Bridging Innovation

Program Book

Henry B. Gonzalez Convention Center • San Antonio, Texas
January 26–29, 2013

Orthopaedic Research Society
NEW! ORS MOBILE APP
Have the Meeting at your fingertips! Download the new ORS Mobile App!
http://ors.showprg.com

JOIN US ON FACEBOOK!
Like the Orthopaedic Research Society on facebook to get the latest society news!
Visit http://www.facebook.com/OrthopaedicResearchSociety

FOLLOW US ON TWITTER @ORSsociety
#ORS2013

Linkedin
JOIN US ON LINKEDIN!
• Orthopaedic Research Society

WATC.ON YOUTUBE!
Ortho Research Society

MAK.MYORS YOUR COLLABORATION DESTINATION
www.myors.org
Dear Fellow ORS Members, Colleagues, and Guests,

On behalf of the Orthopaedic Research Society, we welcome you to the ORS 2013 Annual Meeting in San Antonio, Texas.

Many members are involved in the development of the ORS Annual Meeting. Our Program Committee, Topic Chairs and more than 200 volunteer abstract reviewers work to assemble the best research presentations into podium and poster sessions. We would like to specifically recognize the efforts of the 2013 Program Committee in putting together a dynamic program, and the members of the Annual Meeting Committee for overall meeting organization. Of course, none of this would be possible without our very dedicated, professional staff.

At the 2013 meeting we will continue to address the educational and professional development interests of our attendees through our professional advancement series, co-sponsored symposia and workshops, technical exhibits, industry-related events, research interest groups, mentoring opportunities, and more.

We thank you for your support of the ORS, and hope you experience excellence at the meeting while enjoying your time in San Antonio.

Sincerely,

Theodore Miclau, MD
ORS President

Joan E. Bechtold, PhD
Chair, ORS Annual Meeting Committee
ANNUAL MEETING CORPORATE PARTNERS
The Orthopaedic Research Society would like to thank the following corporate partners for contributions to the ORS 2013 Annual Meeting.

DePuy Orthopaedics Inc.
a Johnson-Johnson company

never stop moving

Lilly

Medtronic

Biomet®

stryker®

AMTI

SANOFI

Baxter

smith&nephew

zimmer

WILEY-BLACKWELL
# TABLE OF CONTENTS

Annual Meeting Corporate Partners .............................................................. Page ii
Meeting Information and Schedules ............................................................... Page 5
Professional Advancement Series ................................................................. Page 6
Mentoring ..................................................................................................... Page 7
ORS Award Session / Research Interest Groups (RIGS)
Poster Walking Tours ................................................................................... Page 8
Advocacy Session / Kappa Delta & OREF Clinical
Research Awards and Presentations / Town Halls ......................................... Page 9
ORS Clinical Research Forum ....................................................................... Page 10
Keynote Lecturer / Presidential Address / Incoming Presidential Address ..... Page 11
2013 Award Recipients ............................................................................... Pages 12-13
ORS Special Events .................................................................................... Page 14
Membership Information ........................................................................... Pages 15-17
Meeting Objective / CME / FDA / Disclaimer / Safety Tips ............................... Page 18
The Innovation Theater / Exhibit Adventure ................................................ Page 19
Education Workshops / ORS-AAOS Combined Symposium /
Professional Advancement Series
  Saturday, January 26 ........................................................................ Pages 23-25
  Sunday, January 27 ........................................................................ Pages 36-37, 40-45
  Monday, January 28 ....................................................................... Pages 49-60
  Tuesday, January 29 ....................................................................... Pages 65-76
Scientific Sessions
  Saturday, January 26 ........................................................................ Pages 26-34
  Sunday, January 27 ........................................................................ Pages 36-37, 40-45
  Monday, January 28 ....................................................................... Pages 49-60
  Tuesday, January 29 ....................................................................... Pages 65-76
Poster Sessions .......................................................................................... Pages 77-159
Exhibitor Listing and Floor Plan ................................................................. Pages 161-168
Exhibit and Poster Floor Plan ...................................................................... Inside Back Cover
Orthopaedic Research Society Board of Directors 2012-2013

Theodore Miclau, MD........................................................................................... President
Joan E Bechtold, PhD .................................................................................... First Vice President
Mary B Goldring, PhD ................................................................................... Second Vice President
Mathias P Bostrom, MD .............................................................................. Third Vice President
Farshid Guilak, PhD ...................................................................................... Fourth Vice President
Brian Johnstone, PhD ................................................................................... Immediate Past President
Marjolein van der Meulen, PhD ................................................................. Secretary
Jennifer S Wayne, PhD ................................................................................... Treasurer
Gloria Matthews, DVM, PhD ................................................................. Treasurer-Elect
Michael J Yaszemski, MD, PhD ............................................................. Member-At-Large
Jennifer J Westendorf, PhD ................................................................. Member-At-Large
Niamh Nowlan, PhD .................................................................................. Member-At-Large
X. Edward Guo, PhD .................................................................................. Membership Chair
Joseph M Lane, MD .................................................................................... Society Liaison Committee Chair
Benjamin Alman, MD ................................................................................... Editorial Advisory Board Chair

Orthopaedic Research Society Staff

Brenda A Frederick...............................................................................Executive Director
Amber Blake ..................................................................................Communications Manager
Mary Jo Heflin ........................................................................................Education Manager
Clare Keesey ........................................................................................Meetings Assistant
Jola Lewsza ..................................................................................Professional Development Coordinator
Alyson Scolaro ..................................................................................Society Coordinator
Matt Zuleg........................................................................................Member-At-Large

TOPIC CHAIRS

The ORS Board of Directors, Annual Meeting and Program Committees would like to acknowledge the Topic Chairs for their contribution to the 2013 Annual Meeting Program.

Roy K Aaron, MD ................................................................. Hip
John S Adams, MD ................................................................. Bone
Joseph Borrelli, Jr, MD .............................................................. Trauma
Susanna G Chubinskaya, PhD ....... Cartilage and Synovium
Darryl D D’Lima, MD .......................................................... Arthroplasty
Timothy Damron, MD .......................................................... Cancer, Tumors
Louis E DeFrate, PhD .......................................................... Knee
Kenneth J Fischer, PhD ........................................................ Hand and Wrist
Jamie Fitzgerald, PhD .......................................................... Muscle
Louis C Gerstenfeld, PhD ........................................................ Fracture
Gloria Gronowicz, PhD ........................................................ Bone
Ranjan Gupta, MD .............................................................. Shoulder and Elbow
Warren O Haggard, PhD......................................................... Biomatertials - Bioinert
Clark T Hung, PhD............................................. Cartilage and Synovium
James C Iatridis, PhD ........................................................... Spine
Michael A Liebschner, PhD........................................................... Spine
Suzanne A Maher, PhD ................................................... Meniscus
Koichi Masuda, MD .......................................................... Spine Therapeutics
James D Michelson, MD ................................................ Foot and Ankle
Steven B Nicoll, PhD .......................................................... Biomaterials - Bioactive
Kjell S Olmarker, MD .......................................................... Nerve and Spinal Cord
A Robin Poole, PhD, DSc ......................................................... Cartilage and Synovium
Geoff Richards, PhD .......................................................... Infection
Douglas D Robertson Jr, MD ......................................................... Diagnostics Imaging
J Mark Wilkinson, PhD, FRCS ..................................................... Arthroplasty
Chunfeng Zhao, MD .............................................................. Tendon/Ligament

Annual Meeting Committee

Joan E Bechtold, PhD, Chair
Tamara Alliston, PhD
Mathias P Bostrom, MD
Katy Georgiadis, PhD
Mary B Goldring, PhD
Dominik R Haudenschild, PhD
Joseph M Lane, MD
Ruth Ochia, PhD
Thomas Cherliyan, MD (Associate Member)

Program Committee

Mary B Goldring, PhD, Chair
Mathias P Bostrom, MD, Poster Chair
Farshid Guilak, PhD
Donald D Anderson, PhD
Mats Brittberg, MD, PhD
Matthew Stewart, PhD
COMMITTEE MEMBERS The ORS would like to thank the following 2012 ORS Committee Members.

Advocacy
Carolyn M. Hettrich, MD, MPH, Chair
Alesha B. Castillo, PhD
Damian Genetos, PhD
Lynne C. Jones, PhD
Paul Manner, MD
Ara Nazarian (Associate Member)
Cathleen L. Raggio, MD (Ex-officio)

Awards and Recognition
Dominik Haudenschild, PhD, Chair
Mathias P Bostrom, MD
Susanna G Chubinskaya, PhD
Eleni Ntouvali, MD, PhD
Harry A. Mckellop, PhD (Ex-officio)

Basic Science Education
Matthew J. Allen, Vet MB, PhD, Chair
Samuel B. Adams, MD
Kivanc Atesok, MD
Daniel A. Grande, PhD
Hubert T. Kim, MD, PhD
Oran Kennedy, PhD
Michael A. Liebschner, PhD
Nancy Pleshko, PhD
Zongbing You, MD, PhD
Barbara D. Boyan, PhD, Orthopaedic Device Forum, ORS Liaison
Hani Haider, PhD, AAOS Biological Implants, ORS Liaison
Lynne C. Jones, PhD, AAOS Biomedical Engineering, ORS Liaison
Warren O. Haggard, PhD, Orthopaedic Device Forum, ORS Liaison

Clinical Research
James Wright, MD, Chair
Mohit Bhandari, MD
Sam Morshed, MD
George Muschler, MD
Kristy Weber, MD
Ted Mclau, MD (Ex-officio)

Corporate Affairs
Katy Georgiadis, PhD, Chair
Harold M. Aberman, DVM
Jacob L. Cartner, MS (Associate Member)
David W. Schroeder, BS
James J. Mason, PhD (Ex-officio)

Editorial Advisory Board
Benjamin Alman, MD, Chair
Christopher Evans, PhD
Marjolein van der Meulen, PhD
Theodore Mclau, MD
Rick Sumner, PhD
Gordana Vunjak-Novakovic, PhD
J. Mark Wilkinson, PhD
Sheesh Bedi, MD (Associate)
Joseph A. Buckwalter, MD, Editor (Ex-officio)
Timothy M. Wright, PhD, Editor (Ex-officio)

Finance
Jennifer S. Wayne, PhD, Chair
Marjolein van der Meulen, PhD
Theodore Mclau, MD
Jennifer Westendorf, PhD
Katy Georgiadis, PhD
Brian Johnstone, PhD (Ex-officio)
Gloria Matthews, DVM, PhD (Ex-officio)

International Task Force
Niamh Nowlan, PhD, Chair (UK)
Joan Bechtold, PhD (US)
X. Edward Guo, PhD (US, China)
Bernd Grimm, PhD (Netherlands)
Yoshinori Ishii, MD (Japan)

Media Relations and Communications
Terence McIff, PhD, Chair
John A. Anderson, MD
Anton E. Bowden, PhD
William B. Macaulay, MD
Leon Nesti, MD, PhD
J. Patrick O’Connor, PhD
Bettina Willie, PhD
William Wu, PhD

Membership Committee
X. Edward Guo, PhD, Chair
Kurt Hankenson, DVM, PhD
Johnny Huard, PhD
John Antoniou, MD, PhD (Ex-officio)
Victor Leung, PhD (Associate member)
Domingo Molina, BS (Associate Member)

New Initiatives
Edward M. Schwarz, PhD, Chair
Martha A. Gray, PhD
George R. Dodge, PhD
Todd McKinley, MD
Deepak Vashishth, PhD
Jonathan Gelber, MD (Associate Member)

New Investigator Mentoring
Tamara Alliston, PhD, Chair
Delphine Perie-Curnier, PhD
Randall L. Duncan, PhD
Tammy L. Haut Donahue, PhD
Francis Young-In Lee, MD
Neal L. Millar (Associate Member)
Jinxi Wang, MD

Nominating
Brian Johnstone, PhD, Chair
Kenneth Fischer, PhD
Leesa Galatz, MD
James Iatridis, PhD
Lynne C. Jones, PhD
Douglas D. Robertson, Jr, MD
Edward Schwarz, PhD
Scott Tashman, PhD
Stephen Trippel, MD

Volunteer Appointment
Brian Johnstone, PhD, Chair
Tamara Alliston, PhD
Mary Goldring, PhD
Johnny Huard, PhD
Niamh Nowlan, PhD
Jennifer Westendorf, PhD

Women’s Leadership Forum
Ruth Ochia, PhD, Chair
Michelle A. Ghert, MD
Karen King, PhD
Serena S. Hu, MD (Ex-officio)

Advisory Board
Adele L. Boskey, PhD
Linda J. Sandell, PhD
Clare M. Rimnac, PhD
THANK YOU TO THE ADJUNCT REVIEWERS

The ORS Board of Directors and Program Committee would like to thank all the volunteers for their time, effort, and dedication to the Society and the 2013 Annual Meeting.
## MEETING INFORMATION AND SCHEDULES

Posters will be on display in **Hall C** throughout the meeting from Saturday, January 26 – Tuesday, January 29. Exhibits will be closed Tuesday, January 29.

### Registration

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, January 25</td>
<td>2:00 pm – 6:00 pm</td>
</tr>
<tr>
<td>Saturday, January 26</td>
<td>7:00 am – 6:00 pm</td>
</tr>
<tr>
<td>Sunday, January 27</td>
<td>7:00 am – 6:00 pm</td>
</tr>
<tr>
<td>Monday, January 28</td>
<td>7:00 am – 6:00 pm</td>
</tr>
<tr>
<td>Tuesday, January 29</td>
<td>7:00 am – 4:00 pm</td>
</tr>
</tbody>
</table>

On-site registration will be located in Exhibit **Hall C- Level 1** of the Henry B. Gonzalez Convention Center.

### Posters and Exhibits

**Poster and Exhibit Hours**

Posters and exhibits will be displayed in **Hall C** Saturday - Monday. Posters only will be displayed on Tuesday.

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, January 26</td>
<td>8:30 am – 5:30 pm</td>
</tr>
<tr>
<td>Sunday, January 27</td>
<td>9:30 am – 5:30 pm</td>
</tr>
<tr>
<td>Monday, January 28</td>
<td>9:30 am – 5:30 pm</td>
</tr>
</tbody>
</table>

**Poster Hours**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, January 29</td>
<td>7:00 am – 4:30 pm (Posters Only)</td>
</tr>
</tbody>
</table>

**Poster Session 1**

- **Saturday, January 26**
  - 8:30 am - 9:15 am
  - 12:30 pm - 1:30 pm
  - 3:00 pm – 4:00 pm * (Authors available to answer questions. Even numbered posters 3:00 pm - 3:30 pm, Odd 3:30 pm - 4:00 pm)
- **Sunday, January 27**
  - 9:30 am - 10:15 am
  - 1:00 pm - 2:00 pm
  - 3:00 pm – 4:00 pm * (Authors available to answer questions. Even numbered posters 3:00 pm - 3:30 pm, Odd 3:30 pm - 4:00 pm)

**Poster Session 1 Dismantle**

- 5:30 pm - 6:00 pm

**Poster Session 2**

- **Poster Session 2 Set-up**
  - 7:30 am - 9:00 am
- **Monday, January 28**
  - 9:30 am - 10:15 am
  - 12:30 pm - 1:30 pm
  - 3:00 pm – 4:00 pm * (Authors available to answer questions. Even numbered posters 3:00 pm - 3:30 pm, Odd 3:30 pm - 4:00 pm)
- **Tuesday, January 29**
  - 9:30 am - 10:30 am
  - 12:45 pm - 1:45 pm
  - 2:45 pm – 3:30 pm * (Authors available to answer questions. Even numbered posters 9:30 am - 10:00 am, Odd 10:00 am - 10:30 am)

**Poster Session 2 Dismantle**

- 4:30 pm - 5:00 pm

### Speaker Ready Room

**Room 217D – Level 2**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, January 25</td>
<td>2:00 pm – 6:00 pm</td>
</tr>
<tr>
<td>Saturday, January 26</td>
<td>7:00 am – 6:00 pm</td>
</tr>
<tr>
<td>Sunday, January 27</td>
<td>7:00 am – 6:00 pm</td>
</tr>
<tr>
<td>Monday, January 28</td>
<td>7:00 am – 6:00 pm</td>
</tr>
<tr>
<td>Tuesday, January 29</td>
<td>7:00 am – 5:00 pm</td>
</tr>
</tbody>
</table>

### ORS Career Center Kiosks

The ORS Career Center Kiosks are located in **Hall C** of the Convention Center. The ORS Career Center is the premier recruitment resource for the industry. Here, employers and recruiters can access the most qualified talent pool with relevant work experience to fulfill staffing needs.

**Job seekers:**
Whether you’re looking for a new job or ready to take the next step in your career, we’ll help you find the opportunity that is right for you.

**Employers:**
Target your recruiting and reach qualified candidates quickly and easily. Simply complete the online registration form and start posting jobs today.

### Innovation Theater

<table>
<thead>
<tr>
<th>Time</th>
<th>Hall C - Monday, January 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:45 am – 10:00 am</td>
<td>MPI Research</td>
</tr>
<tr>
<td>3:15 pm – 3:30 pm</td>
<td>Simpleware</td>
</tr>
</tbody>
</table>
Professional Advancement Series I:
Practical Tips to Create, Cultivate and Sustain Your Professional Network
Saturday, January 26, 9:15 am – 10:45 am
Ballroom C3
Organized by the ORS Women’s Leadership Forum and the New Investigator Mentoring Committee
Clare Yellowley, PhD, Professor, UC Davis College of Biological Sciences
Linda Sandell, PhD, Professor, Director of Research, Washington University in St. Louis, School of Medicine
Benjamin Alman, MD, Professor, Department Chair, University of Toronto
David Ke, MD, Scientific Executive Director, Amgen

Learn from ORS members who have mastered the art of networking as they share practical tips and stories on building and sustaining professional networks. In addition to learning face to face networking skills, participants will gain insight on online networking and etiquette strategies.

Professional Advancement Series II:
Careers in Biomaterial Engineering
Monday, January 28, 8:00 am – 9:30 am
Room 217
Organized by the ORS Corporate Affairs Committee
Stephen Spiegelberg, PhD, President, Cambridge Polymer Group, Inc.
Joo L. Ong, PhD, Professor, Department Chair, The University of Texas San Antonio
Warren Haggard, PhD, Professor, Herff Chair of Excellence, University of Memphis
Jorge A. Ochoa, PhD, Principal Engineer, Exponent, Inc.

Biomaterial Engineering requires and utilizes engineering, biology, and biomechanical principles to the design, development, and evaluation of biological and health systems and products, such as artificial organs, prostheses, instrumentation, medical information systems, and health management and care delivery systems. It is an multi-disciplinary field that explores how materials interact with living organisms, and one that influences every part of medical-device research, design and development. Careers may be pursued in laboratories at universities, product development laboratories or medical facilities, medical device manufacturers, raw material suppliers, sport and fitness companies, sport medicine and rehabilitation, regulatory agencies, as well as testing and analytical laboratories. In this program, speakers will discuss the opportunities available in the field of biomaterial bioengineering, how it applies to the work they do, and how it has allowed them to expand their career pathway.

Professional Advancement Series III:
Startup to Success: Tips to Navigate Common Grant Writing Dilemmas for Early and Mid-Career Investigators
Tuesday, January 29, 8:00 am – 9:30 am
Room 217
Organized by the ORS New Investigator Mentoring Committee
Melissa Kacen, PhD, Assistant Professor, Indiana University School of Medicine
Sharmila Majumdar, PhD, Professor in Residence, UCSF School of Medicine
Dawn Elliot, PhD, Professor, University of Delaware
Richard Lieber, PhD, Professor and Vice Chair, Department of Surgery University of California and V.A. Medical Centers, San Diego, CA

Learn how to clearly communicate and market the ideas within your grant proposal while hearing advice from well-funded ORS investigators that will help you navigate common grant writing dilemmas such as: leveraging a new investigator or mid-career startup package for successful R01 funding, timing your two shots at the NIH goal: walking the line between an underdeveloped proposal and ‘perfection paralysis’, deciding whether to revise and resubmit an unfunded proposal or to start a new one and anticipating and preparing for your renewal from the beginning of your R01.
MENTORING
ALL REQUIRE PRE-REGISTRATION

Meet the Mentors Luncheon
Saturday, January 26, 12:30 pm – 1:30 pm
Room 210
Organized by the ORS New Investigators Mentoring Committee
($25 per ticket)

This is an informal and interactive session between mentors and mentees. Mentees will be able to select their mentors. Over lunch, the mentors and mentees will get the opportunity to discuss career establishment and how to balance competing demands in the academic and corporate environments. The discussions will also focus on the importance of identifying mentors and describing the roles and functions of a mentor. A boxed lunch is included in the ticket price.

Meet the Industry Members Forum/Luncheon
Monday, January 28, 12:30 pm – 1:30 pm
Room 210
Organized by the ORS Corporate Affairs Committee
Supported by Stryker
($25 per ticket)

This forum/luncheon provides an excellent opportunity for meeting attendees affiliated with industry or interested in pursuing an industry career to meet with the ORS Corporate Affairs Committee. The purpose of this interactive discussion with industry colleagues is to network and learn how the society can support industry members. As an attendee you will be able to pick the industry member you would like to meet. A boxed lunch is included in the ticket price.

ORS Members can take advantage of all www.MyORS.org has to offer:
• Create your member profile
• Browse the membership directory
• Create and view other member blogs
• Enroll as a mentor or as a mentee
• Create and join communities on topics that you are passionate about
• Share your thoughts and files with your fellow ORS members

My ORS
Your Collaboration Destination!
POSTER WALKING TOURS
The ORS invites you to join experienced investigators who enjoy communicating about great science as they conduct walking tours of the 2013 Annual Meeting Posters.

Daily Schedule: (Please be aware tour leaders are subject to change.)
Tours are in English unless indicated.

Saturday, January 26, 12:40 pm – 1:30 pm
Alejandro Espinoza Orias, PhD Spine Biomechanics
X Ed Guo, PhD Bone
Dominik Haudenschild, PhD Cartilage/Synovium
Sujee Jeyapalina, PhD Biomaterials
Sheldon Lin, MD Foot
Christopher Little, BVMS, PhD Cartilage/Synovium – Osteoarthritis
Zong-Ming Li, PhD Hand and Wrist
Fred Nelson, MD Cartilage/Synovium

Sunday, January 27, 1:10 pm – 2:00 pm
Maria-Grazia Ascenzi, PhD Bone Mechanics
Mary Bayers-Thering, MS, MBA Arthroplasty – Hip
Lawrence Bonassar, PhD Cartilage/Synovium
Xinggou Cheng, PhD Biomaterials
Yifei Dai, PhD Arthroplasty – Finite Element Analysis
Lei Ding, PhD Cartilage/Synovium – in Spanish
Ernst Hunziker, MD, PhD, MD Cartilage/Synovium
Chang Lee, PhD Meniscus
Peter Walker, PhD Arthroplasty – Knee
Wei Yang, PhD Trauma
Xu Yang, MD Bone Mechanobiology – in Chinese

Monday, January 28, 12:40 pm – 1:30 pm
Lei Ding, PhD Cartilage/Synovium
Johnny Huard, PhD Bone
Sujee Jeyapalina, PhD Biomaterials
Joseph Lane, MD Fracture
Xiaojuan Li, PhD Diagnostic Imaging
Suzanne Maher, PhD Meniscus
Fred Nelson, MD Cartilage/Synovium
J Edward Puzas, PhD Bone

Tuesday, January 29, 12:55 pm – 1:45 pm
James E Dennis, PhD Cartilage/Synovium
Alejandro Espinoza Orias, PhD Spine Biomechanics-in Spanish
X Ed Guo, PhD Bone-in Chinese
Dominik Haudenschild, PhD Cartilage/Synovium
Tammy Haut Donahue, PhD Meniscus
Zong-Ming Li, PhD Hand and Wrist
Wei Yang, PhD Trauma

ORS AWARDS SESSION
Sunday, January 27, 5:15 pm – 6:00 pm
Ballroom C1
Please note: the ORS Awards Gala Dinner will take place 7:00 pm – 10:00 pm (pre-registration and ticket required)
The prestigious ORS Awards will be given to individuals with significant contributions to the advancement of orthopaedic research and furthering understanding of the musculoskeletal system and musculoskeletal diseases and injuries. Highly distinguished investigators will be honored.
ORS New Investigator Recognition Awards (NIRA)
Recipients to be announced
ORS Marshall R. Urist, MD Award
Ernst B Hunziker, MD, PhD
ORS Alfred R. Shands, Jr., MD Award
Timothy M. Wright, PhD
Hospital for Special Surgery
ORS Video Outreach Competition Awards Videos
First Place, Youssef Farhat, BS
Who Cares About Orthopaedic Research?
Second Place, Oran Kennedy, PhD
The Cells in Our Bones
Third place, Alan Dang, MD
Articular Cartilage and Regenerative Medicine

RESEARCH INTEREST GROUPS
ORS Research Interest Groups (RIGS) offer the opportunity to engage in lively discussions with colleagues in your area of musculoskeletal research. RIGS foster the thoughtful exchange of ideas and collaborative partnerships.

Friday, January 25, 2:00 pm – 6:00 pm
Growth Factors
Room 213 • Organized by Stephen Trippel, MD

Friday, January 25, 6:00 pm – 8:00 pm
Graduate Students Women's Group
Room 211 • Organized by Tina Nagel and Amy Claeson
Repair and Regeneration of Orthopaedic Tissues
Room 210 • Organized by Chelsea Bahn, PhD
The Spine Research Community
Room 214 • Organized by Jackson Mwale, PhD
Cartilage Mechanobiology
Room 209 • Organized by Chris Chen, PhD and Farshid Guilak, PhD

Saturday, January 26, 6:30 am – 8:00 am
The Orthopaedic Evidence and Outcomes Education Organization Part I
Room 210 • Organized by Michael Dohm, MD

Sunday, January 27, 6:30 am – 8:00 am
The Orthopaedic Evidence and Outcomes Education Organization Part II
Room 210 • Organized by Michael Dohm, MD

Monday, January 28, 6:30 am – 8:00 am
Bone Tissue: Hierarchical Simulations for Clinical Applications
Room 213 • Organized by Maria-Grazia Ascenzi, PhD
INCREASING RESEARCH FUNDING VIA ADVOCACY
Sunday, January 27, 10:15 am – 11:45 am
Room 217
Presented by the ORS Advocacy Committee
Co-Organizers: Carolyn M. Hettrich, MD, MPH, University of Iowa and Joseph M. Lane, MD, Hospital for Special Surgery

With the budget crisis in the federal government, advocacy for research funding has become increasingly important. Government and other funding institutions need to be aware of the importance of musculoskeletal research, with its high burden of disease and potential to improve the lives and productivity of patients. This workshop will provide past examples of success in increasing funding through advocacy, provide background information and ways to get involved through two organizations dedicated to research advocacy; and give ideas for funding and advocacy efforts outside of NIAMS. Members will also be shown the advocacy resources available through ORS to help build relationships between members and their congressional representatives, hopefully resulting in increased advocacy for research and increased funding over time.

Role of Advocacy in Increasing Research Funding
Stuart L. Weinstein, MD, University of Iowa Hospital

Making Research to Improve Health a Higher National Priority
Max Bronstein, Research!America

The American Institute for Medical and Biological Engineering
Lynne C. Jones, PhD, John Hopkins University

TOWN HALLS
Journal of Orthopaedic Research Town Hall
Sunday, January 27, 7:00 am – 8:00 am
Room 213
In the thirty years since the establishment of the Journal of Orthopaedic Research (JOR), musculoskeletal research has dramatically grown in both its breadth and depth. The publishing field has also undergone tremendous change with the establishment of new journals, increased use of electronic distribution, and new publishing models. It is time to for the ORS to strategically plan for the journal so that we can best meet the needs of our members and the musculoskeletal and orthopaedic research communities in this changing publishing environment. The ORS Board, the JOR Editorial Advisory Board, the editors, and the publisher invite you to a town hall meeting to give input on the future of the Journal. Please attend this important event to learn about and contribute your input on potential changes to the journal. The JOR belongs to ORS members, so we need to hear your views on the future direction of the journal.

ORS International Members Town Hall: Help Us Shape a Global ORS
Monday, January 28, 12:30 pm – 1:30 pm
Room 213

Being a global society is inherent to the goal and mission of the ORS. We highly value all of our members and aim to represent members from across the globe. Currently, we are looking for ways to increase the engagement and involvement of new and existing international members. We need your help. How do you feel that the ORS can better serve its members from around the world? Share your thoughts and ideas at a town hall meeting. We welcome all members. ORS members living and working outside North America are particularly encouraged to attend.

The Kappa Delta and OREF Clinical Research Awards and Paper Presentations
Saturday, January 26, 2:00 pm – 3:00 pm
Ballroom C1

2013 Kappa Delta Young Investigator Award
Elise Morgan, PhD – Boston University
Control of Bone Healing by Mechanical Factors

2013 Kappa Delta Ann Doner Vaughan Award
Martha Murray, MD – Boston Children’s Hospital
Co-Authored by: Braden Fleming, PhD – Rhode Island Hospital/Brown University
The Biology of ACL Injury and Repair

2013 Kappa Delta Elizabeth Winston Lanier Award
Richard Lieber, PhD – University of California, San Diego
Co-Authored by: Jan Fridén – Goetborg University, Samuel Ward PT, PhD – University of California, San Diego
Design of Human Skeletal Muscles: Implications For Orthopaedic Surgery

2013 OREF Clinical Research Award
Robert LaPrade, MD, PhD – Steadman Philippon Research Institute
Co-Authors: Benjamin Coobs, MD – University of Minnesota, Lars Engebretsen, MD, PhD – University of Oslo, Andrew Geeslin, MD – Michigan State University, Chad Griffith, MD – University of Minnesota, Steinar Johansen, MD – University of Oslo

Improving Outcomes for Posterolateral Knee Injuries Running Title: The Posterolateral Corner of the Knee
## ORS CLINICAL RESEARCH FORUM:
The Art and Science of Designing and Completing Clinical Trials in Orthopaedics

Room 214 • Sunday, January 27
Organized by the ORS Clinical Research Committee: Chair: James Wright, MD, Hospital for Sick Kids
Mohit Bhandari, MD, McMaster University; Theodore Miclau, MD, Orthopaedic Trauma Institute; Saam Morshed, MD, University of California;
George Muschler, MD, Cleveland Clinic Foundation; and Kristy Weber, MD, John Hopkins University

### MORNING SESSION

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am – 9:40 am</td>
<td>SESSION I: Planning</td>
<td>Moderator: James Wright, MD, Hospital for Sick Kids</td>
</tr>
<tr>
<td>8:00 am</td>
<td>Introduction</td>
<td>James Wright, MD, Hospital for Sick Kids</td>
</tr>
<tr>
<td>8:10 am</td>
<td>Choosing the Most Practical Design/Starting From the Beginning of Studying a Clinical Problem Criteria</td>
<td>Kevin Shea, MD, St. Luke's Clinic - Intermountain Orthopaedics</td>
</tr>
<tr>
<td>8:25 am</td>
<td>Pilot Studies and Moving From Pilot Studies to Main Study</td>
<td>Mohit Bhandari, MD, McMaster University</td>
</tr>
<tr>
<td>8:40 am</td>
<td>Organization Structure/Trial Management</td>
<td>Michael Bosse, MD, Carolinas Medical Center</td>
</tr>
<tr>
<td>8:55 am</td>
<td>Enlisting Study Sites/Investigators</td>
<td>Kurt Spindler, MD, Vanderbilt Orthopaedic Institute</td>
</tr>
<tr>
<td>9:10 am</td>
<td>Panel Discussion</td>
<td></td>
</tr>
<tr>
<td>9:40 am</td>
<td>BREAK</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>SESSION II: Art of the Start</th>
<th>Moderator: George Muschler, MD, Cleveland Clinic Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 am – 11:30 am</td>
<td>Finding the Right Research Staff</td>
<td>Emil Schemitsch, MD, University of Toronto</td>
</tr>
<tr>
<td>10:15 am</td>
<td>Training Investigators</td>
<td>Kurt Spindler, MD, Vanderbilt Orthopaedic Institute</td>
</tr>
<tr>
<td>10:30 am</td>
<td>MOOP</td>
<td>Lori Dolan, PhD, University of Iowa</td>
</tr>
<tr>
<td>10:45 am</td>
<td>Designing Data Collection</td>
<td>Stephen Lyman, PhD, Hospital for Special Surgery</td>
</tr>
<tr>
<td>11:00 am</td>
<td>Panel Discussion</td>
<td></td>
</tr>
<tr>
<td>11:30 am – 12:30 pm</td>
<td>BREAK</td>
<td></td>
</tr>
</tbody>
</table>

### AFTERNOON SESSION

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Moderator: James Weinstein, DO, MS, Dartmouth-Hitchcock Medical Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 pm – 1:15 pm</td>
<td>KEYNOTE – Trial and Tribulations</td>
<td>James Weinstein, DO, MS, Dartmouth-Hitchcock Medical Center</td>
</tr>
<tr>
<td>1:15 pm – 2:30 pm</td>
<td>SESSION III: Keeping it Going</td>
<td>Moderator: Kurt Spindler, MD, Vanderbilt Orthopaedic Institute</td>
</tr>
<tr>
<td>1:15 pm</td>
<td>Collecting Research Data</td>
<td>Marc F Swiontkowski, MD, University of Minnesota</td>
</tr>
<tr>
<td>1:30 pm</td>
<td>Patient Recruitment</td>
<td>Ellen MacKenzie, PhD, Johns Hopkins University</td>
</tr>
<tr>
<td>1:45 pm</td>
<td>Trial Communication</td>
<td>Stuart Weinstein, MD, University of Iowa Hospital</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>Panel Discussion</td>
<td></td>
</tr>
<tr>
<td>2:30 pm</td>
<td>BREAK</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>SESSION IV: Damage Control and Close Out</th>
<th>Moderator: Mohit Bhandari, MD, McMaster University</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:45 pm – 4:15 pm</td>
<td>Keeping Investigators on Protocol / Ensuring Intervention is Delivered Proficiently / Preventing Center Burnout (When “Enough” is Enough)</td>
<td>Ellen MacKenzie, PhD, Johns Hopkins University</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>Managing DMSB/Funding Agency</td>
<td>Lori Dolan, PhD, University of Iowa</td>
</tr>
<tr>
<td>3:15 pm</td>
<td>Writing Committees/Authorship Issues</td>
<td>Michael Bosse, MD, Carolinas Medical Center</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Managing a “Crisis” During a Trial (Major Adverse Events Occurring, Fraud Identification, Ethics Violations at Sites, etc., etc., etc.)</td>
<td>Mohit Bhandari, MD, McMaster University</td>
</tr>
<tr>
<td>3:45 pm</td>
<td>Panel Discussion</td>
<td></td>
</tr>
<tr>
<td>4:15 pm</td>
<td>Conclusion/Adjourn</td>
<td>James Wright, MD, Hospital for Sick Kids</td>
</tr>
</tbody>
</table>

*Note: Presentations and Faculty subject to change*
Keynote Lecturer
Saturday, January 26, 1:30 pm – 2:00 pm
Olivier Pourquié, PhD
New Insights in the Development of the Vertebral Column: From Clocks to Scoliosis
Olivier Pourquié, PhD is currently a professor at Strasbourg University Medical School in France. He served as Director of the Institute for Genetics and Molecular and Cellular Biology in Strasbourg from 2009-2012, prior to that, he was a Howard Hughes Medical Institute Investigator. Pourquié is widely recognized as an international scholar of Vertebrate Developmental Biology.

Pourquié’s most recent research is largely dedicated to exploring the molecular basis of human vertebral malformations. Pourquié’s discoveries have had important consequences for our understanding of the patterning of the vertebrate embryonic axis and provided a conceptual framework to explain human spine malformations such as congenital scoliosis. His laboratory’s discovery of the first evidence of the existence of a molecular oscillator- the segmentation clock- associated to the rhythmic production of vertebral precursors (the somites) in the embryo was recognized as one of the 25 milestones in Developmental Biology in the 20th century by Nature magazine.

Presidential Address/Incoming Presidential Address
Monday, January 28, 10:15 am – 10:45 am
Theodore Miclau, MD
President
2012 has been a year of growth and change for the ORS. Join your colleagues as President Theodore Miclau, MD addresses the members of the society and gives highlights of the past year’s activities.

Joan E. Bechtold, PhD
Incoming President
Incoming ORS president, Joan Bechtold, will offer insight into the future direction of the society as well as discuss several new initiatives.

ORS Annual Business Meeting
Monday, January 28, 10:45 am – 11:15 am
CONGRATULATIONS TO ALL 2013 AWARD RECIPIENTS

New Investigator Recognition Awards
Thank you to the NIRA Award Supporters
University of Rochester
University of California, San Francisco
Hospital for Special Surgery,

Award Winners TBA

ORS/OREF Travel Awards in Orthopaedic Research Translation
Michael B. Cross, MD
Hospital for Special Surgery

Tomoko Kanazawa, MD, PhD
Okayama University

ORS Collaborative Exchange Awards
Adetola B. Adesida, PhD
University of Alberta

Virginia B. Kraus, MD, PhD
Duke University

ORS Women’s Leadership Forum Award
Clare M. Rimnac, PhD
Case Western Reserve University

ORS/OREF Distinguished Investigator Award
Jorge Galante, MD
Midwest Orthopaedics at Rush

ORS William Harris Award
Daniel Varin, MS
University of Ottawa

ORS Marshall R. Urist, MD Award
Ernst B. Hunziker, MD, PhD
University of Bern

ORS Alfred R. Shands, Jr., MD Award
Timothy Wright, PhD
Hospital for Special Surgery

2013 Kappa Delta Young Investigator Award
Elise Morgan, PhD
Boston University
Control of Bone Healing by Mechanical Factors
CONGRATULATIONS TO ALL 2013 AWARD RECIPIENTS

The following are those that will be honored at the ORS Awards Gala, Sunday, January 27.

2013 Kappa Delta
Ann Doner Vaughan Award
Martha Murray, MD
Boston Children’s Hospital
Co-Author:
Braden Fleming, PhD
Rhode Island Hospital/Brown University
The Biology of ACL Injury and Repair

2013 Kappa Delta
Elizabeth Winston Lanier Award
Richard Lieber, PhD
University of California, San Diego
Co-Authors:
Jan Fridén
Goetborg University
Samuel Ward PT, PhD
University of California, San Diego
Design of Human Skeletal Muscles: Implications for Orthopaedic Surgery

2013 OREF Clinical Research Award
Robert LaPrade, MD, PhD
Steadman Philippon Research Institute
Co-Authors:
Benjamin Coobs, MD
University of Minnesota
Lars Engebretsen, MD, PhD
University of Oslo
Andrew Geeslin, MD
Michigan State University
Chad Griffith, MD
University of Minnesota
Steinar Johansen, MD
University of Oslo
Improving Outcomes for Posterolateral Knee Injuries Running Title: The Posterolateral Corner of the Knee

ORS Marshall R. Urist, MD Award Lecturer
Ernst B Hunziker, MD, PhD
University of Bern

ORS Alfred R. Shands, Jr., MD Award Lecturer
Timothy M. Wright, PhD
Hospital for Special Surgery

ORS Video Outreach Competition
Awards Videos

First Place
Youssef Farhat, BS
University of Rochester
Who Cares About Orthopaedic Research?

Second Place
Oran Kennedy, PhD
City College of New York
The Cells in Our Bones

Third Place
Alan Dang, MD
University of California, San Francisco
Articular Cartilage and Regenerative Medicine

ORS Video Outreach Competition Supporters

BIOLOX®
Rothman

13
SPECIAL EVENTS

ALL EVENTS REQUIRE PRE-REGISTRATION

ORS Networking Breakfaests
Saturday, January 26 - Tuesday, January 29, 7:00 am – 8:00 am
($16 per breakfast)

Get a head start on your day and join your colleagues for breakfast. The ORS Networking Breakfasts provide an excellent opportunity to advance your career. Four breakfasts will take place over the course of the meeting, each focusing on a specific topic.

Collaborations
Saturday, January 26
Level 2 – Foyer

The ORS Annual Meeting is a unique environment that fosters collaboration amongst disciplines and exposure to different research methodologies. Attending this breakfast will allow participants to take advantage of this diverse environment and establish new connections that will aid in bridging the basic science and clinical gap.

Meet the NIH
Sunday, January 27
Level 2 – Foyer

Meet representatives from the National Institutes of Health and get an inside look at Research Funding in America. Representatives include: Stephen Katz, Robert Carter, Joan McGowen, Bernadette Tyree, James Panagis, Gayle Lester, Xibin Wang, Fei Wang, Jonelle Drugan and Faye Chen. (Representatives are subject to change.)

Discovering ORS
Monday, January 28
Level 2 – Foyer

This breakfast, designed for new members, will serve as an orientation to the society. From taking advantage of member benefits to learning about the ORS committees you can serve on, this breakfast is a great opportunity for new and seasoned ORS members to make the most of their membership.

Next Steps
Tuesday, January 29
Hall C

You came, you saw and you conquered the ORS Annual Meeting. Now what? Learn how to maintain the connections you made at this year’s meeting.

ORS Welcome Reception
Saturday, January 26, 6:15 pm – 7:30 pm
Level 2 – Foyer
(Included in Registration Fee)

Kickoff the 2013 Annual Meeting in style! Join your colleagues for beverages and light appetizers at this complimentary reception. This event provides an excellent opportunity to see familiar faces and meet new friends.

Women's Leadership Forum Reception
Saturday, January 26, 7:30 pm – 10:00 pm
Grand Hyatt San Antonio
Texas Ballroom – 4th Floor
($50)

Our annual reception begins with informal networking followed by a reception buffet. This year our program will feature a special memorial tribute to celebrate the career of Dr. Phoebe Leboy, followed by the presentation of our annual WLF Woman of the Year Award. We will end the evening with a discussion regarding current career challenges for female scientists.

ORS Awards Gala
Sunday, January 27, 7:00 pm – 10:00 pm
Grand Hyatt San Antonio
Texas Ballroom – 4th Floor
($100)

Join us for a special evening of celebration as we recognize colleagues who have made significant contributions to the field of musculoskeletal research. We will honor the recipients of the William Harris Award, Marshall Urist Award, Alfred Shands Award, Kappa Delta Research Awards, OREF Clinical Research Award, ORS/OREF Distinguished Investigator Award, Video Outreach Competition and the ORS Women's Leadership Award. We will also recognize the recipients of the ORS New Investigator Recognition Awards (NIRA), Collaborative Exchange Awards, and the ORS/OREF Travel Awards in Orthopaedic Research Translation. For more information on this year’s winners, please see page 12.

President's Party at the Grotto
Monday, January 28, 8:30 pm – 10:30 pm
Lonesome Dove Room (River Level of the Convention Center)
($35)

Kick up your heels and join your colleagues at the party at the grotto where you will enjoy a fun evening filled with southwestern flair. This unforgettable venue runs alongside the Riverwalk and is the perfect setting to enjoy a margarita and say goodbye to San Antonio.
Become a Member of the **Orthopaedic Research Society**

The ORS Membership Committee will be available to discuss membership aspects and benefits as well as endorse applications during breaks and poster sessions in the ORS Booth (#604) Located in the Exhibit Hall.

### INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>Active Members are elected to the Society based on previous scientific contributions and continued participation in the field of research. Active members pay annual dues of $240.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate (Student) Membership is available to trainees in the area of orthopaedic research, including individuals who are pursuing advanced degrees (e.g., MD, DDS, DO, MS, PhD, DVM) or in post-doctoral clinical and research training programs (Residency and Fellowship). Associate (Student) Members must verify their training status in the field of orthopaedic research for membership. Associate (Student) Members are expected to apply for Active membership when their training is completed. Associate (Student) Members pay annual dues of $50.</td>
<td></td>
</tr>
<tr>
<td>Affiliate Membership is available to lab technicians, lab and private practice administrators/managers, and industry representatives that make a significant scientific and/or non-scientific contribution to orthopaedic research and the ORS. Applicants must have two institutional sponsors; ORS members must write letters of recommendation including significant scientific and/or non-scientific contribution of the applicant. Letters must be on institutional letterhead. Affiliate members pay annual dues of $240.</td>
<td></td>
</tr>
</tbody>
</table>

### BENEFITS:

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Active</th>
<th>Associate (Student)</th>
<th>Affiliate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestige of membership and recognition</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Reduced registration fees at the ORS Annual Meeting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Network of Skilled Professionals</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Online access to the Transactions of the Annual Meeting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Free subscriptions to ORS Society Newsletter and E-News</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>24-hour access to the Online Membership Directory</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Discounted rate for ORS Career Center</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Eligibility for ORS Awards, Fellowships and Grants</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Subscription to the Journal of Orthopaedic Research (12 issues)</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Eligibility to serve on ORS Committees, as a reviewer and moderator</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligibility to serve on ORS Committees as an ad Hoc</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### REQUIREMENTS:

<table>
<thead>
<tr>
<th>Active</th>
<th>Associate (Student)</th>
<th>Affiliate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Presentation of a paper at an ORS Annual Meeting OR Publication of two peer-reviewed journals papers related to orthopaedic research.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Two ORS sponsors (two letters of recommendation from ORS members, or signatures on the application form. Letters may be sent by mail/e-mail to <a href="mailto:ors@ors.org">ors@ors.org</a>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Two ORS sponsors (two letters of recommendation from ORS members, or signatures on the application form. Letters may be sent by mail/e-mail to <a href="mailto:ors@ors.org">ors@ors.org</a>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A signature from your Advisor, Dean, Department or Program Chair verifying your training status is required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Attendance at one or more prior ORS Annual Meetings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Two ORS sponsors – two letters of recommendation from ORS Active members are required. Letters of recommendation must address the applicant's scientific and/or non-scientific contribution to orthopaedic research and must be on institution's letterhead. Letters may be sent by mail/e-mail to <a href="mailto:ors@ors.org">ors@ors.org</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Attendance at one or more prior ORS Annual Meetings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Two ORS sponsors – two letters of recommendation from ORS Active members are required. Letters of recommendation must address the applicant's scientific and/or non-scientific contribution to orthopaedic research and must be on institution's letterhead. Letters may be sent by mail/e-mail to <a href="mailto:ors@ors.org">ors@ors.org</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ORS Welcomes NEW MEMBERS that Joined Our Society in 2012

ACTIVE MEMBERS
Satomi Abe, MD
Anand Agarwal, MS
Alejandro Almazara, PhD
Loay Al-Zube, PhD
Divya Ambast, PhD
Michel Assaad, PhD
Paul Baker, MS
Rahul Banerjee, MD
Samuel Basler, MS
Danielle Benoist, PhD
Masahiko Bessho, MD, PhD
D Nicole Deal, MD
Giuseppe de Peppo, PhD
Alan Dang, MD
Alexis Dang, MD
Michael Cross, MD
Xingguo Cheng, PhD
Cody Bunger, MD
Conor Buckley, PhD
Claire Brockett, PhD
Jan-M Brandt, PhD
Bahar Bilgen, PhD
Liming Bian, PhD
Masahiko Bessho, MD, PhD
Danielle Benoist, PhD
Samuel Basler, MS
Rahul Banerjee, MD
Michel Assad, PhD
Divya Ambast, MS
Loay Al-Zube, PhD
Anand Agarwal, MS
Satomi Abe, MD
ORS Welcomes NEW MEMBERS that Joined Our Society in 2012

ASSOCIATE MEMBERS
Emrías Abebe, MD
Sara Ajami, BEng
Allison Altman, PhD
Sharon Ando, MS
Olabayo Babatunde, MS
Andrew Carr, MD
Xingguo Cheng, PhD
Michael Cross, MD
Aliki Dang, MD
Giuseppe de Peppo, PhD
D Nicole Deal, MD
Scott Delp, PhD
Ahblijit Dhillon, PhD
Kenneth Diller, PhD
Lei Ding, PhD
Eve Donnelly, PhD
Mahmut Doral, MD

AFFILIATE MEMBERS
16

Evan Carlson, MS
Lisa Ferrara, PhD
Carl Javier, BS
Rodrigo Diaz, MD
Mary Goldsmith, MS
Satya Mallu, MS
Masaru Nishida, MS
Simon Sinclair, PhD

General Information
THANK YOU

The ORS thanks those individuals who have sponsored and endorsed new members.
MEETING OBJECTIVES

- To present the best available research from all disciplines of musculoskeletal research.
- To promote the exchange of ideas and encourage collaborations in orthopaedic research.
- To encourage promising and emerging areas in musculoskeletal research including basic science education, and research strategies by use of forums, workshops, special sessions and special interest meetings.

CONTINUING MEDICAL EDUCATION (CME) CREDIT

This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American Academy of Orthopaedic Surgeons and the Orthopaedic Research Society. The American Academy of Orthopaedic Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

The American Academy of Orthopaedic Surgeons designates this educational activity for a maximum of 29.5 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Attendees claiming CME from the ORS 2013 Annual Meeting will be required to complete the ORS CME Request Form following the meeting in San Antonio. Attendees will need to complete the online CME Request Form by the due date in order to have the ORS CME added to their AAOS Transcript. Requests for CME submitted after the deadline, will not be included on the AAOS Transcript and will receive a CME Certificate from the ORS.

FDA

All drugs and medical devices used in the United States are administered in accordance with Food and Drug Administration (FDA) regulations. These regulations vary depending on the risks associated with the drug or medical device, the similarity of the drug or medical device to products already on the market, and the quality and scope of clinical data available. Some drugs or medical devices demonstrated at this 2013 Annual Meeting of the Orthopaedic Research Society may have not been cleared by the FDA or have been cleared by the FDA for specific purposes only. The FDA noted that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice. Orthopaedic Research Society policy provides that “off label” uses of a drug or medical device may be described in the Orthopaedic Research Society’s CME activities so long as the “off label” use of the drug or medical device is also specifically disclosed (i.e., it must be disclosed that the FDA has not cleared the drug or device for the described purpose). Any drug or medical device is being used “off label” if the described use is not set forth on the product’s approved label.

PHOTO DISCLAIMER

Absolutely no photography, video, audio recording, or reproduction of any kind may be used during any portion of the 2013 Annual Meeting. The ORS reserves all of its rights to such material, and commercial recording or reproduction is specifically prohibited. This includes, but is not limited to, digital and film photography, videography, cellular phones, and other image or audio recording devices. This policy will be strictly enforced.

DISCLAIMER

The materials presented at the 2013 Annual Meeting of the Orthopaedic Research Society have been made available by the Orthopaedic Research Society for educational purposes only. The material is not intended to represent the only, nor necessarily best, method or procedure appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement or opinion of the faculty, which may be helpful to others who face similar situations. The Orthopaedic Research Society disclaims any and all liability for injury or other damages resulting to any individual attending the meeting and for all claims, which may arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by physician or any other person. No reproduction of any kind, including audiotapes and videotape, may be used in any portion of the ORS Annual Meeting. The ORS reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

SAFETY TIPS

DO:
- Travel with only the credit card and ID cards you will use.
- Check that the lock works and that the door closes securely in your hotel room. Put the chain or deadbolt on the door after entering the room.
- Walk with another person. Single targets are the most likely victims of crime.

DON’T:
- Wear your badges or carry conference bags outside.
- Walk in dark, isolated areas, such as closed plazas.

Children 16 years of age and under are not permitted to enter the exhibit and poster hall area or the session rooms at any time. No supervision is offered.

FUTURE ORS MEETINGS

Future Combined Meeting
8th Combined Meeting of the Orthopaedic Research Societies
October 12 – 16, 2013
San Servolo, Venice, Italy
www.cors2013.org

ORS 2014 Annual Meeting
March 15 – 18, 2014
Hyatt Regency New Orleans
New Orleans, Louisiana
(AAOS Annual Meeting, March 11 – 15, 2014,
New Orleans, Louisiana)

ORS 2015 Annual Meeting
March 28 – 31, 2015
MGM Grand Hotel
Las Vegas, Nevada
(AAOS Annual Meeting, March 24 - 28, 2015,
Las Vegas, Nevada)

BADGES FOR SIGNIFICANT OTHERS/SPOUSES of registered ORS Annual Meeting attendees will be available for purchase on site only for $30. Significant Other/Spouse badges will provide guest admittance to the ORS Welcome Reception on Saturday, January 26, 6:15pm-7:30pm.

It is essential that all attendees wear a badge at all times during our event for Security Purposes.
**THE NEW INNOVATION THEATER!**

Hall C

Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

**Monday, January 28**
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length and are commercial/promotional activities only.

**EXHIBIT ADVENTURE**

Hall C

Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:

- **Bone & Joint Research:** An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
- **Bose Corporation – ElectroForce Systems Group:** Bose QuietComfort 15 Acoustic Noise Cancelling Headphones
- **IOP Publishing:** Kindle
- **Micro Photonics, Inc.:** iPad
- **Pacific Research Labs/Sawbones:** $200 Gift Card
- **Scanco Medical:** $150 Gift Card
Please encourage investigators who are driving better outcomes.

Capt. Marlene DelMair, MD, USN

New knowledge is the heart of orthopaedics.

Since 1955, ORS and OREF have worked hand-in-hand to expand funding for clinically relevant research and increase opportunities for new investigators. You can help us continue that tradition with a gift to the OREF Annual Campaign.

Every gift makes a difference. ORS members know firsthand how precious research funding has become. Please give generously to encourage your fellow investigators and support the science of orthopaedics.

We need a stream of good, young investigators coming into the field, and OREF gives them a boost in their early to intermediate career stages.

For more information, please contact:

Ed Hoover
VP, Development
(847) 384-4354
hoover@oref.org

Kathy Jermal
Development Administrator
(847) 384-4352
jermal@oref.org

Please visit www.oref.org/ors to make a generous gift to support ORS and OREF.

6300 North River Road — Suite 700 • Rosemont, IL 60018 • (847) 698-9980 • www.oref.org

© 2012, Orthopaedic Research and Education Foundation, All Rights Reserved.
SCIENTIFIC SESSIONS
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM -</td>
<td>Registration Open</td>
</tr>
<tr>
<td>6:00 PM</td>
<td></td>
</tr>
<tr>
<td>6:30 AM -</td>
<td>Research Interest Group (RIG)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Evidence and Outcomes Education Organization Part I (Registration</td>
</tr>
<tr>
<td></td>
<td>Required)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Welcome / General Session</td>
</tr>
<tr>
<td>8:30 AM -</td>
<td>Networking Breakfast - Collaborations in Foyer (Registration Required)</td>
</tr>
<tr>
<td>9:15 AM -</td>
<td>New Horizon Workshop 1</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>Workshop 2</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>Professional Advancement Series (PAS) I</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>Workshop 3</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Workshop 4</td>
</tr>
<tr>
<td>9:15 AM -</td>
<td>Controversies, and Basic Scientific Understanding of Polytraumatized</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>Patients with Major Skeletal Trauma</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Presented by the ORS and the Orthopaedic Trauma Association (OTA)</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Organizer: Todd McKinley, MD</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Monitoring Progression of Osteoarthritis</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>Fracture Repair and Augmentation</td>
</tr>
<tr>
<td>12:45 PM</td>
<td>Meniscus; Function, Attachment and Engineering</td>
</tr>
<tr>
<td>1:15 PM</td>
<td>The Injured and Diseased Tendon</td>
</tr>
<tr>
<td>1:45 PM</td>
<td>Sarcoma</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>Spotlight Session 1</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Spotlight Session 2</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Spotlight Session 3</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Spotlight Session 5</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Spotlight Session 4</td>
</tr>
<tr>
<td>1:30 PM -</td>
<td>Keynote Speaker: Dr. Olivier Pourquie, PhD “New Insights in the</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Development of the Vertebral Column: From Clocks to Scoliosis”</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Poster Walking Tours</td>
</tr>
<tr>
<td>3:30 PM -</td>
<td>Kappa Delta and OREF Paper Presentations</td>
</tr>
<tr>
<td>4:00 PM -</td>
<td>View Posters and Visit Exhibits / Coffee Break (Authors available at</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>posters)</td>
</tr>
<tr>
<td>4:00 PM -</td>
<td>NIRA Presentations 1</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>NIRA Presentations 2</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>NIRA Presentations 3</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>NIRA Presentations 5</td>
</tr>
<tr>
<td>8:00 PM</td>
<td>NIRA Presentations 4</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>Cartilage Osteoarthritis</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>Bone</td>
</tr>
<tr>
<td>11:00 PM</td>
<td>Spine - Nerve</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Tendon and Ligaments</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Stem Cells</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Session 6</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Session 7</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Session 8</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Session 10</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Session 9</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>Chondrogenesis and Chondrocyte Differentiation</td>
</tr>
<tr>
<td>8:00 PM</td>
<td>Bone Osteocytes</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>Mechanisms of Muscle Damage and Implications for Repair</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>ACL: Positions and Motions</td>
</tr>
<tr>
<td>11:00 PM</td>
<td>Hip Morphology and Clinical Consequences</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>ORS Welcome Reception in Foyer - (Registration Required)</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Women’s Leadership Forum Reception at the Hyatt - (Registration</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Required)</td>
</tr>
<tr>
<td>3:00 PM</td>
<td></td>
</tr>
</tbody>
</table>
NEW HORIZON WORKSHOP #1

CURRENT MANAGEMENT, CLINICAL CONTROVERSIES, AND BASIC SCIENTIFIC UNDERSTANDING OF POLYTRAUMATIZED PATIENTS WITH MAJOR SKELETAL TRAUMA

Presented by the ORS and the Orthopaedic Trauma Association (OTA)
Organizer: Todd McKinley, MD, University of Iowa

This purpose of this workshop is to discuss current clinical and basic scientific knowledge bases pertaining to orthopaedic injuries in polytraumatized patients. Management of multiply injured patients frequently involves addressing major axial and appendicular skeletal trauma. Timing, magnitude, and technical choices of orthopaedic interventions can affect the outcomes of these patients. This workshop is designed to generate interaction between orthopaedic clinicians who manage multiply injured patients and basic and clinical scientists interested in major orthopaedic injuries, systemic response to trauma, and bone healing. There are many research topics within Orthopaedic Surgery including bone healing, systemic inflammation, tissue energetics, rehabilitation, and bone and cartilage injury that are profoundly affected by polysystem trauma. This workshop is significant because it will address how polytrauma affects a wide variety of orthopaedic-related issues.

Current Management of Axial and Appendicular Trauma in Multiply Injured Patients: Highlights and Controversies
Adam J Starr, MD, University of Texas Southwestern

Resuscitation Endpoints: What is Occult Hypoperfusion and Does it Affect Polytraumatized Patients Subjected to Major Orthopaedic Surgery
Robert V O'Toole, MD, University of Maryland Medical Center, Shock Trauma Center

Timing and Magnitude of Orthopaedic Intervention in Polytraumatized Patients: Basic Scientific and Translational Model Evidence that Guides Clinical Practice
H Christopher Pape, MD, University of Aachen

WORKSHOPS
SATURDAY, JANUARY 26, 2013  9:15 AM – 10:45 AM

Ballroom C2
WORKSHOP #2

CARTILAGE REGENERATION: CAN WE REPAIR THE WHOLE JOINT SURFACE?

Organizer: Jeremy Mao, DDS, PhD, Columbia University Medical Center

Microfracture, ACI and mosaicplasty are current clinical procedures for cartilage repair. Experimentally, cartilage regeneration has primarily focused on the repair of focal defects. However, a number of barriers have become apparent in both clinical and experimental approaches of cartilage repair, including scarring and fibrocartilage formation, difficulties in cartilage-cartilage integration and suboptimal clinical outcomes. This workshop discusses alternative approaches for regeneration of the entire articular surface, and contrasts with most existing clinical and experimental models of cartilage regeneration.

Cartilage Resurfacing Using 3D Woven Biomaterials
Bradley Estes, PhD, Duke University Medical Center

Clinical and Experimental Models of Cartilage Repair
James L Cook, DVM, PhD, University of Missouri

Cartilage Regeneration of the Articular Surface
Jeremy Mao, DDS, PhD, Columbia University Medical Center
Room 217
WORKSHOP #3
TRIBOCORROSION IN ORTHOPEDIC IMPLANTS – A NEW APPROACH TO AN OLD PROBLEM
Organizers:

Markus A Wimmer, PhD, Rush University Medical Center
Michael M Morlock, PhD, TUHH Hamburg University of Technology

Recent wear and corrosion problems have shaken the orthopedic industry and the clinical community. This workshop will highlight recent issues with modular junctions and joint articulations, and provide an overview of the current situation with descriptive evidence based on retrieval analysis. An emerging novel approach to systematically address this issue will then be presented. It entails a mechanistic analysis of the interaction between wear and corrosion to understand the problems of material selection and design. Current shortcomings of preclinical testing will also be discussed.

Tribocorrosion from a Clinicians Point of View: An Old New Problem
John Antonio, MD, PhD, McGill University

Interesting or to be Concerned: What can we Learn from Retrieval Analysis?
Michael M Morlock, PhD, TUHH Hamburg University of Technology

Wear Accelerated Corrosion: Is there a Way out of the Dilemma?
Nuria Espallargas, Norwegian University of Science and Technology

Room 214
WORKSHOP #4
OBESITY AND BIOMECHANICS
Presented by the ORS Corporate Affairs Committee
Organizers: Harold Aberman, Malvern, PA

Obesity is a major risk factor for osteoarthritis, the most common form of arthritis and a leading cause of disability in the U.S. Altered joint loading in the knee - associated to obesity, malalignment, trauma or joint instability - is a critical risk factor for joint degeneration in OA. The mechanisms by which mechanical stress alters the physiology or pathophysiology of articular cartilage or other joint tissues likely involve complex interactions with genetic and molecular influences, particularly local or systemic inflammation secondary to injury or obesity. This workshop will explore computational and biomechanical modeling involved in the testing of knee devices used in orthopaedics as well as explore the biological link between obesity and arthritis.

Are Current Knee Test Methods Effective for the “Typical” Patient, and are they Applicable to the Highly Active or Obese Patient?
Hani Haider, PhD, University of Nebraska Medical Center

Computational Models to Clarify the Role of Obesity as a Risk Factor for Knee Osteoarthritis
Amy L Lerner, PhD, University of Rochester

Mechanobiology of the Obese Joint: Too Much Loading or Not Enough?
Tim Griffin, PhD, Oklahoma Medical Research Foundation
Ballroom C3

PROFESSIONAL ADVANCEMENT SERIES I

PRACTICAL TIPS TO CREATE, CULTIVATE AND SUSTAIN YOUR PROFESSIONAL NETWORK

Organized by the ORS Women’s Leadership Forum and New Investigator Mentoring Committee

The ORS is an outstanding environment to develop your professional network, whether you are quiet or outgoing. Learn from successful ORS members who will share practical networking tips and stories of building and using their professional networks. In addition to learning skills for in person networking that can be implemented at the ORS Annual Meeting, participants will learn tips for online networking and networking etiquette.

Speakers:

Benjamin Alman, MD, FRCSC,
University of Toronto

David Ke, MD, Amgen Inc

Linda Sandell, PhD, Washington University

Clare Yellowley, PhD,
University of California-Davis
Spotlight Session 1
Monitoring Progression of Osteoarthritis
Ballroom C1
Moderators: Christopher B Little, DVM and Jeroen DeGroot, PhD

11:00 AM  Paper No. 0001
Using Transcriptomics for the Analysis of Synovial Specimen of Early Human (CHECK) and Experimental OA Identify Pathways and Processes Associated With Cartilage Damage
Arjen Blom, Peter L van Lent, Martijn H van den Bosch, Hans Cats, Eugene Verwiel, Peter M van der Kraan, Wim B van den Berg

11:10 AM  Paper No. 0002
Correlation of Pain Response and In Vivo Imaging of NF-κB Activity in a Model of Inflammatory Arthritis
Robby D Bowles, Brian A Mata, Timothy K Mwangi, Gregory M Palmer, Lori A Setton

11:20 AM  Paper No. 0003
A novel peptide inhibiting the binding between C1q and immunoglobulin ameliorates joint destruction in rats with collagen-induced arthritis
Yu Moriguchi, Toshikazu Shiba, W David Zhang, Hideki Yoshikawa, Tetsuya Tomita

11:30 AM  Paper No. 0004
An Oral Preparation Containing Hyaluronic Acid (Oralvisc®) Can Act Systemically to Decrease Serum and Synovial Fluid Levels of Pro-Inflammatory Cytokines and Chemokines in Osteoarthritic Knee Patients
William Wu, Magdalena Pasierb, Barbara Zonca, Peter Wilton, Raimonds Zvuibulis, Daniel Martinez-Puig, Fred Nelson

11:40 AM  Paper No. 0005
Synovial overexpression of Wnt and Wnt-1-induced secreted protein 1 induces cartilage damage by skewing of TGF-β signaling and reduction of the anti-hypertrophy factor Sox9
Martijn H van den Bosch, Arjen B Blom, Peter L van Lent, Henk M van Beuningen, Fons A van de Loo, Esmeralda N Blaney Davidson, Peter M van der Kraan, Wim B van den Berg

11:50 AM  Paper No. 0006
Detection of Knee Osteophytes with Ultrasonography and Conventional Radiography: Intra- and Inter-reader Reliability and Comparison to Arthroscopic Degeneration of Articular Cartilage

12:00 PM – 12:30 PM  Spotlight Speaker: Linda J Sandell, PhD
Biomarkers: Osteoarthritis

Spotlight Session 2
Fracture Repair and Augmentation
Ballroom C2
Moderators: Haim Stein, MD, PhD and David Wagner, PhD

11:00 AM – 11:30 AM  Spotlight Speaker: Vicki Rosen, PhD
Clinical Augmentation of Bone Repair

11:30 AM  Paper No. 0007
Plasmin but not Fibrin is Essential for Fracture Healing
Masato Yuasa, Nicholas Mignemi, Heather Cole, Lynda O’Rear, Jeffry S Nyman, Justin Cates, Herbert Schwartz, Jonathan Schoenecker

11:40 AM  Paper No. 0008
Effects of sclerostin antibody on histologic and biomechanical progression of closed fracture healing in rats
Michael S Ominsky, Stephen Kaufman, Franklin J Asuncion, Mario Grisanti, Hong L Tan, Chaoyang Li, Rogely W Boyce, Hua Ke

11:50 AM  Paper No. 0009
Delayed Fracture Repair and Increased Callus Adiposity in a Murine Model of Obesity-Associated Type 2 Diabetes
Matthew L Brown, Kiminori Yukata, Din Chen, Regis J O’Keefe, Robert A Mooney, Michael J Zusckik

12:00 PM  Paper No. 0010
Investigating the anabolic-catabolic paradigm of BMP-7 and Zoledronate on allografts in an open rat osteotomy model
Neashan Mathavan, Per Bossemke, Hanna Isaksson, Magnus Tägil

12:10 PM  Paper No. 0011
Bone Healing Enhancement through Inhibition of Sclerostin by Monoclonal Antibody in Rat Osteotomy Model
Pui Kit Suen, Yi-Xin He, Dick Ho Kiu Chow, Le Huang, Zhong Liu, Chi Wai Man, Li-Zhen Zheng, Tao Tang, Chaoyang Li, Hua Ke, Ge Zhang, Ling Qin

12:20 PM  Paper No. 0012
Enhanced Sclerostin Expression Delays Mineralization and Decreases Strength of the Fracture Callus in Osteoblast/Osteocyte Specific Connexin 43 Deficient Mice
Alayna Loiselle, Gregory S Lewis, Emmanuel M Paul, Henry J Donahue
Spotlight Session 3
Meniscus; Function, Attachment and Engineering
Ballroom C3
Moderators: Tammy Haut Donahue, PhD and Farshid Guilak, PhD

11:00 AM Paper No. 0013
Composition-Function Relationships Differ Between Juvenile and Adult Meniscal Tissue
Marc E Levenston, Carrie H Ling, Janice H Lai, Ivan J Wong

11:10 AM Paper No. 0014
Meniscal attachments are more compliant in patients with osteoarthritis
Adam Abraham, Tammy Donahue

11:20 AM Paper No. 0015
Mechanisms of Articular Cartilage Defect Progression may differ following Meniscectomy
Rebecca L Lathrop, Andrea C Adams, Mark D Lambach, David C Flanigan, Robert A Siston

11:30 AM Paper No. 0016
Subject-specific finite element modeling of tibiofemoral joint based on in vivo multi-modality imaging data
Robert E Carey, Liying Zheng, Ameet K Aiyangar, Christopher Harner, Xudong Zhang

11:40 AM Paper No. 0017
Digital-Micromirror-Device Projection Printing System for Meniscus Tissue Engineering
Shawn P Grogan, Peter H Chung, Pranav Soman, Peter Chen, Martin K Lotz, Shaochen Chen, Darryl D’Lima

11:50 AM Paper No. 0018
A Novel Fiber-Reinforced Scaffold for Reconstruction of the Meniscus and Joint Preservation
Jay M Patel, Aaron R Merriam, Michael G Dunn, Charles J Gatt

12:00 PM – 12:30 PM
Spotlight Speaker: Suzanne A Maher, PhD
Meniscus: The Mechanics of Injury and Repair

Spotlight Session 4
Sarcoma
Room 214
Moderators: John H Healey, MD and Francis Y Lee, MD

11:00 AM – 11:30 AM
Spotlight Speaker: Benjamin A Alman, MD
Pericytes and Tumor Initiating Cells in Sarcoma: Implications for a Novel Treatment Approach

11:30 AM Paper No. 0019
Preclinical study of RNAi therapeutics as a novel strategy against tumor-initiating phenotypes of osteosarcoma
Tomohiro Fujiwara, Nobuyoshi Kosaka, Ryou-u Takahashi, Fumitaka Takeshita, Daisuke Kubota, Akira Kawai, Toshifumi Ozaki, Takahiro Ochiya

11:40 AM Paper No. 0020
Anti RANKL/RANK signaling therapy inhibits Prkar1α-low subclass of osteosarcoma
Yan Chen, Marco Di Grappa, Paul Waterhouse, William Dougall, Swami Narala, Iris Fang, Trevor McKe, Rama Khokha

11:50 AM Paper No. 0021
A novel oncolytic adenovirus armed p53 induces dual apoptotic and autophagic cell death pathway in human osteosarcoma cells
Joe Hasei, Tsuyoshi Sasaki, Hiroshi Tazawa, Shuhei Osaki, Yasuaki Yamakawa, Toshiyuki Kunisada, Aki Yoshida, Yasuo Urata, Toshifumi Ozaki, Toshiyoshi Fujiwara

12:00 PM Paper No. 0022
Axl is a novel therapeutic target for osteosarcoma
Ashley Rettew, Eric Young, Dina Lev, Eugenie Kleinerman, Fadi W Abdul-Karim, Patrick Getty, Edward Greenfield

12:10 PM Paper No. 0023
Re-expression of silenced Ewing’s sarcoma genes in tumor cell lines by an engineered bone microenvironment
Aranzazu Villasante, Richard A Friedman, Francis Y Lee, Gordana Vunjak-Novakovic

12:20 PM Paper No. 0024
Chicken Embryo Extracts (CEE) and epigenetic regulation of cancer stem cells
Xiaodong Mu, Bolat Sultankulov, Riddhima Agarwal, Johnny Huard, Kurt Weiss
Spotlight Session 5
The Injured and Diseased Tendon
Room 217
Moderators: James H Wang, PhD and Martha M Murray, MD

11:00 AM – 11:30 AM
Spotlight Speaker: Louis J Soslowsky, PhD
Tendon Injury and Repair in a Rat Rotator Cuff Model

11:30 AM  Paper No. 0025
PRP exerts anti-inflammatory effects on injured tendons through HGF
Jianying Zhang, Yunfa Yang, Ning Wang, Guangyi Zhao, Freddie H Fu, James H Wang

11:40 AM  Paper No. 0026
Elucidating the In Vivo Role of ADAMTS5 in Tendinopathy Using Knockout Mice
Rebecca Bell, Jun Li, Daniel Gorski, Anne Bartels, Elizabeth Shewman, Robert Wysocki, Bernard Bach, Brian J Cole, John Sandy, Anna Plaas, Vincent M Wang

11:50 AM  Paper No. 0027
Murphy Roths Large Mice Exhibit Improved Tendon Healing After Laceration And Fatigue Loading
Jedd B Sereysky, Nisha S George, Damien Laudier, Evan L Flatow, Nelly Andarawis-Puri

12:00 PM  Paper No. 0028
Noninvasive Prediction of Healing Ligament Structural Properties with T2* and Volume
Alison M Biercevicz, Edward G Walsh, Martha M Murray, Daniel L Miranda, Braden C Fleming

12:10 PM  Paper No. 0029
Characterization of Tendon-Derived Stem Cell Sheet and its Effect on Anterior Cruciate Ligament Graft Healing
On Tik Wong, Yuk Wa Lee, Pauline Po Yee Lui

12:20 PM  Paper No. 0030
The Biomechanical and Histological Alterations of Rat Achilles Tendon after the Steroid Injections
Tomoyuki Muto, Takeshi Kokubu, Yutaka Mifune, Hanako Nishimoto, Yoshifumi Harada, Issei Nagura, Ryosuke Sakata, Atsuyuki Inui, Masahiro Kurosaka
New Investigator Recognition Award Presentations 1
Cartilage Osteoarthritis
Ballroom C1
Moderators: Johnny Huard, PhD and Johnny Hurd, PhD

4:00 PM  Paper No. 0397  
Disrupting Ihh signaling pathway in vivo attenuates OA progression in Col2a1-CreERT2; Ihhfl/fl mouse induced by surgery  
Jingming Zhou, Yuzhi Wei, Xiaochun Wei, Shaowei Wang, Ge Zhang, Qian Chen, Richard Terek, Lei Wei

4:07 PM  Paper No. 0398  
The Effect of Intra-Articular Injection of MicroRNA-210 in a Rat Anterior Cruciate Injury Model  
Takeshi Shoji, Tomoyuki Nakasa, Keiichiro Yamazaki, Shigeru Miyaki, Naousuke Kamei, Yuji Yasunaga, Mitsuo Ochi

4:14 PM  Paper No. 0399  
Dual axis gene-therapy using stem cells overexpressing TGF-β3 in combination with IL-1β and TNF-α RNA silencing for osteoarthritis control in a large animal osteochondral chip fracture model  
Ashlee Watts, Laila Begum, Michael Scimeca, Alan J Nixon

4:21 PM  Paper No. 0400  
In vitro and in vivo intracellular delivery of siRNA via self-assembled nanoparticles for orthopaedic therapeutics and diagnostics  
Yupeng Chen, Tianbin Zhou, Jorge Rosario, Hongchuan Yu, Eric Darling, Thomas Webster, Hicham Fenniri, Qian Chen

4:28 PM  Paper No. 0401  
Stromal cell-derived factor 1 regulates the actin organization of chondrocytes and chondrocyte hypertrophy  
Koichi Murata, Toshiyuki Kitaori, Hiroyuki Yoshitomi, Moritoshi Furu, Masahiro Ishikawa, Hideyuki Shibuya, Shuichi Matsuda, Hiromu Ito

4:35 PM  Paper No. 0402  
Magnetic Resonance Imaging And Clinical Evaluation Of Chondral Lesions treated With Allografts Juvenile Cells  
Cecilia Pascual-Garrido, Stephanie L Gold, Jaclyn Snikeris, Alissa J Burge, Joseph Nguyen, Hollis Potter, Russell F Warren, Riley J Williams, Scott A Rodeo

4:42 PM  Paper No. 0403  
Cartilage Transdifferentiation During Endochondral Bone Repair  
Chelsea S Bahney, Diane Hu, Aaron Taylor, Theodore Miclau, Ralph Marcucio

4:49 PM  Paper No. 0404  
Patient Activity and in-vivo Polyethylene Wear in Total Hip Arthroplasty  
Rachel Senden, Matthijs Lipperts, Bernd Grimm

New Investigator Recognition Award Presentations 2
Bone
Ballroom C2
Moderators: Jinxi Wang, MD, PhD and Elizabeth Loboa, PhD

4:00 PM  Paper No. 0405  
Finite Element Analysis of Distal Femur Fixation: Fracture Gap Motion Predicts Radiographic Outcome  

4:07 PM  Paper No. 0406  
Contracting Osteocytes Synchronized with Calcium Signaling Under Fluid Flow  
Andrew D Baik, Ivo Kalajzic, Elizabeth M Hillman, Yingxiao Wang, Cheng Dong, X. Edward Guo

4:14 PM  Paper No. 0407  
Evaluation of osteoprogenitor cell response to bone morphogenetic protein and demineralized bone matrix in a critical sized defect model using GFP reporter mice  
Farhang Alae, Alex Dukas, Michael Pensak, Seung-Hyun Hong, David Rowe, Jay R Lieberman

4:21 PM  Paper No. 0408  
Potential Role of microRNA in nonunion in Rat  
Takahiro Waki, Sang Yang Lee, Takahiro Niikura, Takaaki Koga, Yoshihiro Dogaki, Etsuko Okumachi, Masahiro Kurosaka

4:28 PM  Paper No. 0409  
Parabiotic Pairing of Aged Dystrophic Mice with Young Counterparts Halts Progressive Bone Loss  
Hongshuai Li, Aiping Lu, Johannes Schneppendahl, Ying Tang, Bing Wang, Johnny Huard

4:35 PM  Paper No. 0410  
Targeted disruption of heparan sulfate in osteoblasts leads to a severe osteoporotic phenotype in mice  
Satoshi Nozawa, Fumitoshi Irie, Shinji Iizuka, Thomas L Clements, Kazu Matsumoto, Yu Yamaguchi

4:42 PM  Paper No. 0411  
CT-based Structural Rigidity Analysis Accurately Predicts Fracture Risk and Influences Treatment of Patients with Skeletal Metastases: A Prospective, Multi-Center Study  

4:49 PM  Paper No. 0412  
Fibrin accumulation causes heterotopic ossification after fracture  
Masato Yuasa, Nicholas Mignemi, Heather Cole, Justin Cates, Herbert Schwartz, Jonathan Schoenecker
New Investigator Recognition Award Presentations 3

Spine - Nerve
Ballroom C3
Moderators: Mauro Alini, PhD and Jeffrey C Lotz, PhD

4:00 PM  Paper No. 0413  Combined engineering of Schwann cell implants to secrete neurotrophin and chondroitinase promotes axonal regeneration and locomotion after spinal cord injury
Haruo Kanno, Yelena Pressman, Alison Moody, Randall Berg, Elizabeth Muir, John Rogers, Hiroshi Ozawa, Eiji Ito, Damien D Pearse, Mary B Bunge

4:07 PM  Paper No. 0414  Deformation of Translamellar Cross Bridges during Shear Loading of the Annulus Fibrosus
Sang Kuy Han, Chao-Wei Chen, Yu Chen, Adam H Hsieh

4:14 PM  Paper No. 0415  Prolyl hydroxylase 3 (PHD3) modulates catabolic effects of TNF-α on cells of the nucleus pulposus through co-activation of NF-κB/p65 signaling
Nobuyuki Fujita, Shilpa Gogate, Kazuhiro Chiba, Morio Matsumoto, Yoshiaki Toyama, Irving Shapiro, Makarand V Risbud

4:21 PM  Paper No. 0416  High glucose-induced microglial activation deteriorates the secondary injury via NF-κB pathway after experimental spinal cord injury
Kazu Kobayakawa, Kensuke Kubota, Yukihide Iwamoto, Seiji Okada

4:28 PM  Paper No. 0417  Autophagy Modulates Cellular Apoptosis, Senescence, and Extracellular Matrix Synthesis in the Intervertebral Disc
Takashi Yurube, William J Buchser, Hong Joo Moon, Robert A Hartman, Michael T Lotze, James D Kang, Gwendolyn A Sowa

4:35 PM  Paper No. 0418  Changes of Nerve Root Action Potentials during Intraoperative SLR Test on Lumbar Disc Herniation
Shigeru Kobayashi, Kenichi Takeno, Kosuke Awara, Riya Kosaka, Adam Meir

Pinar Yilgor Huri, Gazi Huri, Umit Yasar, Yurdanur Ucar, Nurten Dikmen, Vasif Hasirci

4:49 PM  Paper No. 0420  MRI is Predictive of ALVAL and Tissue Damage in Failed Metal-on-Metal Hip Arthroplasty
Danyal H Nawabi, Stephanie Gold, Alissa Burge, Stephen Lyman, Kara Fields, Matthew F Koff, Douglas E Padgett, Hollis G Potter

New Investigator Recognition Award Presentations 4

Stem Cells
Room 214
Moderators: Rocky S Tuan, PhD and Brian Johnstone, PhD

4:00 PM  Paper No. 0421  Mesenchymal Stem Cells Residing Close to the Bone Surface are Functionally Distinct from those in the Central Bone Marrow
Valerie A Siclari, Ji Zhu, Kentaro Akiyama, Fei Liu, Xianrong Zhang, Abhishek Chandra, Hyun-Duck Nah-Cederquist, Songtao Shi, Ling Qin

4:07 PM  Paper No. 0422  Pro-angiogenic and pro-survival functions of glucose in human mesenchymal stem cells upon transplantation
Mickael Deschepper, Mathieu Manassero, Karim Oudina, Joseph Paquet, Laurent Emmanuel Monfoulet, Delphine Logeart-avramoglou, Morad Bensidhoum, Herve Petite

4:14 PM  Paper No. 0423  Identification and Characterization of a Mesenchymal Progenitor Cell Population Involved in Fracture Healing
Brya Matthews, Danko Grcevic, Leping Wang, Yusuke Hagiwara, David W Rowe, Douglas J Adams, Ivo Kalajzic

4:21 PM  Paper No. 0424  Dedifferentiation-reprogrammed Mesenchymal Stem Cells Enhanced Cell Survival and Osteogenic Differentiation Potential
Yun-feng Rui, Ting Zhang, Ming Ni, Fanbiao Meng, Yang Lui, Chen Wang, Gang Li

4:28 PM  Paper No. 0425  Development of scaffold-free tissue-engineered construct (TEC) with chondrogenic differentiation capacity using rabbit embryonic stem cell-derived mesenchymal stem cells
Yu Moriguchi, Takeshi Teramura, Haruko Hasegawa, Morito Sakaue, Ryota Chijimatsu, Norihiko Sugita, Kota Koizumi, Hideki Yoshikawa, Akira Myoui, Norimasa Nakamura

4:35 PM  Paper No. 0426  The role of NFAT5 in osmolarity-mediated improved chondrogenic differentiation of progenitor cells
Marjolein M Caron, Anna van der Windt, Pieter J Emans, Lodewijk W van Rhijn, Holger Jager, Tim J Welting

4:42 PM  Paper No. 0427  The Effects of Reoxygenation Using a Novel CO2 Therapy on Metastatic Potentials in Osteosarcoma
Risa Harada, Teruya Kawamoto, Takeshi Ueha, Hitomi Hara, Yasuo Onishi, Mitsunori Toda, Masaya Minoda, Masahiro Kurosaka, Tohshiro Akisue

4:49 PM  Paper No. 0428  Vascularization for Bone Tissue Engineering via Modulation of Macrophage Behavior
Kara L Spiller, Kenneth R Nakazawa, Gordana Vunjak-Novakovic
New Investigator Recognition
Award Presentations 5
Tendon and Ligaments
Room 217
Moderators: Albert Banes, PhD and Spencer P Lake, PhD

4:00 PM  Paper No. 0429
Deletion of Scleraxis Impairs Supraspinatus Enthesis Development
Megan L Killian, Stavros Thomopoulos

4:07 PM  Paper No. 0430
Combined treatment of a tendon gap with a biomimetic electrospun scaffold, stromal cells and GDF5
Roshan James, MaCalus Hogan, Thomas C Keller, Gary Balian, Cato T Laurencin, A (Bobby) Chhabra

4:14 PM  Paper No. 0431
The Influence of the Paratenon and Adjacent Struts on Patellar Tendon Healing
Nathaniel Dyment, Chia-Feng Liu, Namdar Kazemi, Lindsey Ascbacher-Smith, Keith Kenter, Andrew Breidenbach, Jason Shearn, Christopher Wylie, David Rowe, David L Butler

4:21 PM  Paper No. 0432
Multiphase Meniscus Regeneration in a Preclinical Model by Spatiotemporal Delivery of CTGF and TGFβ3
Chang Lee, Scott A Rodeo, Lisa A Fortier, Jenny Y Sun, Jeremy J Mao

4:28 PM  Paper No. 0433
Implantation of Autogenous Meniscal Fragments Wrapped With a Fascia Sheath Enhances Fibrocartilage Regeneration In Vivo In A Large Harvest Site Defect: An Experimental Study With Sheep
Yasuyuki Kawaguchi, Eiji Kondo, Nobuto Kitamura, Yasukazu Kobayashi, Masashi Kimura, Shunji Yunoki, Kazunori Yasuda

4:35 PM  Paper No. 0434
Single-Step Projection Stereolithographic Fabrication of Gene-Activated Bone Scaffold Encapsulating Human Bone Marrow Stem Cells and Lenti-BMP-2 Viral Vector
Hang Lin, Ying Tang, Jian Tan, Bing Wang, Rocky Tuan

4:42 PM  Paper No. 0435
Differences of scapulothoracic and glenohumeral joint motions between tennis serve and baseball pitching: A kinematic perspective based on throw-push continuum
Shoji Konda, Toshimasa Yanai

4:49 PM  Paper No. 0436
A Novel Molecular Targeted Therapy for the musculoskeletal infectious diseases
Tetsuya Kuramoto, Ken Ishii, Shigenori Nagai, Haruki Funao, Yoshiomi Kobayashi, Masahiko Hirai, Aya Sasaki, Yasunori Okada, Kazuhiro Chiba, Shigeo Koyasu, Yoshiaki Toyama, Morio Matsumoto
Session 6
Chondrogenesis and Chondrocyte Differentiation
Ballroom C1
Moderators: Thorsten Kirsch, PhD and Matthew Stewart, PhD

5:15 PM  Paper No. 0031
Sequential derivation of chondrocytes from human induced pluripotent stem cells through in vitro pellet cultures
Gun-Il Im, Ji-Yun Ko, You-jeong Choi

5:25 PM  Paper No. 0032
Effect of deletions in the thrombospondin-like domain of COMP influencing COMP-TGF-beta1 binding in chondrogenesis of mesenchymal stem cells
Chitrangada Acharya, Jasper Yik, Paul E Di Cesare, Dominik R Haudenschild

5:35 PM  Paper No. 0033
Differential Effects of Sustained Interleukin-1 Receptor Antagonist (IRAP) Exposure on Mesenchymal Stem Cell (MSC) Chondrogenesis
Hannah H. Lee, Xiao Xiao, Constance R Chu

5:45 PM  Paper No. 0034
CCAAT/enhancer binding protein β regulates phenotypic conversion from proliferative to hypertrophic chondrocytes during endochondral ossification
Takahiro Ushijima, Ken Okazaki, Hidetoshi Tsushima, Yukihide Iwamoto

5:55 PM  Paper No. 0035
Non-genomic actions of thyroid hormone in the growth plate involve intracellular calcium signaling
Lai Wang, Yvonne Y Shao, R. Tracy Ballock

6:05 PM  Paper No. 0036
Identification and Characterization of Novel Transient Receptor Potential Vanilloid 4 (TRPV4) mutations associated with skeletal dysplasia
Lauren M. Hur, Mary B. Boggs, Susan M. Kirwin, Kathy M. Vinette, Michael B. Bober, William G. Mackenzie, Vicky L. Funanage, Randall L. Duncan

Session 7
Bone: Osteocytes
Ballroom C2
Moderators: Randall L. Duncan, PhD and Robert J. Majeska, PhD

5:15 PM  Paper No. 0037
Inhibition of osteocyte apoptosis prevents trabecular bone loss after unloading of mouse long bone
Pamela C. Cabahug, Damien Laudier, Oran Kennedy, Robert J. Majeska, Alyssa Tuthill, Stefan Judex, Mitchell B. Schaffler

5:25 PM  Paper No. 0038
The Direct Effect of Sclerostin on the Mechanical Loading Response in Bovine Bone Ex Vivo
Gerald J. Atkins, Kamarul Khalid, Masakazu Kogawa, Asiri R. Wijenayaka, David M. Findlay

5:35 PM  Paper No. 0039
Ex Vivo Calcium Response of Osteocytes and Osteoblasts in Intact Mouse Tibiae under Cyclic Mechanical Loading
Da Jing, Bin Zhou, X. Lucas Lu, Liyun Wang, X. Edward Guo

5:45 PM  Paper No. 0040
αvβ3 integrins Play a Key Role in Osteocyte Polarized Mechanotransduction
Mia M. Thi, Sylvia O. Suadicani, Sheldon Weinbaum, David C. Spray

5:55 PM  Paper No. 0041
Assessment of Osteocyte NADH Levels In Situ in Responses to Ischemia
Dorra Benayed, Robert Majeska, Mitchell B. Schaffler

6:05 PM  Paper No. 0042
Visualization of bisphosphonate binding to bone microcracks and surrounding osteocyte lacunae using near-infrared optical imaging
Mathieu S. Davis, Albert Shih, Joan Marini, Kenneth Kozloff
**Session 8**  
Mechanisms of Muscle Damage and Implications for Repair  
Ballroom C3  
Moderators: Jamie Fitzgerald, PhD and Simon P Frostick, MD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:15 PM</td>
<td>Paper No. 0043</td>
<td>MMP-3 Deletion Improves Functional Motor Recovery After Surgical Repair Of Traumatic Nerve Injury</td>
<td>Tom Chao, Derek Frump, James S Jung, Vincent Caiozzo, Tahseen Mozaffar, Ranjan Gupta</td>
</tr>
<tr>
<td>5:25 PM</td>
<td>Paper No. 0044</td>
<td>Rational Target Selection For Therapeutic Intervention For Joint Contractures Following Neonatal Brachial Plexus Injury</td>
<td>Athanasia Nikolaou, Liangjun Hu, Holly Weekley, Christopher Wylie, Roger Cornwall</td>
</tr>
<tr>
<td>5:35 PM</td>
<td>Paper No. 0045</td>
<td>A Variant in SLC30A8 Gene is Associated with Skeletal Muscle Size and Damage in Young Men</td>
<td>Jason S Lipof, Hugo Clifford, Kirsten N Norrell, Victoria I Rentas, Nathanael Leo, Hanwool R Choi, Mai S Abdel-Ghani, Courtney Sprouse, Heather Gordish-Dressman, Priscilla M Clarkson, Eric Hoffman, Joseph M Devaney, Laura L Tosi</td>
</tr>
<tr>
<td>5:45 PM</td>
<td>Paper No. 0046</td>
<td>Concomitant Volumetric Muscle Loss Delays Revascularization in the Healing of a Segmental Bone Defect</td>
<td>Mon-Tzu A Li, Nick J Willett, Brent A Uhrig, Joel D Boerckel, Gordon L Warren, Robert Gulberg</td>
</tr>
<tr>
<td>5:55 PM</td>
<td>Paper No. 0047</td>
<td>Faster and superior repair of severely wounded mouse skeletal muscles by oral administration of a RARγ agonist</td>
<td>Agnese Di Rocco, Kenta Uchibe, Maurizio Pacifici, Masahiro Iwamoto</td>
</tr>
<tr>
<td>6:05 PM</td>
<td>Paper No. 0048</td>
<td>mTOR Modulates the differentiation capacity of Muscle-Derived Stem Cells isolated from progeroid mice (ERCC1-/-)</td>
<td>Koji Takayama, Xiaodong Mu, Mitra Lavasani, Sahnghoon Lee, Freddie Fu, Johnny Huard</td>
</tr>
</tbody>
</table>

**Session 9**  
Hip Morphology and Clinical Consequences  
Room 214  
Moderators: Roy K Aaron, MD and Thomas D Brown, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:15 PM</td>
<td>Paper No. 0049</td>
<td>Pelvic deformity influences anterior acetabular coverage and femoral anteversion in dysplastic hip</td>
<td>Mio Akiyama, Yasuharu Nakashima, Masanori Fujii, Taishi Sato, Masanobu Hirata, Daisuke Hara, Yukihide Iwamoto</td>
</tr>
<tr>
<td>5:25 PM</td>
<td>Paper No. 0050</td>
<td>Correlations between 2D Radiographic and 3D Model-Based Measurements of Femoral Asphericity</td>
<td>Michael D Harris, Ashley L Kapron, Christopher L Peters, Andrew E Anderson</td>
</tr>
<tr>
<td>5:35 PM</td>
<td>Paper No. 0051</td>
<td>Developmental Dysplasia of the Hip: Possible Causative Genetic Variant Identified in a Large Multi-Generation Family</td>
<td>George J Feldman, Javad Parvizi, Mark Levenstien, Marcella Devoto, Kathryn Scott, Paolo Fortina, Jill Erickson, Christopher L Peters</td>
</tr>
<tr>
<td>5:45 PM</td>
<td>Paper No. 0052</td>
<td>Using Coagulopathies to Predict Avascular Necrosis of the Femoral Head: A Comparison of Prospective to Retrospective Methodologies</td>
<td>Gabriel Verzino, Michael Lopez, Anne Voisinet, Eunhee Kim, Roy K Aaron</td>
</tr>
<tr>
<td>5:55 PM</td>
<td>Paper No. 0053</td>
<td>Difference in Pathological Modes of Labral Tears between Dysplastic Hips and FAI Hips - 3D Assessment by High Resolution CT Arthrography</td>
<td>Satoru Tamura, Takashi Nishii, Masaki Takao, Takashi Sakai, Nobuhiko Sugano</td>
</tr>
</tbody>
</table>
Session 10
ACL: Positions and Motions
Room 217
Moderators: Darryl D’Lima, MD, PhD and John H Currier

5:15 PM  Paper No. 0055  
Femoral intercondylar notch geometry and anterior cruciate ligament size in association with risk of ACL injury: a multivariate model  
Darryl Whitney, Daniel R Sturnick, Helen C Smith, Pamela Vacek, Leigh Ann Holterman, Sarah Quinttus, Nathaniel Foot, James Slaughterbeck, Sandra Shultz, Javad Hashemi, Robert Johnson, Bruce D Beynnon

5:25 PM  Paper No. 0056  
Maturation-induced modifications in “non-modifiable” joint morphologic ACL injury predictors  
Caitlin Williams, Jessica M Deneweth, Scott G McLean

5:35 PM  Paper No. 0057  
Knee Flexor Effective Musculo-Articular Stiffness Responses Post-Ipsilateral Hamstring Tendons Anterior Cruciate Ligament Reconstruction in Patients  
Giampietro L Vairo, John H Challis, Wayne J Sebastianelli

5:45 PM  Paper No. 0058  
Moment Arm Variations throughout Puberty and their Effect on the ACL Injury Mechanism in Females  
Shannon M Pomeroy, Jessica M Deneweth, Scott G McLean

5:55 PM  Paper No. 0059  
Do tibia rotational characteristics play a role in determining the likelihood of anterior cruciate ligament failure?  
Shaun Stinton, Nathan DeJarnette, Thomas Cunningham, William C Hutton, Thomas Branch

6:05 PM  Paper No. 0060  
Preferential Loading of the ACL Compared to the MCL during Simulated Landings: An Indication of Injury Mechanism  
Carmen E Quatman, Ata M Kiapour, Constantine K Demetropoulos, Samuel C Wordeman, Jason W Levine, Vijay K Goel, Timothy E Hewett
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 AM - 8:00 AM</td>
<td>Research Interest Group (RIG)</td>
<td>Ballroom C1</td>
</tr>
<tr>
<td></td>
<td>Evidence and Outcomes Education Organization Part II</td>
<td>Ballroom C2</td>
</tr>
<tr>
<td></td>
<td>Organizer: Michael Dahm, MD</td>
<td>Ballroom C3</td>
</tr>
<tr>
<td></td>
<td>Room 219</td>
<td>Room 217</td>
</tr>
<tr>
<td>7:00 AM - 8:00 AM</td>
<td>JOR Town Hall</td>
<td>Room 213</td>
</tr>
<tr>
<td></td>
<td>Networking Breakfast - Meet the NIH in Foyer (Registration Required)</td>
<td></td>
</tr>
<tr>
<td>8:00 AM - 9:30 AM</td>
<td>Spotlight Session 11</td>
<td>Room 210</td>
</tr>
<tr>
<td></td>
<td>Chondrocyte Signaling and Hemostasis</td>
<td></td>
</tr>
<tr>
<td>9:30 AM - 10:15 AM</td>
<td>ORS/AAOS Combined Symposium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workshop 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cell-Based Strategies for Regenerating Musculoskeletal Tissues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presented by the ORS and the AAOS Biological Implant Committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organizer: Stuart B Goodman, MD, PhD and Lynne C Jones, PhD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigating the Vasculature of Bone Organizers; David Findlay and Larry Suva</td>
<td></td>
</tr>
<tr>
<td>10:15 AM - 11:45 AM</td>
<td>ORS/AAOS Combined Symposium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workshop 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient Reported Outcome Measures in Orthopedics: The New Knee Society Score</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presented by the ORS and the Knee Society Organizer: Philip C Noble PhD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increasing Research Funding Via Advocacy Organized by the ORS Advocacy Committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORS Clinical Research Forum</td>
<td></td>
</tr>
<tr>
<td>12:00 PM - 1:00 PM</td>
<td>Session 15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osteoporosis I: Pathogenesis</td>
<td></td>
</tr>
<tr>
<td>1:00 PM - 2:00 PM</td>
<td>ORS/AAOS Combined Symposium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session 17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tissue Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session 18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shoulder and Elbow</td>
<td></td>
</tr>
<tr>
<td>2:00 PM - 3:00 PM</td>
<td>International Summit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session 19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Osteoarthritis: Murine Models</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bone: Development, Formation and Healing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cancer, Tumors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knee Mechanics</td>
<td></td>
</tr>
<tr>
<td>5:15 PM - 6:00 PM</td>
<td>ORS Awards Presentation - Shands Lecture, Urist, Video Competition, NIRA</td>
<td></td>
</tr>
<tr>
<td>5:30 PM - 6:00 PM</td>
<td>Poster Session 1 Removal of Posters</td>
<td></td>
</tr>
<tr>
<td>6:00 PM - 7:00 PM</td>
<td>Past Presidents Reception (invitation only)</td>
<td></td>
</tr>
<tr>
<td>7:00 PM - 8:00 PM</td>
<td>ORS Awards Gala at the Hyatt - (Registration Required)</td>
<td></td>
</tr>
</tbody>
</table>
SUNDAY, JANUARY 27, 2013  8:00 AM – 9:30 AM

**Spotlight Session 11**  
Chondrocyte Signaling and Homeostasis  
Ballroom C1  
Moderators: Susanna G Chubinskaya, PhD and Maurizio Paciﬁci, PhD

8:00 AM – 8:30 AM  
**Spotlight Speaker:** Richard F Loeser, MD  
Redox Regulation of Chondrocyte Signaling

8:30 AM  
**Paper No. 0061**  
Increase in Mitochondrial Antioxidant Sod2 in Response to Aging-Associated Oxidative Stress and Osteoarthritis in Rat Articular Cartilage  
Yao Fu, Michael Kinter, Timothy M Griffin

8:40 AM  
**Paper No. 0062**  
Cartilage-Speciﬁc RBPJK-dependent Notch Signaling is Required for Articular Cartilage and Joint Maintenance  
Anthony J Miranda, Zhaoyang Liu, Tyler Moore, Alexandra Lang, Anat Kohn, Alana Osinski, Regis O’Keefe, Robert A Mooney, Michael Zuscik, Matthew Hilton

8:50 AM  
**Paper No. 0063**  
CITED2 Suppresses Senescence Through p21: A New Role in Chondroprotection  
Daniel J. Leong, Lili Xu, Leon An, Sun Jin Kim, David Hirsh, Robert J. Majeska, Mitchell B. Schaffer, Mary B. Goldring, Luis Cardoso, Neil Cobelli, Hui B. Sun

9:00 AM  
**Paper No. 0064**  
p21 regulates MMP-13 expression via STAT3 signaling in chondrocytes  
Shinya Hayashi, Takayuki Nishiyama, Takaaki Fujishiro, Shingo Hashimoto, Shuhei Sakata, Kenjiro Iwasa, Kohei Kawakita, Nobuaki Chinzei, Noriyuki Kanzaki, Ryosuke Kuroda, Masahiro Kurosaka

9:10 AM  
**Paper No. 0065**  
AREG induces MMP13 expression in human synovial ﬁbroblasts through PI3K, Akt and NF-κB pathway  
Chun-Han Hou, Sheng Mou Hou, Chih Hsin Tang, Ju Fang Liu

9:20 AM  
**Paper No. 0066**  
A Gain of Function Channelopathy in Transient Receptor Potential Vanilloid 4 Induces Skeletal Dysplasia In Vivo: The Role of Follistatin  
Amy L McNulty, Holly Leddy, Nicole Rothfus, Suk Hee Lee, Margaret Kirby, Mary Hutson, Wolfgang Liedtke, Farshid Guilak

8:00 AM – 9:30 AM  
**Spotlight Session 12**  
Stem Cells & Progenitors  
Ballroom C2  
Moderators: Jay R Lieberman, MD and Jeremy Mao, DDS, PhD

8:00 AM  
**Paper No. 0067**  
Deactivation of TGFβ signaling promotes the initiation of hypertrophic differentiation during hMSC chondrogenesis  
Andrew M Handorf, Wan-Ju Li

8:10 AM  
**Paper No. 0068**  
Identiﬁcation of Slow-Cycle Cells in Articular Cartilage and Growth Plate in the Mouse Developing Limb  
Maria E Candela, Masahiro Iwamoto, Maurizio Paciﬁci, PhD

8:20 AM  
**Paper No. 0069**  
Muscle cell-derived factors inhibit inﬂammatory stimuli-induced damage in hMSC-derived chondrocytes  
Roshni S Rainbow, Heenam Kwon, Andrea Foote, Rucsandra Preda, David Kaplan, Li Zeng

8:30 AM  
**Paper No. 0070**  
Role of Mitochondria in Regulation of Osteogenic Potential of Mesenchymal Stem Cells  
Roman Eliseev, Tamara Raymond, Randy Rosier, Edward M Schwarz, Regis O’Keefe

8:40 AM  
**Paper No. 0071**  
Enhanced Generation of Bone by Human Mesenchymal Stem Cells following an Endochondral Ossiﬁcation Pathway  
Jonathan C Bernhard, Sarindr Bhumiratana, Gordana Vunjak-Novakovic

8:50 AM  
**Paper No. 0072**  
Puriﬁed Perivascular Stem Cells Show Enhanced Vascularized Bone Formation with NELL-1  
Aaron W James, Asal Askarinam, Raghav Goyal, Le Chang, Angel Pan, Todd Rackohn, Khoi Le, Choon G Chung, Janette N Zara, Mirko Corselli, Xinli Zhang, David Stoker, Kang Ting, Bruno Peault, Chia Soo

9:00 AM – 9:30 AM  
**Spotlight Speaker:** Johnny Huard PhD  
Overview of Stem Cells from Various Sources and Use in Tissue Engineering
### Spotlight Session 13
**Invertebral Disc**  
Ballroom C3  
Moderators: Rita Kandel, MD and James C Iatridis, PhD

**8:00 AM – 8:30 AM**  
**Spotlight Speaker: Keita Ito**  
Biomechanics of Intervertebral Disc Degeneration/Injury and Pain

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>No. 0073</td>
<td>The Effect of Neurotropin® on IL-1β-induced Cytokines, Matrix Enzymes and Pain Markers in Human Intervertebral Disc Explant Cultures</td>
<td>Rajeswari Pichika, Tomonori Yamaguchi, Tatsumiko Fujiwara, Mary E Lenz, Mitsuru Naiki, Koichi Masuda</td>
</tr>
<tr>
<td>8:40 AM</td>
<td>No. 0074</td>
<td>Intervertebral Disc derived Notochordal Cell Conditioned Media inhibits Neurite Outgrowth from SH-SY5Y cells and Dorsal Root Ganglion Cells whilst maintaining Neuronal Cell Viability</td>
<td>Devina Purmessur, Marisa C Cornejo, Samuel K Cho, Nicole Goodsell, Ilana R Stock, James C Iatridis</td>
</tr>
<tr>
<td>8:50 AM</td>
<td>No. 0075</td>
<td>Substance P Receptor Antagonist: Disrupting the Actions of a Pro-Inflammatory Nociceptor in Human Disc Cells</td>
<td>Christopher K Kepler, Dessislava Z Markova, Joseph Mendelis, Alan S Hillbrand, Alexander R Vaccaro, Todd J Albert, Makarand V Risbud, D. G Anderson</td>
</tr>
</tbody>
</table>

**8:30 AM**  
**Paper No. 0076**  
Microstructural Analysis of Nutrition Canal in Rabbit Lumbar Vertebal Endplate  
Nozomu Inoue, Shota Goto, Tomonori Yamaguchi, Alejandro A Espinoza Orías, Won C Bae, Koichi Masuda

**8:50 AM**  
**Paper No. 0077**  
Microgravity during 15 Days Space Flight Induced Disc Height Loss and Bone Morphological Changes of the Mouse Lumbar Spine  
Tomonori Yamaguchi, Won C Bae, Jade He, Nozomu Inoue, Alan Hargens, Jeffrey C Lotz, Robert L Sah, Hiroshi Asahara, Koichi Masuda

**9:00 AM**  
**Paper No. 0078**  
Low-back Pain Patients Exhibit Higher Subchondral Bone Density Distributions in Lumbar Facet Joints  
Chien-Chou Pan, Peter Simon, Alejandro A Espinoza Orías, Ryota Takatori, Howard S An, Gunnar B Andersson, Nozomu Inoue

### Spotlight Session 14
**Rotator Cuff Repair**  
Room 217  
Moderators: Stavros Thomopoulos, PhD and Ranjan Gupta, PhD

**8:00 AM – 8:30 AM**  
**Spotlight Speaker: Scott A Rodeo, MD**  
Platelet-Rich Plasma (PRP) Therapy - Does it Work?

**8:30 AM**  
**Paper No. 0079**  
Treatment with rapamycin reduces rotator cuff fatty infiltration in rats  
Sunil K Joshi, Xuhui Liu, Afshin A Anoushiravani, Sanjum Samgha, Ryan Kaveh, Anisa Bashiri, Torie Tsuei, Hubert T Kim, Brian T Feeley

**8:40 AM**  
**Paper No. 0080**  
Reduction in muscle fiber force production, disruption of myofibril architecture and accumulation of fatty macrophages in patients with chronic rotator cuff tears  
Christopher L Mendias, Stuart M Roche, Evan B Lynch, Max E Davis, Elizabeth R Sibilsky Enselman, Caleb W Bromley, Julie A Harning, Sarah Calve, Jon A Jacobson, Dennis R Claffin, Asheesh Bedi

**8:50 AM**  
**Paper No. 0081**  
The Effect of Chronic Unloading on Tendon-to-Bone Healing in a Rat Model of Massive Rotator Cuff Tears  
Megan L Killian, Leonardo M Cavinatto, Shivam A Shah, Leesa M Galatz, Stavros Thomopoulos

**9:00 AM**  
**Paper No. 0082**  
Alterations in Glenohumeral Kinematics in Patients with Rotator Cuff Tears Using Biplane Fluoroscopy  
Katharine J Wilson, J. Erik Giphart, Kine Kagnes, Peter J Millett

**9:10 AM**  
**Paper No. 0083**  
Three-Dimensional Analysis of Acromial Morphology by Using the Proximity Mapping Technique: Comparison of Subjects With and Without Rotator Cuff Tear  
Yukitaka Fujisawa, Teruhisa Mihata, Tsuyoshi Murase, Kazuomi Sugamoto, Masashi Neo

**9:20 AM**  
**Paper No. 0084**  
MRI Quantification of Fatty Infiltration and Muscle Volume in a Mouse Model of Rotator Cuff Tears  
Erik Kramer, Sanjum P Samagh, Gerd Melkus, Blake M Bodendorfer, Sharmila Majmudar, Xuhui Liu, Hubert T Kim, Brian T Feeley
Ballroom C1
ORS/AAOS COMBINED SYMPOSIUM:
CELL-BASED STRATEGIES FOR REGENERATING MUSCULOSKELETAL TISSUES

Presented by the ORS and the AAOS Biological Implant Committee
Organizers:

Stuart B Goodman, MD, PhD, Stanford University
Lynne C Jones, PhD, Johns Hopkins University

Basic Science Consideration: Cell-based therapies are truly an example of "bench to bedside" translational research. Biologists, bioengineers and material scientists have studied the behavior and manipulation of stem, progenitor and end-differentiated cells, and developed scaffolds to mimic the mechanical and microenvironment for cells to remain viable, proliferate, and ultimately function to reconstitute the desired tissue. Basic science research has led to a better understanding of the fundamental behavior of musculoskeletal cells in their natural environment and the development of strategies for regenerative medicine.

Scientific Context of Cell-Based Therapies Regarding Musculoskeletal Tissue Engineering
Louis C Gerstenfeld, PhD, Boston University School of Medicine

Historical Context of Cell-Based Therapies Regarding Musculoskeletal Tissue Engineering
Joseph M Lane, MD, Hospital for Special Surgery

Different Approaches that have been Developed and What the State-of-the-Art of Cell-Based Therapies are Today
George F Muschler, MD, Cleveland Clinic Foundation

The Future Regarding the Opportunities for New Applications and Further Development of Existing Therapies
Rocky S Tuan, PhD, University of Pittsburg

Ballroom C2
WORKSHOP #5
INVESTIGATING THE VASCULATURE OF BONE

Organizers:

David M Findlay, PhD, University of Adelaide
Larry J Suva, PhD, University of Arkansas for Medical Sciences

It has long been understood that blood vessels and blood flow in bone are essential to the health and repair mechanisms of this tissue. However, investigation of the vasculature, angiogenesis and blood flow during normal physiology, skeletal anabolism or catabolism, and bone disease have been difficult for the majority of investigators for many reasons. This workshop will provide an interactive forum, in which to describe and explain existing methods to explore the vasculature of bone and will introduce the newest evolving technologies making them accessible to a broad spectrum of orthopaedic researchers.

Imaging bone blood vessels in health, disease and treatment
Marie-Hélène Lafage-Proust, University of St. Etienne

Measuring bone blood flow in health and disease
James F Griffith, Chinese University of Hong Kong, Prince of Wales Hospital

Histology of the vasculature in bone: How do you do it right?
Robert A Skinner, HTL(ASCP), University of Arkansas for Medical Sciences
Increasingly, orthopedic surgeons are being assessed in terms of functional outcomes and patient satisfaction following operative procedures, especially total knee and hip replacement surgeries. This has led to the recent emergence of patient-directed outcome instruments in which multiple domains of physical and emotional well-being are often considered in assessing the clinical effectiveness of surgical interventions. The Knee Society has recently released the latest version of the Knee Society Score which has been extensively developed and validated using advanced psychometric methods combined with attention to the diverse and individual demands of patients presenting a wide spectrum of ages, expectations and lifestyles. The purpose of this workshop will be to address the challenge of measuring outcomes of elective surgical procedures using advanced biostatistical and psychometric tools, using the New Knee Society Score as a demonstration of this process.

Quantifying the Outcome of Total Knee Replacement: Old and New Solutions
Giles R Scuderi, MD, North Shore-LIJ Medical Group

Patient-Centered Scoring of Functional Outcomes after Total Knee Replacement
Philip C Noble, PhD, Institute of Orthopedic Research & Education

The Use of Psychometric Methodology to Validate Orthopaedic Outcome Measures
Alla Sikorskii, PhD, Michigan State University

With the budget crisis in the federal government, advocacy for research funding has become increasingly important. Government and other funding institutions need to be aware of the importance of musculoskeletal research, with its high burden of disease and potential to improve the lives and productivity for patients. This workshop will provide past examples of success in increasing funding through advocacy, provide background information and ways to get involved through two organizations dedicated to research advocacy; and give ideas for funding and advocacy efforts outside of NIAMS. Members will also be shown the advocacy resources available through ORS to help build relationships between members and their congressional representatives, hopefully resulting in increased advocacy for research and increased funding over time.

Role of Advocacy in Increasing Research Funding
Stuart L. Weinstein, MD, University of Iowa Hospital

Making Research to Improve Health a Higher National Priority
Max Bronstein, Research!America

The American Institute for Medical and Biological Engineering
Lynne C. Jones, PhD, John Hopkins University
Session 15
Chondrogenesis / Mechanobiology
Ballroom C1
Moderators: Fergal J O’Brien, PhD and David A Lee, PhD

12:00 PM Paper No. 0085
Dynamic Stretch Rapidly Alters Nuclear Structure and Increases Chromatin Condensation in Mesenchymal Stem Cells
Su-Jin Heo, Stephen D Thorpe, Tristan P Driscoll, Sohaib K Hashmi, David A Lee, Robert L Mauck

12:10 PM Paper No. 0086
Mutation of the Mechano-Osmosensitive Ion Channel TRPV4 Results in Dysfunctional Calcium Signaling and Altered Gene Expression in Chondrocytes
Holly A Leddy, Amy L McNulty, Suk Hee Lee, Nicole E Rothfusz, Wolfgang Liedtke, Farshid Guilak

12:20 PM Paper No. 0087
Mechanical Regulation of mTOR Pathway is Required for Cartilage Development
Yingjie Guan, Qian Chen

12:30 PM Paper No. 0088
Cytoskeletal Tension is Required for Dynamic Tensile Loading Induced Alterations in Mesenchymal Stem Cell Shape and Nuclear Connectivity
Tristan P Driscoll, Zach E Shurden, Su-Jin Heo, Robert L Mauck

12:40 PM Paper No. 0089
Chondrocyte sensitization and desensitization to dynamic mechanical loading in cell-seeded agarose constructs
Joanna Weber, Stephen Waldman

12:50 PM Paper No. 0090
Calcium Signaling of Chondrocytes under Osmotic Stress and Mechanical Stimulation
Wen Li, Miri Park, Catherine Kirn-Safran, Liyun Wang, X. Lucas Lu

Session 16
Osteoporosis I: Pathogenesis
Ballroom C2
Moderators: Hua Zhu (David) Ke, MD and Susan V Bukata, MD

12:00 PM Paper No. 0091
Loss of the coagulation protein plasminogen leads to severe degeneration of the spine
Tetsuro Ohba, Heatheer Cole, Masato Yuasa, Nicholas A Mignemi BS, Lynda O’Rear, Jonathan Schoenecker

12:10 PM Paper No. 0092
Altered Bone Development in a Mouse Model of Peripheral Sensory Nerve Inactivation
Mollie A Heffner, Matthew J Anderson, Alexander C Kelemen, Damian C Genetos, Blaine A Christiansen

12:20 PM Paper No. 0093
The effect of human parathyroid hormone (1-34) on spine fusion in an osteoporotic animal model
Shin-ichi Nakao, Mamoru Kawakami, Daisuke Fukui

12:30 PM Paper No. 0094
Osteonal Collagen Fiber Orientation Differs from Normal in Bone Formed During Disuse Osteoporosis
Leila Mehraban Alvandi, Jelena Basta-Pljakic, Oran Kennedy, Mitchell Schaffler

12:40 PM Paper No. 0095
EGFR Signaling Promotes Proliferation and Survival in Osteoprogenitors by Increasing Egr2 Expression
Abhishek Chandra, Shenghui Lan, Ji Zhu, Valerie Siclari, X. Sherry Liu, Ling Qin

12:50 PM Paper No. 0096
Kidney disease increases bone turnover in young adult C5Bl/6 mice
Virginia Ferguson, Andrew Cureton, Laura C Shum, Marco S Loayza, Ted A Bateman, Moshe Levi, Karen B King
<table>
<thead>
<tr>
<th>Session 17</th>
<th>Tissue Engineering</th>
<th>Ballroom C3</th>
<th>Moderators: Syam P Nukavarap, PhD and Magali Cucchiarini, PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 PM</td>
<td>Paper No. 0097</td>
<td>Evaluation of Human Muscle Derived Stem Cells Combined with a Sustained Release of BMP2 Coacervate for Bone Regeneration</td>
<td>Hongshuai Li, Noah R Johnson, Johannes Schneppendahl, Avrydas Usas, Xueqin Gao, Yadong Wang, Johnny Huard</td>
</tr>
<tr>
<td>12:10 PM</td>
<td>Paper No. 0098</td>
<td>Controlled release of rhBMP-2 from keratin biomaterials promotes bridging of critically-sized rat mandibular defect while minimizing ectopic bone growth</td>
<td>Christine Kowalczenewski, Seth Tombyln, David Wasnick, Mary Ellenburg, Michael Callahan, Thomas Smith, Mark Van Dyke, Luke Burnett, Justin Saul</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>Paper No. 0100</td>
<td>PTH-Enhanced Structural Allograft Healing is Associated with Decreased Angiopoietin-2 Mediated Arteriogenesis, Mast Cell Accumulation and Fibrosis</td>
<td>Edward M Schwarz, Robinder S Dhillion, Chao Xie, Wakenda Tyler, Hani Awad, Michael J Zuscik, Regis J O’Keefe</td>
</tr>
<tr>
<td>12:40 PM</td>
<td>Paper No. 0101</td>
<td>SDF-1α and BMP-2 directed stem cell recruitment towards a localized critical size bone defect</td>
<td>Stefan Zwingenberger, Zhenyu Yao, Angela Jacobi, Corina Vater, Roberto Valladares, Chenguang Li, Christophe Nich, Allison Rao, Jane E Christman, Joseph K Antonios, Emmanuel Gibson, Axel Schambach, Tobias Mátzig, Klaus-Peter Günther, Stuart B Goodman, Maik Stiehler</td>
</tr>
<tr>
<td>12:50 PM</td>
<td>Paper No. 0102</td>
<td>Ten-Fold Increases in Bone Formation via Optimization of Sucrose Acetate Isobutyrate (SAIB) as an Injectable Phase-Transitioning Delivery System for rhBMP-2</td>
<td>Aaron Schindeler, Tegan Cheng, Peter Valtchev, Kathy Mikulec, Fariba Dehghani, David G Little</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session 18</th>
<th>Shoulder and Elbow</th>
<th>Room 217</th>
<th>Moderators: Louis J Soslowsky, PhD and Aaron Daluiski, MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 PM</td>
<td>Paper No. 0103</td>
<td>Biceps Mechanical Properties Are Not Altered in the Presence of Asymptomatic Rotator Cuff Tendon Tears</td>
<td>Katherine E Reuther, Stephen J Thomas, Lauren N Satchell, Louis J Soslowsky</td>
</tr>
<tr>
<td>12:10 PM</td>
<td>Paper No. 0104</td>
<td>Denervation and tenotomy equally contribute to cartilage wear in a rat model of rotator cuff tear arthropathy</td>
<td>Blake M Bodendorfer, Dominique Laron, Jason Wong, Hubert Kim, Xuhui Liu, Brian Feeley</td>
</tr>
<tr>
<td>12:20 PM</td>
<td>Paper No. 0105</td>
<td>Biomechanical Comparison of the Trapezius Transfer and Latissimus Transfer for Irreparable Massive Cuff Tears</td>
<td>Nathanael Heckmann, Reza Omid, Lawrence Wang, Michelle McGarry, Thomas Vangness, Thay Q Lee</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>Paper No. 0106</td>
<td>A Formula for Predicting Anterior Glenoid Bone Loss Due to Instability</td>
<td>Joshua W Giles, Brett D Owens, James A Johnson, George S Athwal</td>
</tr>
<tr>
<td>12:40 PM</td>
<td>Paper No. 0107</td>
<td>The Effect of Capitellar Impaction Fractures on Radiocapitellar Stability</td>
<td>Dave R Shukla, Andrew R Thoreson, James S Fitzsimmons, Kai-Nan An, Shawn W O’Driscoll</td>
</tr>
<tr>
<td>12:50 PM</td>
<td>Paper No. 0108</td>
<td>Range of motion at the elbow necessary to visualize osteochondral lesions of the humeral capitellum by ultrasonographic evaluation</td>
<td>Tetsuya Takenaga, Hideyuki Goto, Masaaki Kobayashi, Hirotaka Iguchi, Yoko Nagaya, Masahiro Nozaki, Hiroto Mitsui, Kaneaki Tawada, Masahito Yoshida, Yasuhiro Nishimori, Atsushi Murase, Takanobu Otsuka</td>
</tr>
</tbody>
</table>
## Session 19
### Osteoarthritis: Murine Models
**Ballroom C1**  
**Moderators:** Gary Gibson, PhD and Anne-Marie Malfait, MD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>Paper No. 0109</td>
<td>Osteoarthritis associated mutation in MATN3 gene abolishes IL-1Ra dependent stimulation of chondrogenesis markers in chondroprogenitor cells</td>
<td>Chathuraka T Jayasuriya, Zhengke Wang, Qian Chen</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Paper No. 0110</td>
<td>Collagen cross-linking and heteropolymer formation in mouse cartilage exclusively expressing the type IIA collagen isoform</td>
<td>Russell J Fernandes, Geoffrey Traeger, Soumya Ravindran, Louisa Wirthlin, Audrey McAlinden</td>
</tr>
<tr>
<td>2:20 PM</td>
<td>Paper No. 0111</td>
<td>Role of Chondroadherin in Nanoscale Tissue Assembly and biomechanics of Murine Articular Cartilage</td>
<td>Michael Battista, Hadi Tavakoli Nia, Karen Cox, Alan J Grodzinsky, Christine Ortiz, Dick Heinegård, Lin Han</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Paper No. 0112</td>
<td>Deletion of Gangliosides Enhances Cartilage Degradation in Murine Models of Osteoarthritis</td>
<td>Fumio Sasazawa, Norimasa Iwasaki, Tadashi Yamashita, Tomohiro Onodera</td>
</tr>
<tr>
<td>2:40 PM</td>
<td>Paper No. 0113</td>
<td>Ablation of Dickkopf-1 in mice does not protect for articular cartilage degeneration from mechanical loading</td>
<td>Frank C Ko, Alyson Morse, Allison W Hsia, David G Little, Marjolein C van der Meulen</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Paper No. 0114</td>
<td>Histone Methylation-Mediated Decrease in Nfat1 Expression Contributes to Dysfunction of Articular Chondrocytes in Aging Mice</td>
<td>Mingcai Zhang, Qinghua Lu, Kenneth Caldwell, Jamie Crist, Clayton Theleman, Jinxí Wang</td>
</tr>
</tbody>
</table>

## Session 20
### Bone: Development, Formation and Healing
**Ballroom C2**  
**Moderators:** Vicki Rosen, PhD and Hicham Drissi, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>Paper No. 0115</td>
<td>Perlecan/Hspg2 Deficiency Alters Solute Diffusion and Convection in the Bone Lacunar-canicular System</td>
<td>Bin Wang, Christopher Price, Xiaohan Lai, Wen Li, Catherine B Kirn-Safran, Jun Pan, Liyun Wang</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Paper No. 0116</td>
<td>Connexin-43 Deficiency in Osteoblasts/Osteocytes Impairs Tendon and Muscle Formation</td>
<td>Hua Shen, Susan K Grimston, Roberto Civitelli, Stavros Thomopoulos</td>
</tr>
<tr>
<td>2:20 PM</td>
<td>Paper No. 0117</td>
<td>Connexin43 Deficiency Protects Against Unloading Induced Bone Loss by Attenuating Sclerostin Production and Preventing Suppression of Bone Formation</td>
<td>Shane Lloyd, Yue Zhang, Emmanuel M Paul, Alayna Loiselle, Gregory S Lewis, Henry J Donahue</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Paper No. 0118</td>
<td>Cartilage-specific expression of mechanically inducible miRNA-365 leads to accelerated formation of the secondary ossification center and higher bone mineral density of long bones in vivo</td>
<td>Kun Yang, Alex Han, Qian Chen</td>
</tr>
<tr>
<td>2:40 PM</td>
<td>Paper No. 0119</td>
<td>VPS53 polymorphism destroys miR-206 binding and is associated with bone and muscle phenotypes in young males and females</td>
<td>Todd Spock, Laura L Tosi, Karin Kuhn, Clare Griffis, Mai Abdel-Ghani, Heather Gordish-Dressman, Eric Hoffman, Joseph Devaney</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Paper No. 0120</td>
<td>A Small Interfering RNA Targeting Lnk Uing Atelocollagen as a Scaffold Accelerates Bone Fracture Healing via Early Neovascularization</td>
<td>Yohei Kawakami, Tomoyuki Matsumoto, Masaaki Ii, Atsuhiro Kawamoto, Yutaka Mifune, Taro Shoji, Tomoaki Fukui, Ryosuke Kuroda, Masahiro Kurosaka, Takayuki Asahara</td>
</tr>
</tbody>
</table>
Session 21  
Cancer, Tumors  
Ballroom C3  
Moderators: Michelle A Ghert, MD and Thomas J Scharschmidt, MD

2:00 PM  Paper No. 0121  
Decoy Receptor 3 Regulates Migration and Invasion Abilities via Promoting MMP-2 Expression through PI3K/Akt Pathway in Human Malignant Fibrous Histiocytoma  
Mitsunori Toda, Teruya Kawamoto, Hitomi Hara, Yasuo Onishi, Risa Harada, Masahiro Kurosaka, Toshihiro Akisue

2:10 PM  Paper No. 0122  
Cartilage-Specific Tumor Suppression by Ptpn11 As Revealed by Tissue Specific Shp2 deficient Mice  
Wentian Yang, Douglas Moore, Mark Dooner, Qian Chen, Qian Wu, Richard Terek, Benjamin G Neel, Peter J Quesenberry, Michael G Ehrlich, Aron Mohan

2:20 PM  Paper No. 0123  
Parathyroid hormone-related protein (PTHrP) modulates adhesion, migration and invasion in bone tumor cells  
Isabella Mak, Michelle A Ghert

2:30 PM  Paper No. 0124  
Mechanical alteration of Epithelial Cells after TGF-β1 Inducing EMT Evaluated by Micro-Mechanical Testing System  
Pei-Hung Chou, Tsung-Hsien Wu, Ming-Long Yeh

2:40 PM  Paper No. 0125  
Heat Distribution in Bone During Radiofrequency Ablation of Osteoid Osteoma: An Ex-Vivo Model  
Alex Greenberg, Tamar Bernstein-Weil, Jacob Sosna, Jacob Apllebaum, Amos Peyser

2:50 PM  Paper No. 0126  
Early Increased Medullary Osteoclasts and Unopposed Cortical Mineral Apposition Explain Morphologic Changes After Limited Field Irradiation  
Megan E Oest, Veerle Franken, Savannah Wentz, Joseph A Spadaro, Judy Strauss, Timothy A Damron

Session 22  
Knee Mechanics  
Room 217  
Moderators: Louis E DeFrate, PhD and Sophia N Sangiorgio, PhD

2:00 PM  Paper No. 0127  
Females with patellofemoral pain exhibit greater cartilage stress compared to males with patellofemoral pain  
Thor F Besier, Saikat Pal, Parastou Eslami, Christine Draper, Garry Gold, Michael Fredericson, Scott Delp, Gary Beaupré

2:10 PM  Paper No. 0128  
The relationship between tibiofemoral contact stress at baseline and meaningful worsening in knee pain by 60 months  
Neil A Segal, Natalie Glass, Tyler Stockman, Andrew Kern, Donald D Anderson, Jingbo Niu, Felix Eckstein, John A Lynch, David T Felson, Cora Lewis, James C Torner, Michael Nevitt, Leena Sharma

2:20 PM  Paper No. 0129  
Evidence for Asymmetry in Knee Adduction Moments in Healthy Populations  
Rebecca Lathrop, Katerina Blazek, Jessica Asay, Steve Jamison, Laura Schmitt, Robert Siston, Ajit Chaudhari, Thomas Andriacchi

2:30 PM  Paper No. 0130  
Differences in transverse knee moment and knee adduction angle between healthy and anterior cruciate ligament injured subjects during a standing target matching task  
Amelia Lanier, Toran MacLeod, Kurt Manal, Thomas Buchanan

2:40 PM  Paper No. 0131  
The Relationship between Time Past Injury, Knee Kinematics, and Kinetics during Gait in the ACL Deficient Knee  
Michael Zabala, Julien Favre, Thomas P Andriacchi

2:50 PM  Paper No. 0132  
Correlation Between Posterior Tibial Slope and In-vivo Knee Kinematics  
Daisuke Araki, Eric Thorhauer, Scott Tashman
## Session 23
**Models of Articular Cartilage Injury and Degeneration**
Ballroom C1
Moderators: Constance R Chu, MD and Hui Bin (Herb) Sun, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 PM</td>
<td>Paper No. 0133</td>
<td>Low levels of Vitamin D effect on Cartilage and subchondral bone in a Rat Model</td>
<td>Cecilia Pascual-Garrido, Michael E Angeline, Shen-Ying R Ma, Clifford Voigt, Joseph Nguyen, Russell F Warren, Scott A Rodeo</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>Paper No. 0134</td>
<td>Chronic In Vivo Varus Loading Induces Degenerative Changes in the Rat Tibiofemoral Joint</td>
<td>Maria Roehmoldt, Anna Gauthier, Bruce Beynnon, Fatih Ertem, Mack Gardner-Morse, Gary Badger</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>Paper No. 0135</td>
<td>Early, Site-specific Cartilage Deterioration after Anterior Cruciate Ligament Transection in Adult Rabbits</td>
<td>Bradley C Hansen, Jason P Caffrey, Iliya Goldberg, William J McCarty, Esther Cory, Karli K Gillette, Kirsten E Cherry, Elaine F Chan, Tomonori Yamaguchi, Won C Bae, Michele Temple-Wong, Chris B Raub, Koichi Masuda, Robert L Sah</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>Paper No. 0136</td>
<td>Acute and Subacuthe Changes in Articular Cartilage after Impact Injury</td>
<td>Anneliese D Heiner, Todd O McKinley, Abigail D Lehman, Jessica E Goetz, Curtis M Goreham-Voss, John F Bierman, James A Martin</td>
</tr>
<tr>
<td>4:40 PM</td>
<td>Paper No. 0137</td>
<td>Sub-Impact Loading Induces Chondrocyte Death in the Deeper Layers of Cartilage in Porcine Knees</td>
<td>Robert A Siston, Mark Lambach, Andrea Adams, Scott Shemory, Sudha Agarwal, David Flanigan</td>
</tr>
</tbody>
</table>

## Session 24
**Osteoporosis II: Therapy**
Ballroom C2
Moderators: David B Burr, PhD and Joseph M Lane, MD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 PM</td>
<td>Paper No. 0139</td>
<td>A Closer Look at the Immediate Trabeculae Response to Combined Parathyroid Hormone (PTH) and Alendronate Treatment</td>
<td>Allison Altman, Beom Kang Huh, Shiming Luo, Abhishek Chandra, Ling Qin, X. Sherry Liu</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>Paper No. 0140</td>
<td>Comparison of Long-Term RankL Blockade and Bisphosphonate Therapy in oim/oim Mice into Adulthood</td>
<td>Josephine Marino, Nancy Pleshko, Steve Doty, Erin Carter, Maria Baldino, Rachel Sibley, Rhima Coleman, Adele Boskey, Cathleen Raggio</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>Paper No. 0142</td>
<td>rhCalregulin is a potent inhibitor of inflammation-associated osteoclastogenesis</td>
<td>Francis Y Lee, Heon Goo Lee, Saqib Nizami, Hiroshi Minematsu, Lee Song, Hesham Tawfeek, Hicham M Drissi, Hana Goto, Daniel S Oh, Maya Mikami</td>
</tr>
<tr>
<td>4:40 PM</td>
<td>Paper No. 0143</td>
<td>Salubrinal Regulates Bone Remodeling and Fat Metabolism in Ovariectomized Mice</td>
<td>Ping Zhang, Andy Chen, Todd Dodge, Nancy Tanjung, Yueze Zheng, C. Fuqua, Hiroki Yokota</td>
</tr>
<tr>
<td>4:50 PM</td>
<td>Paper No. 0144</td>
<td>Sex-Linked Bone Loss and Adipocyte Differentiation are Co-Regulated by the Brd2 Gene</td>
<td>Beth Bragdon, Robert Burns, Amelia H Baker, Anna Belkin, Gerald Denis, Elise F Morgan, Louis C Gerstenfeld, Jennifer Schlezinger</td>
</tr>
<tr>
<td>Session 25</td>
<td>Bioactive Biomaterials</td>
<td>Ballroom C3</td>
<td>Moderators: Dominique P Pioletti, PhD and Pen-Hsiu (Grace) Chao, PhD</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------</td>
<td>------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Paper No. 0145</td>
<td></td>
<td>Plasma Biofunctionalisation of Poly-(ether-ether)-ketone for Improved Human Mesenchymal Stem Cell Functionality</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>Paper No. 0146</td>
<td></td>
<td>Chondroprotective effect of sulforaphane and PLGA-based delivery system</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>Paper No. 0147</td>
<td></td>
<td>Engineering Interpenetrating Network as Biomimetic Cellular Niche Cell Scaffold with Independently Tunable Mechanical and Biochemical Properties</td>
</tr>
<tr>
<td>4:40 PM</td>
<td>Paper No. 0149</td>
<td></td>
<td>HUVEC-derived Extracellular Matrix (ECM) on β-TCP Scaffold Enhanced Osteogenic Differentiation of Human Bone Marrow MSC</td>
</tr>
<tr>
<td>4:50 PM</td>
<td>Paper No. 0150</td>
<td></td>
<td>Effect of Silver Nanoparticles on Human Mesenchymal Stem Cell Differentiation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session 26</th>
<th>Arthroplasty Knee I</th>
<th>Room 217</th>
<th>Moderators: Clifford W Colwell, Jr., MD and John D DesJardins, PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 PM</td>
<td>Paper No. 0151</td>
<td></td>
<td>Prediction of deep vein thrombosis after total knee and hip arthroplasty as measured by reactive hyperemia peripheral arterial tonometry</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>Paper No. 0152</td>
<td></td>
<td>What We have Learned from the ACS-NSQIP Database: An Example Analyzing Short Term Complications following Total Arthroplasty</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>Paper No. 0153</td>
<td></td>
<td>Level of Pain and Disability at Time of TKR across the past 10 years: results from two national cohorts</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>Paper No. 0154</td>
<td></td>
<td>Comparison of High Flexion Usage and Weightbearing after TKA and UKA</td>
</tr>
<tr>
<td>4:40 PM</td>
<td>Paper No. 0155</td>
<td></td>
<td>Muscle ‘regenerative potential’ determines physical recovery following total knee arthroplasty</td>
</tr>
<tr>
<td>4:50 PM</td>
<td>Paper No. 0156</td>
<td></td>
<td>Continuous Passive Motion after Total Knee Arthroplasty: A Randomized Controlled Trial</td>
</tr>
</tbody>
</table>
### DAILY MEETING HIGHLIGHTS

**Monday, January 28, 2013**

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 AM -</td>
<td>Ballroom C1</td>
<td>Bone Tissue: Hierarchical Simulations for Clinical Applications Organizer: Maria-</td>
</tr>
<tr>
<td>8:00 AM</td>
<td></td>
<td>Grazia Ascenzi, PhD Room 213</td>
</tr>
<tr>
<td>7:00 AM -</td>
<td></td>
<td>Registration Open</td>
</tr>
<tr>
<td>6:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00 AM -</td>
<td></td>
<td>Networking Breakfast - New Members / International Members in Foyer - (Registration Required)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td></td>
<td>Post Session 2 Set Up</td>
</tr>
<tr>
<td>8:00 AM -</td>
<td></td>
<td>New Horizon Workshop 7</td>
</tr>
<tr>
<td>9:30 AM</td>
<td></td>
<td>View Posters and Visit Exhibits / Coffee Break</td>
</tr>
<tr>
<td>10:15 AM -</td>
<td></td>
<td>Presidential Address / Incoming Presidential Address</td>
</tr>
<tr>
<td>10:45 AM</td>
<td></td>
<td>Business Meeting</td>
</tr>
<tr>
<td>11:30 AM -</td>
<td></td>
<td>Session 27</td>
</tr>
<tr>
<td>12:30 PM -</td>
<td></td>
<td>International Town Hall Room 213</td>
</tr>
<tr>
<td>2:00 PM</td>
<td></td>
<td>View Posters and Visit Exhibits</td>
</tr>
<tr>
<td>3:00 PM -</td>
<td></td>
<td>Poster Walking Tours</td>
</tr>
<tr>
<td>3:00 PM -</td>
<td></td>
<td>View Posters and Visit Exhibits / Coffee Break (Authors available at posters)</td>
</tr>
<tr>
<td>4:00 PM -</td>
<td></td>
<td>Osteoarthritis Assessment &amp; Therapy</td>
</tr>
<tr>
<td>5:00 PM</td>
<td></td>
<td>Knee Kinematics and Gait</td>
</tr>
<tr>
<td>5:15 PM -</td>
<td></td>
<td>MMP Regulation in Articular Chondrocytes</td>
</tr>
<tr>
<td>6:30 PM -</td>
<td></td>
<td>President’s Reception (invitation only)</td>
</tr>
<tr>
<td>6:30 PM -</td>
<td></td>
<td>President’s Party at the Grotto - (Registration Required)</td>
</tr>
<tr>
<td>8:00 PM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The advent of nano-technology offers the promise of resolving molecular and material properties and defining cell and tissue morphology in a course of tissue engineering. Applications of engineering to the manufacture, production, material efficiency and the scaled manufacturing impose unique challenges and also afford novel solutions. This forum seeks to show how that current technologies can translate imaging resolution into the architecture of materials for use in orthopedic repair. This workshop will demonstrate the conversion of micro-CT data into spatial mimetic structures. These structures can be achieved by both subtractive etching, or by additive fabrication using laser welding. Moreover, laser etching can be used to physically change the structure of ceramics, imbuing them with physics-based morphology that assigns new meaning to the cell-matrix interaction. In achieving a biologic-implant interface, it is important to recognize that inanimate objects can offer instructive integration to tissue performance. Recognizing the tissue response is critical to evaluating performance and refining objectives of tissue regeneration that are accountable to therapeutic intention. Both micro-mechanical evaluation and biologic reporter technologies are vital to affirming the transfer of information and the resultant transduction of instruction.

**Laser Micro-Engineering Systems for Biologic-Material Interface**
Frank E Livingston, PhD, The AeroSpace Corporation

**Additive Fabrication Technology for Bone Scaffold and Implants - Coherent Methods of Design**
Tony Decarmine, Oxford Performance Materials, Inc.

**Defining Levels of Differentiation in Osteoprogenitor Lineages**
David Rowe, MD, University of Connecticut Health Center

---

The mass and architecture of the skeleton develop in response to the mechanical stimuli experienced over the lifetime of an individual or organism. Because mechanical loading is ubiquitous in our gravitational environment, adaptation to mechanical loading is inherent to many biological processes of musculoskeletal biology. In addition, controlled mechanical loading holds promise as an anabolic agent to inhibit bone loss and maintain bone mass and strength with aging and disease. Exercise has been used as a tool to increase the loads experienced by the skeleton, but the loads imparted to the skeleton are difficult to quantify and control. Therefore, researchers have developed in vivo methods to apply well-controlled mechanical loads to the skeleton in small animal models. The purpose of this workshop is to present an overview of these in vivo loading methods, the principles of experimental design, and the methods to assess skeletal responses. In addition, recent data on the role of Lrp5/Wnt signaling in mechanotransduction, ascertained using these methods, will be presented.

**Selecting In Vivo Models and Designing Experimental Studies**
Marjolein C van der Meulen, PhD, Cornell University

**Assessing In Vivo Skeletal Adaptation to Mechanical Loading**
Matthew J Silva, PhD, Washington University

**Wnt Signaling and Bone Adaptation**
Alexander Robling, PhD, Indiana University
The purpose of this workshop is to discuss contemporary issues facing the hip arthroplasty surgeon with the primary learning objective being to share with the orthopaedic research community the major clinical challenges are. Specific topics to be discussed include hip dislocations, bearings, sepsis and implant fixation. The clinical relevance of each of these topics will be discussed along with past, current and future research in each of these areas. The hope of the organizers and the Hip Society is that this workshop will stimulate new research programs in each of these areas to enhance the welfare of patients undergoing hip arthroplasty.

**Hip Dislocations**
Daniel J Berry, MD, Mayo Clinic Grad School of Medicine

**Polyethylene Bearings**
Orhun K Muratoglu, PhD, Massachusetts General Hospital

**Alternative Bearings**
Harry A McKellop, PhD, Orthopaedic Hospital

**Modularity Corrosion**
Joshua J Jacobs, MD, Midwest Orthopaedics at Rush

**Navigation and Robotics**
Mark W Pagnano, MD, Mayo Clinic

Biomechanics is the field of examining the forces acting upon and within a biological structure, and their effect. It is the application to a biological system of an individual's hybrid training in mechanics, anatomy, biology, engineering sciences, and physics. And it is a diverse field, with many career pathways. Careers may be pursued in biomechanics laboratories at universities, product development laboratories or medical facilities, medical device manufacturers, raw material suppliers, sport and fitness companies, sport medicine and rehabilitation, as well as testing and analysis of medical devices. These careers can involve experimental biomechanics that require the design and execution of biological specimen experiments, the development of human surrogate and computational models systems, or involve strategic analysis of injury mechanics. A career in biomechanics requires applying one's knowledge of engineering to areas such as biomaterials, medical devices and procedures. In this program, speakers will discuss the opportunities available in the field of biomechanics, how it applies to the work they do, and how it has allowed them to expand their career pathway.

**Speakers:**
Warren Haggard, PhD, University of Memphis

Jorge A Ochoa, PhD, PE, Exponent, Inc

Joo L Ong, PhD, The University of Texas at San Antonio

Stephen Spiegelberg, PhD, Cambridge Polymer Group, Inc
Session 27
Cartilage Tissue Engineering
Ballroom C1
Moderators: Henning Madry, MD and Henry J Donahue, PhD

11:30 AM  Paper No. 0157
Engineering zonal cartilaginous tissue using infrapatellar fat pad derived stem cells by modulating the spatial environment within the developing construct
Lu Luo, Stephen Thorpe, Conor Buckley, Daniel Kelly

11:40 AM  Paper No. 0158
Depth-Dependent Properties of a Tri-layered Hyaluronic Acid Hydrogel Construct with Zonal Co-culture of Chondrocytes and MSCs
Minwook Kim, Megan J Farrell, Jason A Burdick, Robert L Mauck

11:50 AM  Paper No. 0159
HB-IGF-1 Adsorbed to Self-Assembling Peptide Enhances Matrix Production by Encapsulated Chondrocytes and Co-Cultured Cartilage Explants
Emily Florine, Richard Lee, Parth Patwari, Alan Grodzinsky

12:00 PM  Paper No. 0160
Generation of clinical scale tissue engineered human cartilage sheets
Thomas J Kean, G Adam Whitney, Danielle L MacKay, James E Dennis

12:10 PM  Paper No. 0161
Characterization and Evaluation of Osteochondral Tissue Engineered Constructs on a Porous Titanium Base
Adam B Nover, Reuben A Saunders, Robert W Klein, Aaron Essner, Anthony P Napolitano, Eric G Lima, Gerard A Ateshian, Clark T Hung

12:20 PM  Paper No. 0162
Fact vs. Artifact: Avoiding Erroneous Estimates of Glycosaminoglycan Content in Tissue-Engineered Constructs
Chun hua Zheng, Marc E Levenston

Session 28
Bone Failure Mechanisms and Assessment
Ballroom C2
Moderators: Fabrizio Billi, PhD and Ted S Gross, PhD

11:30 AM  Paper No. 0163
Diffuse damage matrix failure locations: Where does live bone fail in creep?
Zeynep Seref-Ferlengez, Oran Kennedy, Jelena Basta-Pijakic, Mitchell B Schaffler

11:40 AM  Paper No. 0164
Biaxial Strength Behavior of Human Trabecular Bone Depends on Volume Fraction and Anisotropy
Arnav Sanyal, Tony M Keaveny

11:50 AM  Paper No. 0165
Contribution of bone morphological parameters to vertebral fracture strength within different vertebral regions
Javad Hazrati Marangalou, Keita Ito, Bert van Rietbergen

12:00 PM  Paper No. 0166
Raman Spectroscopy Predicts Femoral Fracture Toughness in a Murine Model of Rheumatoid Arthritis
Jason A Inzana, Jason Maher, Edward M Schwarz, Andrew Berger, Hani A Awad

12:10 PM  Paper No. 0167
Infrared Spectroscopic Assessment of Bone Mineral Differences Induced by Diet
Nathanael Raber, Cushla M McGoverin, Kathleen Axen, Kenneth Axen, Nancy Pleshko, Vanessa Yingling

12:20 PM  Paper No. 0168
Transcriptional Factor ATF4 Regulates the Fracture Resistance of Bone
Alexander J Makowski, Sasidhar Uppuganti, Ahbid Zein-Sabatto, Xiangli Yang, Barbara J Rowland, Jeffry S Nyman
Session 29
Spine Biomechanics and Imaging
Ballroom C3
Moderators: Dawn M Elliott, PhD and Alejandro A Espinoza Orias, PhD

11:30 AM  Paper No. 0169
A recommendation to modify the ASTM f1717 protocol for endurance limit testing of posterior spinal fusion devices
Jeremi M Leasure, Jessica Tang, Jenni Buckley, Dimitriy Kondrashov, Christopher Ames

11:40 AM  Paper No. 0170
Three Dimensional Visualization of the Vertebral Growth Plate: the Effects of Growth Modulation
Christine L Farnsworth, Joshua D Doan, Diana A Glaser, Peter O Newton

11:50 AM  Paper No. 0171
High-resolution 3D Imaging of Rat Spinal Vascular Structure: A Novel Method by Synchrotron Radiation-based Micro-CT
Tianding Wu, Hongbin Lu, Jianzhong Hu, Yong Cao, Dongzhe Li

12:00 PM  Paper No. 0172
Demands on posterior fusion hardware during lordosis restoration procedures
Audrey J Martin, Connor Telles, Jeremi M Leasure, Jessica Tang, Christopher Ames, Dimitriy Kondrashov

12:10 PM  Paper No. 0173
Anterior and Posterior Variations in Mechanical Properties of Human Vertebrae Measured by Nanoindentation
Hugo Giambini, Huajun Wang, Chunfeng Zhao, Qingshan Chen, Ahmad Nassr, Kai-Nan An

12:20 PM  Paper No. 0174
In situ label-free cell viability assessment of intervertebral disc tissue
Roman Dittmar, Bart van Dijk, Marc van Zandvoort, Keita Ito

Session 30
Osteolysis and Implant Loosening
Room 217
Moderators: Joshua J Jacobs, MD and Edward M Schwarz, PhD

11:30 AM  Paper No. 0175
Role of direct estrogen receptor signaling in wear particle-induced osteolysis
Christophe Nich, Roberto Valladares, Allison Rao, Stefan Zwingenberger, Chenguang Li, Jane E Christman, Joseph K Antonios, Zhenyu Yao, Herve Petite, Moussa Hamadouch, Stuart B Goodman

11:40 AM  Paper No. 0176
GSK3 Inhibition Blocks Mechanically Induced Osteoclast Differentiation And Periprosthetic Bone Loss
Anna Fahlgren, Rune Madsen, Nikolaus Binder, Hayden Courtland, James Sutherland, Patrick F Ross, Mathias P Bostrom

11:50 AM  Paper No. 0177
Influence of the periosteum in wear particle-induced osteolysis in the murine calvarium
Roberto Valladares, Christophe Nich, Stefan Zwingenberger, Chenguang Li, Katherine Swank, Allison Rao, Zhenyu Yao, Stuart B Goodman

12:00 PM  Paper No. 0178
TIRAP/Mal Mediates Particle-induced Osteolysis in vitro and in vivo

12:10 PM  Paper No. 0179
Fluid Flow Induced Osteoclast Differentiation Is Associated With Alterations In Genes Regulating IL-6 Signaling, Cell Death And Osteoblast Differentiation
Rune Madsen, Ben McArthur, Aleksey Dvorzhinskiy, Patrick F Ross, Mathias P Bostrom, Anna Fahlgren

12:20 PM  Paper No. 0180
Cobalt Activates Endothelial Large Conductance Calcium Dependent Potassium Channels and Stimulates Angiogenesis: Potential Mechanisms for Implant Loosening Following Metal-on-Metal Hip Arthroplasty
Deepti Kalluri, Anna Stadnicka, Janine Struve, Dorothee Weihrauch, James T Ninomiya
Session 31
ACL and Influences from Load, Techniques and Gender
Room 214
Moderators: Mats Brittberg, MD, PhD and
J Mark Wilkinson, PhD, FRCS

11:30 AM  Paper No. 0181
In vivo analysis of tibiofemoral contact
strains in ACL reconstructed and uninjured
contralateral knees
Jay P Willhite, Eziamaka C Okafor, Gangadhar M
Utturkar, Charles E Spritzer, Ermias S Abebe,
Dean C Taylor, Claude T Moorman, William E Garrett,
Louis E DeFrate

11:40 AM  Paper No. 0182
Gender differences in muscle activation patterns
after ACL reconstruction
Chelsea Marsh, Scott Tashman

11:50 AM  Paper No. 0183
Clinically-relevant predictors of altered joint loads
after acute ACL injury
Emily S Gardinier, Kurt Manal, Thomas S Buchanan,
Lynn Snyder-Mackler

12:00 PM  Paper No. 0184
ACL Graft Type Predicts Return to
Pre-Injury Activity Level
Kathleen White, David Logerstedt,
Lynn Snyder-Mackler

12:10 PM  Paper No. 0185
Tibial Morphology in ACL-Injured Patients:
3D-CT study
Daisuke Araki, Eric Thorhauer, Scott Tashman

12:20 PM  Paper No. 0186
Tibiofemoral stability after ACL reconstruction with
anteromedial and transtibial drilling techniques
Sally Arno, Christopher P Bell, Ankit Bansal, Garret
Garofolo, Orrin Sherman, Laith Jazrawi, Peter S Walker
Spotlight Session 32
Knee Kinematics and Gait
Ballroom C1
Moderators: Joseph J Crisco, PhD and John J Elias, PhD

1:30 PM – 2:00 PM
Spotlight Speaker: Scott L Delp PhD
Joint Kinematics / Gait Analysis

2:00 PM    Paper No. 0187
Motion Characteristics of the Knee during Step-up Activity
Jing-Sheng Li, Ali Hosseini, Lucile Cancre, Nolan Ryan, Thomas J Gill, Guoan Li

2:10 PM    Paper No. 0188
Is the knee adduction moment a strong predictor for the medial contact force? - Facts about the correlation during gait
Ines Kutzner, Adam Trepczynski, Markus Heller, Georg Bergmann

2:20 PM    Paper No. 0189
Changes in Sagittal Knee Kinematics at Heel Strike of Walking with Aging and Knee Osteoarthritis
Julien Favre, Jennifer C Erhart-Hledik, Thomas P Andriacchi

2:30 PM    Paper No. 0190
Knee kinematics & kinetics during a jump-cut maneuver: Effects of gender & ACL surgery
Daniel L Miranda, Paul D Fadale, Michael J Hulstyn, Robert M Shalvoy, Jason T Machan, Braden C Fleming

2:40 PM    Paper No. 0191
Effects of ACL Deficiency on Localized Tibiofemoral Cartilage Strains After Dynamic Activity
Edward G Sutter, Margaret R Widmyer, Gangadhar M Uutturkar, Charles E Spritzer, William E Garrett, Louis E DeFrate

2:50 PM    Paper No. 0192
Bilateral Knee Kinematics Changes in Patients Following Unilateral ACL Reconstruction
Ermias S Abebe, Eric Thorhauer, Scott Tashman

Spotlight Session 33
Fracture Healing and Repair
Ballroom C2
Moderators: Emil H Schemitsch, MD and Ralph Marcucio, PhD

1:30 PM – 2:00 PM
Spotlight Speaker: Louis Gerstenfeld, PhD
Bone Healing/Fracture Repair - Sclerostin

2:00 PM    Paper No. 0193
Fracture Healing With Endothelial Progenitor Cells (EPCs) in a Bone Defect Model: A MicroCT and Biomechanical Comparison with Mesenchymal Stem Cells (MSCs)
Aaron Nauth, Ru Li, Michael Glick, Emil H Schemitsch

2:10 PM    Paper No. 0194
SDF-1/CXCR4 Pathway on Endothelial Progenitor Cells Regulate Both Vasculogenesis and Osteogenesis for Bone Fracture Healing
Yohei Kawakami, Tomoya Kuroda, Sang-Mo Kwon, Tomoyuki Matsumoto, Astuhiko Kawamoto, Masaaki Ii, Yutaka Mifune, Tomoaki Fukui, Ryosuke Kuroda, Masahiro Kurosaka, Takayuki Asahara

2:20 PM    Paper No. 0195
Sclerostin Antibody Enhances Fracture Healing in Ovariectomized Rats With Established Osteopenia
Yun-feng Rui, Liu Yang, Tin Yan Cheng, Shuo Huang, Fanbiao Meng, Liangliang Xu, Chaoyang Li, Hua Zhu Ke, Gang Li

2:30 PM    Paper No. 0196
Canonical Notch Signaling is Required for Proper Temporal Progression of Long Bone Fracture Healing
Michael I Dishowitz, Joel D Takacs, Kurt D Hankenson

2:40 PM    Paper No. 0197
NOTCH2- Selected and Activated Mesenchymal Stem/Progenitor Cells Enhance Bone Repair in a Mouse Femur Allograft Model
Yufeng Dong, Teng Long, Regis O’Keefe, Matthew Hilton

2:50 PM    Paper No. 0198
Comparison of Stem Cell Sources in an Injectable Hydrogel Cell Delivery System for Bone Tissue Engineering
Christopher R Dosier, Hazel Y Stevens, Robert Guldberg
**MONDAY, JANUARY 28, 2013   1:30 PM – 3:00 PM**

**Spotlight Session 34**  
**Spine Therapeutics**  
**Ballroom C3**  
**Moderators:** Helen Gruber, PhD and Chitra L Dahia, PhD

**1:30 PM**  
**Paper No. 0199**  
**A Thermally Responsive Curcumin Conjugate for Local Antagonism of Inflammation in Radiculopathy**  

**1:40 PM**  
**Paper No. 0200**  
**Administration of RhoA siRNA to the injured spinal cord via Lumbar puncture reduces alldynia, preserves white matter, and increases serotonergic fibers caudal to the injury site**  
Seiji Otsuka, Crista Adamson, Sankar Venkatachalam, Noriko Kane-Goldsmith, Takanobu Otsuka, Martin Grumet

**1:50 PM**  
**Paper No. 0201**  
**In Vivo Delivery of IL-1ra from PLGA Microspheres Prevents IL-1β Induced Glycosaminoglycan Loss in the Rat Caudal Intervertebral Disc**  
Deborah J Gorth, John T Martin, George R Dodge, Nader M Hebela, Robert L Mauck, Dawn M Elliott, Lachlan J Smith

**2:00 PM**  
**Paper No. 0202**  
**The Intradiscal Injection of NFκB Decoy Attenuated Proinflammatory Molecular Changes in Rabbit Discs and the Degenerated Disc-Induced Pain Generation in the Xenograft Radiculopathy Rat Model**  
Tatsuhiko Fujiwara, Tomonori Yamaguchi, Rajeswari Pichika, Won C Bae, Alex P Taborak, Jade He, Iris Shieh, Kristine Tan, Mary Ellen Lenz, Koichi Masuda

**2:10 PM**  
**Paper No. 0203**  
**Anti-Inflammatory and Anti-AGE Treatments Decrease the Formation and Effects of Advanced Glycation End Products on Diabetic Mouse Spines**  
Svenja Illien-Junger, Fabrizio Grosjean, Helen Vlassara, Damien F Laudier, Herb B Sun, Gary E Striker, James C Iatridis

**2:20 PM**  
**Paper No. 0204**  
**Intradiscal Injection of Autologous Platelet-Rich-Plasma releasate for the Treatment of Discogenic Low Back Pain -Preliminary Prospective Clinical Trial of 12 cases-**  
Koji Akeda, Koichiro Murata, Takao Imanishi, Koshi Ohishi, Koichi Masuda, Atsumasa Uchida, Toshihiko Sakakibara, Yuichi Kasai, Akihiro Sudo

**2:30 PM – 3:00 PM**  
**Spotlight Speaker:** Michael J Yaszemski, MD, PhD  
**Growth Factory Delivery in Biomaterials and Tissue Engineering to the Spinal Cord**

---

**Spotlight Session 35**  
**Metal-on-Metal**  
**Room 217**  
**Moderators:** Stuart B Goodman, MD, PhD and Nadim J Hallab, PhD

**1:30 PM**  
**Paper No. 0205**  
**Immunological Consequences of Exposure to Metallic Prosthetic Wear Particles**  
Christopher Brown, Lizeth Lacharme-Lora, Blessing Mukonoweshuro, John Fisher, Patrick Case, Eileen Ingham

**1:40 PM**  
**Paper No. 0206**  
**Effect of clinically relevant metal ion combinations on osteoblast survival and function in vitro**  
Karan Shah, Alison Gartland, Mark J Wilkinson

**1:50 PM**  
**Paper No. 0207**  
**Effect of Clinically Relevant Concentrations of Metal Ions on late Osteoblasts and Osteocytes in vitro**  
Nick Mani, Peter Orton, Katie Deaton, Karan Shah, Alison Gartland, Mark J Wilkinson

**2:00 PM**  
**Paper No. 0208**  
**A new mechanism for Metal-on-Metal hip failure: cobalt nanoparticles and ions cause hypoxia-driven inflammation**  
Agata Nyga, Marcin Lignowski, Alister Hart

**2:10 PM**  
**Paper No. 0209**  
**Particulate implant debris induces HIF-1α protein expression in periprosthetic in vivo in the tissue of metal-on-metal (MoM) implants; a novel molecular link in MoM induced peri-implant reactivity**  
Lauryn Samelko, Marco Caicedo, Seung-Jae Lim, Criag Della-Valle, Joshua Jacobs, Nadim Hallab

**2:20 PM**  
**Paper No. 0210**  
**Comparative Proteomic Analysis of Synovial Fluid from Patients with Failed Metal-on-Metal and Metal-on-Polyethylene Hip Implants**  
Eric A Lehoux, Zhibin Ning, Paul E Beaule, Daniel Figeys, Stephen J Baskey, Isabelle Catelas

2:30 PM – 3:00 PM  
**Spotlight Speaker:** Joshua J Jacobs, MD  
**Biological Implications of Metal-on-Metal Bearings**
Spotlight Session 36
Magnetic Resonance Imaging of Cartilage
Room 214
Moderators: Anand Agarwal, MD and Xiaojuan Li, PhD

1:30 PM – 2:00 PM
Spotlight Speaker: Garry Gold, MD
Osteoarthritis: Insights from Structural and Molecular MR Imaging

2:00 PM  Paper No. 0211
Correlation of Meniscal T2* with Multiphoton Microscopy and Changes of Articular Cartilage T2 in an Ovine Model of Meniscal Repair
Matthew F Koff, Lisa A Fortier, Scott A Rodeo, Parina Shah, Bethsabe Romero, Rebecca Williams, Sarah Pownder, Hollis G Potter

2:10 PM  Paper No. 0212
Analysis of Cartilage Regeneration in a Rabbit Glenohumeral Joint Model following Microfracture and Autologous Matrix Induced Chondrogenesis using High-field (11.7 Tesla) MRI
Vincent M Wang, Ziyining Yin, Andrew Lee, Geoffrey Van Thiel, Vasili Karas, Kristen E Hussey, Elizabeth Shewman, Richard L Magin, Brian J Cole

2:20 PM  Paper No. 0213
Clinical Ultrashort TE-Enhanced T2* Mapping Shows Acute and Longitudinal Subsurface Changes to Articular Cartilage in Humans After Anterior Cruciate Ligament Injury and Reconstruction
Ashley Williams, Yongxian Qian, Constance R Chu

2:30 PM  Paper No. 0214
The Effects of Proteoglycan Depletion on T1rho and T2 Mapping of Porcine Articular Cartilage
William C Mostertz, Rebecca E Wilusz, Charles E Spritzer, Farshid Guilak, Louis E DeFrate

2:40 PM  Paper No. 0215
In Vivo Comparison of Delayed Gadolinium-Enhanced MRI of Cartilage and Delayed Quantitative CT Arthrography in Imaging of Articular Cartilage
Jukka Hirvasniemi, Katarina Kulmala, Eveliina Lammentausta, Risto Ojala, Petri Lehenkari, Alaaeldin Kamel, Jukka Jurvelin, Juha Töyräs, Miika Nieminen, Simo Saarakkala

2:50 PM  Paper No. 0216
MRI visualization of the cartilage canal vessels in porcine epiphyseal growth cartilage
Mikko J Nissi, Ferenc Toth, Jinjin Zhang, Michael Garwood, Cathy S Carlson, Jutta Ellermann
**Session 37**  
**Osteoarthritis Assessment & Therapy**  
Ballroom C1  
Moderators: Dominik R Haudenschild, PhD and Blaine A Christiansen, PhD

4:00 PM  
**Paper No. 0217**  
Differences in the Visual, Mechanical and Histological Properties of Articular Cartilage in the Normal and Arthritic Knee Joint  
Sally Arno, Christopher Bell, Shane Keogh, Humera Khan, Peter S Walker

4:10 PM  
**Paper No. 0218**  
Cartilage repair using tenascin-C in mice  
Yuriyo Matsui, Masahiro Hasegawa, Shigeto Ikemura, Takahiro lino, Kyoko Imanaka-Yoshida, Toshimichi Yoshida, Akihiro Sudo

4:20 PM  
**Paper No. 0219**  
Weekly intraarticular injections of synovial mesenchymal stem cells delay cartilage degeneration in a rat anterior cruciate ligament transection model  
Nobutake Ozeki, Ichiro Sekiya, Kunikazu Tsuji, Hiroki Katagiri, Makiko Okuno, Yusuke Nakagawa, Tomoyuki Saito, Takeshi Muneta

4:30 PM  
**Paper No. 0220**  
The Effect of Platelet Rich Plasma on Articular Cartilage During the Development of Osteoarthritis in a Anterior Cruciate Ligament Transection Rabbit Model  
Joon Kyu Lee, Sahnghoon Lee, Hee Jung Park, Sun Ae Han, Sun Young Wang, Hyun Jin Min, Sang Cheol Seong, Myung Chul Lee

4:40 PM  
**Paper No. 0221**  
Anti VEGF antibody contributes to better repair of articular cartilage  
Toshihiro Nagai, Masato Sato, Miyuki Kobayashi, Taku Ukai, Joji Mochida

4:50 PM  
**Paper No. 0222**  
Safety and Efficacy of FX005, an Intra-Articular Extended Release p38MAP Kinase Inhibitor, in Patients with Osteoarthritis of the Knee  
Neil Bodick, Christina C Willwerth, Joelle Lufkin, Anjali Kumar, Robert C Blanks, Michael D Clayman

**Session 38**  
**Knee Kinematics and Gait**  
Ballroom C2  
Moderators: Georg N Duda, PhD and Guoan Li, PhD

4:00 PM  
**Paper No. 0223**  
In Vivo Kinematics of the Knee during Weight Bearing High Flexion  
Wei Qi, Ali Hosseini, Jing-Sheng Li, Tsung-Yuan Tsai, Harry E Rubash, Guoan Li

4:10 PM  
**Paper No. 0224**  
Multiple Tracking Patterns Associated with Patellofemoral Instability  
John J Elias, John A Carrino, Archana Saranathan, Loredana M Gusella, Miho J Tanaka, Andrew J Cosgarea

4:20 PM  
**Paper No. 0225**  
In Vivo Posteral Cruciate Ligament Elongation in Running Activity after Anatomic and Non-anatomic Anterior Cruciate Ligament Reconstruction  
Jing Tang, Eric Thorhauer, Karl Bowman, Freddie H Fu, Scott Tashman

4:30 PM  
**Paper No. 0226**  
ACL deficient patients with passive knee joint instability overcompensate during walking  
Heide Boeth, Georg N Duda, Markus O Heller, Rainald M Ehrig, Ralf Droyscher, Tobias Jung, Philippe Moewais, Sven Scheffler, William R Taylor

4:40 PM  
**Paper No. 0227**  
In vivo Measurement of Localized Tibiofemoral Cartilage Strains After Dynamic Activity  
Edward G Sutter, Margaret R Widmyer, Gangadhar M Utturkar, Charles E Spritzer, William E Garrett, Louis E DeFrate

4:50 PM  
**Paper No. 0228**  
Altered Tibiofemoral Joint Contact Mechanics in Patients with Knee Osteoarthritis and Episodic Complaints of Joint Instability  
Carrie A Rainis, Shawn Farrokhi, Scott Tashman, G. Kelley Fitzgerald
### Session 39
**Spine: Disc Biomechanics**  
Ballroom C3  
Moderators: Keita Ito, MD and Michael A Liebschner, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 PM</td>
<td>0229</td>
<td>Site-Specific Proteoglycan Content and In Situ Mechanics of the Intervertebral Disc Correlated with Quantitative T2* Magnetic Resonance Imaging</td>
<td>Arin M Ellingson, Tina M Nagel, David J Nuckley</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>0230</td>
<td>Mechanical Loading Rate Modulates Intervertebral Disc Trans-Endplate Transport</td>
<td>Sarah E Linley, Joshua Peterson, Rosemarie Mastropolo, Timothy Roberts, James Lawrence, Joseph Glennon, Daryl DiRisio, Eric Ledet</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>0231</td>
<td>T2 Values of Human Lumbar Discs: Template-Based Segmentation and Variations with Age, Sex and Level</td>
<td>Won C Bae, Graeme M Bydder, Koichi Masuda</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>0232</td>
<td>Molecular Transportation within Intervertebral Disc Changed with Disc Degradation and Spinal Traction</td>
<td>Ya-Wen Kuo, I-Ting Chuang, Che-Hao Tsui, Yu-Chun Hsu, Pen-hsiu Grace Chao, Jaw-Lin Wang</td>
</tr>
<tr>
<td>4:40 PM</td>
<td>0233</td>
<td>The Shear Modulus of the Nucleus Pulposus Measured Using MR Elastography As a Biomarker for Early Degeneration of the Intervertebral Disc</td>
<td>Daniel H Cortes, Jeremy F Magland, Alexander C Wright, Dawn M Elliott</td>
</tr>
<tr>
<td>4:50 PM</td>
<td>0234</td>
<td>Enzymatic denaturation is more likely to degrade disc viscoelastic properties than fatigue loadings - An in vitro porcine model using dynamic mechanical analysis (DMA)</td>
<td>Yu-Chun Hsu, Chih-Wei Chen, Ya-Wen Kuo, Mon-Chieh Wang, Shih-Youeng Chuang, Weng-Pin Chen, Jaw-Lin Wang</td>
</tr>
</tbody>
</table>

### Session 40
**Arthroplasty Hip**  
Room 214  
Moderators: Robert S Hastings, MS and Henrik Malchau, MD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 PM</td>
<td>0235</td>
<td>Risk of Damage During Hip Dislocation: Surface Roughness on Dislocated Versus Non-Dislocated Femoral Heads Retrieved after Total Hip Replacement</td>
<td>Ryan Freed, Kevin Keith, Andrew Hodge, Melinda K Harman</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>0236</td>
<td>Effect of Femoral Stem Material and Taper Geometry on Strength of Head-Stem Taper Junctions</td>
<td>Laura Scholl, Lokesh K Raja, Gregg Schmidig, Christopher Heffernan, Mayur Thakore, Jim Nevelos</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>0237</td>
<td>Multi-center Analysis of Clinical Factors Affecting Polyethylene Wear in 945 Total Hip Arthroplasties</td>
<td>Christopher J Barr, Charles Bragdon, John M Martell, Young-Min Kwon, Henrik Malchau</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>0238</td>
<td>Patterns of change in pelvic tilt after total hip arthroplasty – a three-dimensional analysis</td>
<td>Haruka Suzuki, Yutaka Inaba, Naomi Kobayashi, Yohei Yukizawa, Hyonmin Choe, Hiroyuki Ike, Masamitsu Tomioka, Tomoyuki Saito</td>
</tr>
<tr>
<td>4:40 PM</td>
<td>0239</td>
<td>The Influence of Stem Length on Rotational and Tilting Stability after Line-to-Line Cementation</td>
<td>Moussa Hamadouche, Caroline Scemama, Luc Kerboull</td>
</tr>
<tr>
<td>4:50 PM</td>
<td>0240</td>
<td>In vivo hip joint loading during post-operative physiotherapeutic exercises</td>
<td>Verena Schwachmeyer, Philipp Damm, Georg Bergmann</td>
</tr>
</tbody>
</table>
Session 41
Tendon and Ligament: Mechanics
Room 217
Moderators: Zong-Ping Luo, PhD and Clare F Yellowley, PhD

4:00 PM  Paper No. 0241
The actin cytoskeleton may be a regulator of developing tendon mechanical properties
Nathan R Schiele, Joseph E Marturano, Cassandra B Saitow, Jacqueline E Judith, Catherine K Kuo

4:10 PM  Paper No. 0242
Location-Specific Changes in Flexor Carpi Ulnaris Tendon Mechanical Properties in the Absence of Biglycan or Decorin
Mark R Buckley, George R Huffman, Renato V Iozzo, David E Birk, Louis J Soslowsky

4:20 PM  Paper No. 0243
Effect of High Fat Diet-Induced Obesity and Type 2 Diabetes on Tendon Repair
Michael A David, Jason A Inzana, Khyrie H Jones, Michael J Zuscik, Hani A Awad, Robert A Mooney

4:30 PM  Paper No. 0244
 Accumulation of Tendon Matrix Injury During Fatigue and the Associated Biologic Response
Stephen J Ros, Nelly Andarawis-Puri, Evan L Flatow

4:40 PM  Paper No. 0245
Microstructural Mechanical Models of Fiber-Matrix Interactions in Soft Tissues: Comparison of Parallel and Coupled Approaches
Spencer P Lake, Lijuan Zhang, Victor K Lai, Catalin P Picu, Mark S Shephard, Victor H Barocas

4:50 PM  Paper No. 0246
Controlled Treadmill Exercise Removes Chondroid Deposits and Restores Tensile Properties in a New Murine Tendinopathy Model
Rebecca Bell, Jun Li, Daniel Gorski, Anne Bartels, Elizabeth Shewman, Bernard Bach, Brian J Cole, Robert Wysocki, Katalin Mikecz, John Sandy, Anna Plaas, Vincent M Wang
### Session 42
**MMP Regulation in Articular Chondrocytes**
Ballroom C1  
Moderators: Qian Chen, PhD and Mary B Goldring, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:15 PM</td>
<td>0247</td>
<td>CDK9 inhibition protects cartilage from the catabolic effects of pro-inflammatory cytokines</td>
<td>Jasper Yik, Ratna Kumari, Blaine Christiansen, Dominik R Haudenschild</td>
</tr>
<tr>
<td>5:25 PM</td>
<td>0248</td>
<td>MicroRNA-23b suppresses matrix metalloproteinase-13 expression via post-transcriptional silencing of both Hypoxia-inducible factor-2α and runt-related transcription factor 2 expressions in osteoarthritic chondrocytes</td>
<td>Shinya Ishizuka, Tadahiro Sakai, Hideki Hiraiwa, Takashi Hamada, Motoshiige Nakashima, Naoki Ishiguro</td>
</tr>
<tr>
<td>5:35 PM</td>
<td>0249</td>
<td>Nuclear Protein-1 (Nupr1) Regulates Matrix Metalloproteinase-13 Expression In Human Articular Chondrocytes</td>
<td>Raghunatha Yammani, Richard F Loeser</td>
</tr>
<tr>
<td>5:45 PM</td>
<td>0250</td>
<td>Cartilage Catabolism Induced by Metalloproteinases or Inflammatory Cytokines are Inhibited by Alpha-2-Macroglobulin (A2M) and Platelet-rich Plasma - Autologous Protease Inhibitor Concentrate (PRP-APIC)</td>
<td>Vanessa G Cuellar, Shawn R Browning, Gaetano Scuderi, Amiee Weiser, Carolina Carballo, Raymond Golish, Lewis Hanna</td>
</tr>
<tr>
<td>5:55 PM</td>
<td>0251</td>
<td>Knee Loading Reduces MMP13 Activity in the Articular Cartilage of Osteoarthritic Mice</td>
<td>Liming Zhao, Kazunori Hamamura, Joon W Shim, Chien-Chi Lin, Hui Bin Sun, Hiroki Yokota</td>
</tr>
</tbody>
</table>

### Session 43
**Knee Biomechanics and Navigation**
Ballroom C2  
Moderators: Carl W Imhauser, PhD and Scott L Delp, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:15 PM</td>
<td>0253</td>
<td>Development of Surgical Algorithms for a Ligament Balancing Load-Sensing Device in TKA</td>
<td>Christopher Bell, Patrick Meere, Peter S Walker</td>
</tr>
<tr>
<td>5:25 PM</td>
<td>0254</td>
<td>Computationally Efficient Forward-Dynamic Musculoskeletal Modeling in a Finite Element Framework</td>
<td>Clare K Fitzpatrick, Kevin Shelburne, Blake Dunbar, Paul Rullkoetter</td>
</tr>
<tr>
<td>5:35 PM</td>
<td>0255</td>
<td>Application of In Vivo Measured Forces Replicates In Vivo Kinematics in a Robotic Simulator</td>
<td>Fred Wentorf, Marc Bandi, Iris Sauerberg, Darryl D’Lima, Amit M Mane</td>
</tr>
<tr>
<td>5:45 PM</td>
<td>0256</td>
<td>Variability in the Distal Femoral Mechanical-Anatomic Angle in Patients Undergoing Total Knee Arthroplasty</td>
<td>Denis Nam, Patrick Maher, Alex L Robles, Alexander S McLawhorn, David J Mayman</td>
</tr>
<tr>
<td>5:55 PM</td>
<td>0257</td>
<td>Patient Specific Instrumentation versus Computer Navigated, Adjustable Cutting Blocks in Total Knee Arthroplasty</td>
<td>Denis Nam, Patrick Maher, Brian J Rebolledo, Alexander S McLawhorn, Andrew D Pearle</td>
</tr>
<tr>
<td>6:05 PM</td>
<td>0258</td>
<td>Changes in the Functional Flexion Axis of the Knee Pre to Post-Implant in Total Knee Arthroplasty Using a Navigation System</td>
<td>David A Wilson, Janie L Astephen Wilson, Michael J Dunbar</td>
</tr>
</tbody>
</table>
Session 44
Spine: Disc Biology
Ballroom C3
Moderators: Makarand V Risbud, PhD and Fackson Mwale, PhD

5:15 PM  Paper No. 0259
In Vivo Effects of Exogenous Crosslinking on the Functional Integrity of Injured Porcine Intervertebral Discs
Shih-Youeng Chuang, Hsiu-Jen Lin, Leou-Chyr Lin, Weng-Pin Chen

5:25 PM  Paper No. 0260
Evaluation of the Regenerative Potential of Link-N in Degenerated Human Intervertebral Discs
Rahul Gawri, John Antoniou, Bashar AlKhatib, Jean Ouellet, Thomas Steffen, Peter Roughley, Lisbet Haglund, Fackson Mwale

5:35 PM  Paper No. 0261
Fate of Notochordal Descendent Cells in the aged and degenerated Intervertebral Disc
To Kam Lam, Tiffany Y K Au, Sarah Wynn, Danny Chan, Kathryn S E Cheah, Victor Y Leung, Kenneth Cheung

5:45 PM  Paper No. 0262
Human annulus cells regulate PAPP-A and IGFBP-4 expression, and thereby insulin-like growth factor bioavailability, in response to proinflammatory cytokine exposure in vitro
Helen E Gruber, Gretchen L Hoelscher, Jane A Ingram, Edward N Hanley

5:55 PM  Paper No. 0263
Inflammation Induces Irreversible Physical and Biomechanical Changes on Single Nucleus Pulposus Cells
Robert Maidhof, Timothy Jacobsen, Nadeen Chahine

6:05 PM  Paper No. 0264
Loss of Progranulin Growth Factor Deteriorates Intervertebral Disc Degeneration in Aging Mice
Yunpeng Zhao, Qingyin Tian, Jason M Cuellar, Brendon Richbourgh, Shuai Zhao, Chuanju Liu

Session 45
Polyethylene Wear
Room 217
Moderators: John M Martell, MD and Jim Nevelos, PhD

5:15 PM  Paper No. 0265
In vivo friction in total hip replacement during walking
Philipp Damm, Alwina Bender, Friedmar Graichen, Georg Bergmann

5:25 PM  Paper No. 0266
Edge loading in metal-on-polyethylene modular total hip replacement: effect of cup angles and microseparation
Xijin Hua, Zhongmin Jin, Ruth Wilcox, John Fisher

5:35 PM  Paper No. 0267
The Effect of High Crystallinity on Tensile Properties of Vitamin E stabilized Irradiated Polyethylene
Christopher E Fan, Jeffrey Halperin, Anuj Bellare

5:45 PM  Paper No. 0268
Multicenter RSA evaluation of vitamin E doped highly cross-linked polyethylene liners and acetabular cup stability
Nanna H Sillesen, Meridith E Greene, Audrey K Nebergall, Poul T Nielsen, Mogens B Laursen, Anders Troelsen, Henrik Malchau

5:55 PM  Paper No. 0269
A New Technique for Surface Cross-linked UHMWPE by Diffusion of Peroxides
Rizwan Gul, Ebru Oral, Orhun K Muratoglu

6:05 PM  Paper No. 0270
Comparison of the In Vivo Performance of Highly Cross-linked Ultra High Molecular Weight Polyethylene Materials in the Hip and Knee
Barbara H Currier, John H Currier, Evan M Carlson, John P Collier, Douglas W Van Citters
MONDAY, JANUARY 28, 2013   5:15 PM – 6:15 PM

Session 46
Tendon/Ligament: Cell Biology
Room 214
Moderators: Mary Barbe, MD and Daisuke Sakai, MD, PhD

5:15 PM   Paper No. 0271
Knocking Out Hedgehog Signaling Impairs Enthesis Formation in Adult Murine Patellar Tendon
Andrew Breidenbach, Chia-Feng Liu, Lindsey Aschbacher-Smith, Chris Wylie, Jason Shearn, David Butler

5:25 PM   Paper No. 0272
Enthesis fibrocartilage cells are derived from a unique population of Hedgehog-responsive cells
Andrea G Schwartz, Fanxin Long, Stavros Thomopoulos

5:35 PM   Paper No. 0273
The extent of degeneration of cruciate ligament is associated with chondrogenic differentiation in patients with osteoarthritis of the knee
Ken Kumagai, Keiko Sakai, Yoshihiro Kusayama, Yasushi Akamatsu, Tomoyuki Saito, Takao Sakai

5:45 PM   Paper No. 0274
Lysyl Oxidase-Mediated Collagen Crosslinking in Developing Embryonic Tendon
Joseph E Marturano, Joanna Xylas, Irene Georgakoudi, Catherine K Kuo

5:55 PM   Paper No. 0275
Tenomodulin Associates with Chromatin at Mitosis in Tenocytes and HeLa Cells
Albert J Banes, Jie Qi, Jakub Dmochowski, Ashley Banes, Wesley Norman, Jeeho Kim, Don Bynum, Megan Patterson, Alex Creighton

6:05 PM   Paper No. 0276
Functionally replicated bioimprint scaffold to support tenocytic differentiation of mesenchymal stem cells
Kelvin Yeung, Wingyin Tong, Wei Shen, Connie W Yeung, Ying Zhao, Shukhan Cheng, Paul K Chu, Godfrey C Chan, Danny Chan, Kenneth Cheung, Yunwah Lam
### Daily Meeting Highlights

**TUESDAY, JANUARY 29, 2013**

<table>
<thead>
<tr>
<th>Time</th>
<th>Ballroom C1</th>
<th>Ballroom C2</th>
<th>Ballroom C3</th>
<th>Room 217</th>
<th>Room 214</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM - 4:00 PM</td>
<td>Registration Open</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00 AM - 8:00 PM</td>
<td>Networking Breakfast - Next Steps in Hall C - (Registration Required)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00 AM - 9:30 AM</td>
<td>Workshop 10</td>
<td>Workshop 11</td>
<td>Workshop 12</td>
<td>Workshop 13</td>
<td>Professional Advancement Series (PAS) III</td>
</tr>
<tr>
<td></td>
<td>Organizers: Ebru Oral, PhD and Douglas W Van Citters, PhD</td>
<td>Organizers: Yang Xia and Adele Boskey</td>
<td>Organizer: Joel J Gagnier</td>
<td>Organized by the ORS New Investigator Mentoring Committee</td>
<td></td>
</tr>
<tr>
<td>9:30 AM - 10:30 AM</td>
<td>View Posters / Coffee Break (Authors available at posters)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30 AM - 11:30 AM</td>
<td>Session 47</td>
<td>Session 48</td>
<td>Session 49</td>
<td>Session 50</td>
<td>Session 51</td>
</tr>
<tr>
<td></td>
<td>Regulation of Chondrocyte Hypertrophy</td>
<td>Osteochondral Repair</td>
<td>Spine Biomechanics</td>
<td>Implant Fixation and Wear</td>
<td>Tendon and Ligament: Repair and Tissue Engineering</td>
</tr>
<tr>
<td>11:45 AM - 12:45 PM</td>
<td>Session 52</td>
<td>Session 53</td>
<td>Session 54</td>
<td>Session 55</td>
<td>Session 56</td>
</tr>
<tr>
<td></td>
<td>Cartilage Mechanics, Mechanobiology and Assessment</td>
<td>Fracture Therapies</td>
<td>Spine: Disc Repair</td>
<td>Infection</td>
<td>Tendon and Ligament: Progenitors and Stem Cells</td>
</tr>
<tr>
<td>12:45 PM - 1:45 PM</td>
<td>View Posters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:55 PM - 1:45 PM</td>
<td>Poster Walking Tours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:45 PM - 2:45 PM</td>
<td>Session 57</td>
<td>Session 58</td>
<td>Session 59</td>
<td>Session 60</td>
<td>Session 61</td>
</tr>
<tr>
<td></td>
<td>Stem Cell Chondrogenesis</td>
<td>Future Perspectives on Fracture Healing</td>
<td>Peripheral Nerve and Spine Cord Injuries</td>
<td>Foot and Ankle</td>
<td>Meniscus: Injury and Repair</td>
</tr>
<tr>
<td>2:45 PM - 3:30 PM</td>
<td>View Posters / Coffee Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:30 PM - 4:30 PM</td>
<td>Session 62</td>
<td>Session 63</td>
<td>Session 64</td>
<td>Session 65</td>
<td>Session 66</td>
</tr>
<tr>
<td></td>
<td>Cartilage Synthesis Development and Homeostasis</td>
<td>Fractures: From Risk Prediction to Treatment</td>
<td>Biomaterials - Inert</td>
<td>Hand and Wrist</td>
<td>Cartilage Lubrication</td>
</tr>
<tr>
<td>4:30 PM - 5:00 PM</td>
<td>Poster Session 2 Removal of Posters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Ballroom C1
WORKSHOP #10
ANTIOXIDANT STABILIZATION OF HIGHLY CROSS-LINKED UHMWPE

Organizers:

Ebru Oral, PhD, Massachusetts General Hospital

Douglas W Van Citters, PhD, Dartmouth College

Patient demands for high-performance, long-lasting total joint implants have driven rapid change and innovation in bearing materials. Highly cross-linked UHMWPEs have decreased wear and osteolysis in the last decade, significantly improving clinical outcomes. However, the increase in the number of arthroplasty operations especially with younger patient populations, and the severely adverse reactions associated with some metal-on-metal joint implants have increased the functional demands on UHMWPE bearings. A recent widespread innovation to develop joint implants with improved function and longevity is the incorporation of antioxidants into cross-linked ultrahigh molecular weight polyethylene (UHMWPE). The purpose of this workshop is to provide all stakeholders with a balanced, state-of-the-art review of the motivations behind using antioxidants, the antioxidant choices available for orthopaedic polymers, the methods by which these might be incorporated into polymers, the biological effects of adding a new agent to the joint space and the clinical outcome data for currently used antioxidant-stabilized implants. The workshop will conclude with future directions with specific focus on how antioxidant stabilized cross-linked UHMWPEs may address unsolved problems in joint arthroplasty. The target audience is orthopaedic researchers, especially those working on the development of bearing surfaces, orthopaedic surgeons looking for more in-depth information on the newest clinical products offered to them and industrial representatives.

The Biological Impact of Antioxidant-Containing Bearing Materials
Joanne Tipper, PhD, University of Leeds

The Formulation and Properties of Vitamin E-Stabilized, Highly Cross-Linked UHMWPEs
Orhun K Muratoglu, PhD, Massachusetts General Hospital

The Development of Antioxidant-Stabilized Cross-Linked UHMWPE for the Clinic
Venkat Narayan, PhD, DePuy Synthes, a company of Johnson & Johnson

Ballroom C2
NEW HORIZON WORKSHOP #11
FOURIER-TRANSFORM INFRARED IMAGING OF ARTICULAR CARTILAGE AND BONE

Organizers:

Yang Xia, PhD, Oakland University

Adele K Boskey, PhD, Weill Medical College and Hospital for Special Surgery

Fourier Transform Infrared Imaging (FTIRI) is a spectroscopic imaging technique that has fine resolutions in both spatial and spectral dimensions. In the spatial dimension, the pixel size in FTIRI can be as fine as 5-10µm in a standard configuration and 1-2µm when an attenuated-total-reflection device is used. In the spectral dimension, FTIRI in mid infrared region can differentiate many chemical groups that have significant importance in cartilage and bone tissues. The combined ability in both spatial and spectral information makes FTIRI uniquely suited in musculoskeletal research, since the orientation as well as concentration of several major molecules in cartilage and bone can be quantified. This workshop aims to update the recent progress and breakthroughs in FTIRI analysis since the first ORS workshop on this topic in 2000.

Structures of Articular Cartilage by Amide Anisotropy
Yang Xia, PhD, Oakland University

Quantification of Molecular Concentrations in MSK Tissue
Jukka Jurvelin, University of Eastern Finland

Structural Image of Bone
Adele L Boskey, PhD, Weill Medical College and Hospital for Special Surgery
Ballroom C3
WORKSHOP #12
ADVANCED DESIGN, IMPLEMENTATION, STATISTICAL ANALYSIS AND REPORTING ISSUES OF CLINICAL TRIALS IN ORTHOPAEDICS

Organizer: Joel J Gagnier, PhD, University of Michigan

This workshop will provide attendees with advanced ideas surrounding how to design, implement, analyze and report a clinical trial in orthopaedic surgery. On completion of this workshop, attendees will have an excellent understanding of clinical trials and will have developed a concrete idea of how to proceed with their plans for clinical trials. We expect significant interaction amongst the speakers and attendees. This workshop is a follow-up to last year’s workshop in San Francisco. This year we will cover slightly more advanced material.

Introduction to Clinical Trials, Randomization and Blinding, Recruitment, Assessing and Reporting Adverse Events, Participant Adherence, Reporting of Clinical Trials. Each of these sections will be integrated with those presented by Dr. Beyene and Dr. Bhandari.

Joel J Gagnier, PhD, McMaster University

Sample Size Calculations and Power, Baseline Assessment, Data Collection and Quality Control, Monitoring Response Variables and Data Analysis

Joseph Beyene, PhD, McMaster University

Ethical Issues, Study Population, Basic Study Design, Trial Completion, Systematic Review and Meta

Mohit Bhandari, MD, McMaster University

Room 214
WORKSHOP #13
BIOLOGY AND BIOMECHANICS OF LIGAMENT AND TENDON DEVELOPMENT

Organizers:

Catherine K Kuo, PhD, Tufts University
David L Butler, PhD, University of Cincinnati

Adult ligaments and tendons are vulnerable to injury due to large forces experienced during daily living activities. Traditional methods to repair and reconstruct these damaged structures have not been uniformly successful. Tissue engineering strategies to repair these structures are promising but normal tendon tissue and integration sites with adjacent tissue remain difficult to regenerate. Understanding the biology of the developing tendon, ligament and insertion site, and the role of biomechanical forces during embryonic and early post-natal development could lead to valuable strategies for improving tissue engineering and ultimately soft tissue repair in the adult. This workshop will examine how ligaments and tendons naturally form and discuss the role of genetics and biomechanical forces during embryonic development and maturation of the tissue engineered construct. The workshop is endorsed by both the US National Committee on Biomechanics and the International Symposium on Ligaments and Tendons.

Genetic and Molecular Regulation of Tendon Induction and Differentiation
Ronen Schweitzer, PhD, Oregon Health and Science University, Shriners Hospital

Skeleton Development as Part of the Musculoskeletal System
Elazar Zelzer, PhD, Weizmann Institute of Science

Embryonic Cues to Direct Tendon and Ligament Tissue Engineering and Regeneration
Catherine K Kuo, PhD, Tufts University
PROFESSIONAL ADVANCEMENT SERIES III
TUESDAY, JANUARY 29, 2013  8:00 AM – 9:30 AM

Room 217
PROFESSIONAL ADVANCEMENT SERIES III

STARTUP TO SUCCESS: TIPS TO NAVIGATE COMMON GRANT WRITING DILEMMAS FOR EARLY AND MID-CAREER INVESTIGATORS

Organized by the ORS New Investigator Mentoring Committee

Learn ways to clearly communicate and market the ideas within your grant proposal while hearing advice from well-funded ORS investigators to help you navigate common grant writing dilemmas such as:

- Leveraging a new investigator or mid-career startup package for successful R01 funding.
- Timing your two shots at the NIH goal: walking the line between an underdeveloped proposal and ‘perfection paralysis’.
- Deciding whether to revise and resubmit an unfunded proposal or to start a new one.
- Anticipating and preparing for your renewal from the beginning of your R01.

Speakers:

- Melissa Kacena, PhD, Indiana University
- Dawn Elliott, PhD, University of Delaware
- Rick Lieber, PhD, University of California and VA-San Diego
- Sharmila Majumdar, PhD, University of California-San Francisco
## Session 47  
**Regulation of Chondrocyte Hypertrophy**  
**Ballroom C1**  
**Moderators:** Hiroshi Kawaguchi, MD and Audrey McAlinden, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30 AM</td>
<td>0277</td>
<td>ESET histone methyltransferase is essential to the control of chondrocyte hypertrophy and epiphyseal plate</td>
<td>Liu Yang, Jacques Hacquebord, Junhui Zou, David P Patterson, Andrew C Ghatan, Qi Mei, Anna Z Kiatkowska, Kevin A Lawson, Howard A Chansky</td>
</tr>
<tr>
<td>10:40 AM</td>
<td>0278</td>
<td>Candidate Factors Interacting with Hypertrophic Chondrocyte-specific Col10a1 Cis-enhancer</td>
<td>Junxia Gu, Yaqjuan Lu, Feifei Li, Jeffrey Borgia, QiPing Zheng</td>
</tr>
<tr>
<td>10:50 AM</td>
<td>0279</td>
<td>Overexpression of PTHrP related miRNA in Human Bone Marrow Derived Stem Cells Enhances Chondrogenesis and Inhibits Hypertrophy</td>
<td>Gun-II Im, Jong-Min Lee, Jun-Ho Joe, Jung-Min Ahn</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>0280</td>
<td>TGF-β signaling is highly active to induce SnoN in ectopically hypertrophying chondrocyte in degenerating osteoarthritis cartilage -Evaluating SnoN as molecular target for regulating progression of chondrocyte maturation-</td>
<td>Ichiro Kawamura, Shingo Maeda, Katsuyuki Imamura, Masahiro Yokouchi, Yasuhiro Ishidou, Setsuro Komiya</td>
</tr>
<tr>
<td>11:10 AM</td>
<td>0281</td>
<td>Low Oxygen Promotes Redifferentiation and Suppresses Hypertrophy in Both Healthy and Osteoarthritic Chondrocytes</td>
<td>Brandon Markway, Holly Cho, Brian Johnstone</td>
</tr>
<tr>
<td>11:20 AM</td>
<td>0282</td>
<td>Decrease of HDAC4 is associated with OA cartilage degeneration by up-regulating OA related genes</td>
<td>Changqi Sun, Yuzhi Wei, Xiaochun Wei, Caroline Huang, Ge Zhang, Richard Tereck, Lei Wei</td>
</tr>
</tbody>
</table>

---

## Session 48  
**Osteochondral Repair**  
**Ballroom C2**  
**Moderators:** Donald D Anderson, PHD and Clark T Hung, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30 AM</td>
<td>0283</td>
<td>A Novel Aragonite-Hyaluronate Bi-Phasic Implant for Articular Osteochondral Regeneration</td>
<td>Elizaveta Kon, Dror Robinson, Andrew S Levy, Kenneth R Zaslav, Vincenzo Condello, Giuseppe Filardo, Jonathan Shani, Nir Altschuler</td>
</tr>
<tr>
<td>10:40 AM</td>
<td>0284</td>
<td>Polyvinyl alcohol-polyacrylic acid (PVA-PAA) hydrogels for osteochondral defect repair</td>
<td>David Bichara, Hatice Bodugoz-Senturk, Doris Ling, Erik Malchau, Charles Bragdon, Orhun K Muratoglu</td>
</tr>
<tr>
<td>10:50 AM</td>
<td>0285</td>
<td>Matrix-induced autologous chondrocyte implant (MACI™) improves healing of full thickness cartilage defects at one year in the equine model</td>
<td>Alan J Nixon, Holly D Sparks, Whitney Linnenkohl, Laila Begum, Sean McDonough, James Hart, Nance Moran, Gloria Matthews</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>0286</td>
<td>Novel Cross-linked Chitosan Hydrogels for Interfacial Bonding of Osteochondral Transplants</td>
<td>Jamila Gittens, Stephanie Grenier, Amgad Haleem, Niall Smyth, John Kennedy, Peter Torzilli</td>
</tr>
<tr>
<td>11:10 AM</td>
<td>0287</td>
<td>Mitigating Mechanical Damage to Osteochondral Allografts During Implantation</td>
<td>Ferris M Pfeiffer, Aaron M Stoker, James L Cook, Brenda L Kick</td>
</tr>
</tbody>
</table>
Session 49
Spine Biomechanics
Ballroom C3
Moderators: Eric Ledet, PhD and Kyle D Allen, PhD

10:30 AM  Paper No. 0289
Endplate Deflection is a Defining Feature of Vertebral Fracture and is Associated with Properties of the Underlying Trabecular Bone
Timothy M Jackman, Amira I Hussein, Alexander M Adams, Kamil K Makhnejia, Elise F Morgan

10:40 AM  Paper No. 0290
Damage Accumulation Location in the Lumbar Intervertebral Disc under Cyclic Compression and Flexion Shifts from Inner Annulus Lamellae to Peripheral Annulus as the Disc Degenerates
Muhammad Qasim, Raghu N Natarajan, Gunnar Andersson

10:50 AM  Paper No. 0291
Development and aging of the osteochondral interface within the human vertebral endplate
Rachel C Paietta, Evalina Burger, Vikas Patel, Kirsten Kinneberg, Virginia Ferguson

11:00 AM  Paper No. 0292
Increased Variability of Bone Tissue Mineral Density Resulting from Estrogen Deficiency Influences Creep Behavior in a Rat Vertebral Body
Do-Gyoon Kim, Anand Navalgund, BoonChing Tee, Garrett Noble, Richard T Hart, Hye Ri Lee

11:10 AM  Paper No. 0293
Vertebral Growth Reductions after Spinal Hemiepiphysiodesis as Determined by Histomorphometry Are Lower than Predicted by Finite Element Model with Linear Stress-Growth Relationship
Donita Bylski-Austrow, Bharathwaj Kumar, Eric J Wall

11:20 AM  Paper No. 0294
Capturing Three-Dimensional In Vivo Lumbar Inter-Vertebral Joint Kinematics and Disc Deformation Using Dynamic Stereoradiography: A Feasibility Study
Ameet K Aiyangar, Liying Zheng, William J Anderst, Xudong Zhang

Session 50
Implant Fixation and Wear
Room 217
Moderators: Mathias P Bostrom, MD and Philip C Noble, PhD

10:30 AM  Paper No. 0295
The Combined Effects of iPTH and Mechanical Loading on Periprosthetic Cancellous Bone
Matthew J Grosso, Hayden-William Courtland, Xu Yang, James Sutherland, Anna Fahlgren, Patrick F Ross, Marjolein van der Meulen, Mathias Bostrom

10:40 AM  Paper No. 0296
Simulating Fluid-Flow Induced Trabecular Bone Resorption in Micro-interlocked Regions of the Bone-implant Interface
Kenneth Mann, Mark Miller

10:50 AM  Paper No. 0297
Computational Modeling of Implant Fixation Strength
Curtis M Goreham-Voss, Joergen Baas, Pascal Swider, Joan E Bechtold

11:00 AM  Paper No. 0298
Hip Simulator Wear Testing of Modular Diffusion Hardened Oxidized Zirconium Couples
Amit Parikh, Patrick Hill, Vivek Pawar, Jeff Sprague

11:10 AM  Paper No. 0299
The relative effects of two and three-body abrasive conditions on ceramic-on-ceramic hip wear and squeaking
Anthony P Sanders, Ira B Tibbitts, Rebecca M Brannon

11:20 AM  Paper No. 0300
The Importance of Synovial Fluid Proteins in the Lubrication of Artificial Hips
Connor Myant, Michelle Burgett, Ian C Clarke, Philippa Cann
Session 51
Tendon and Ligament: Repair and Tissue Engineering
Room 214
Moderators: Hiroyuki Enomoto, MD, PhD and Ronen Schweitzer, PhD

10:30 AM  Paper No. 0301
Use of a Bioactive Scaffold to Stimulate ACL Healing also Minimizes Post-traumatic Osteoarthritis After Surgery
Martha M Murray, Braden C Fleming

10:40 AM  Paper No. 0302
Resurfacing with Hyaluronic Acid and Lubricin for Flexor Tendon Reconstruction
Chunfeng Zhao, Takahiro Hashimoto, Ramona L Kirk, Andrew R Thoreson, Gregory D Jay, Steven L Moran, Kai-Nan An, Peter C Amadio

10:50 AM  Paper No. 0303
Bioprinted rhNoggin Spatially Inhibits Spontaneous Heterotopic Ossification Following Mouse Achilles Partial Injury
Siddhesh R Angle, Lee E Weiss, Phil G Campbell

11:00 AM  Paper No. 304
The Effect of Scleraxis-Transduced Tendon-derived Stem Cells (TDSCs) on Tendon Repair in a Rat Model
Chunlai Tan, Pauline Po Yee Lui, Yuk Wa Lee, On Tik Wong, Yin Mei Wong, Qi Tan, Kai Ming Chan

11:10 AM  Paper No. 0305
Ligament regeneration using an absorbable stent-shaped poly-L-lactic acid scaffold in a rabbit model
Hanako Nishimoto, Takeshi Kokubu, Yutaka Mifune, Atsuyuki Inui, Hiroyuki Fujioka, Chiaki Hiwa, Kumiko Yokota, Masahiro Kurosaka

11:20 AM  Paper No. 0306
Deficiency of CITED2 Alters Tendon Stem/Progenitor Cell Fate Options Between Senescence and Apoptosis
Lili Xu, Daniel J Leong, Robert J Majeska, Mitchell B Schaffler, Konrad Gruson, Evan L Flatow, Hui B Sun
Session 52
Cartilage Mechanics, Mechanobiology and Assessment
Ballroom C1
Moderators: Thomas M Quinn, PhD and Gerard A Ateshian, PhD

11:45 AM  Paper No. 0307
Depth-Dependent Compressive Strain of Articular
Cartilage during Unconfined Impact Compression
Fatemeh Malekipour, Peter Vee Sin Lee, Denny Oetomo

11:55 AM  Paper No. 0308
A High Throughput Mechanical Model to Study
Injurious Compression of Engineered Cartilage
Bhavana Mohanraj, Cheri Hou, Megan M Schmidt, Brian D Cosgrove, Brian L Mauck, George R Dodge

12:05 PM  Paper No. 0309
Depth-dependent self-stiffening, energy dissipation and poroelastic properties of normal human cartilage via broad-spectrum dynamic nanoindentation
Hadi Tavakoli Nia, Yang Li, Yang Wang, Iman Bozchalooi, Susanna G Chubinskaya, Kamal Yousef-Toumi, Christine Ortiz, Alan J Grodzinsky

12:15 PM  Paper No. 0310
Loading has Significant Influence on Glycosaminoglycan Contents of the Cartilage Sub-tissue Zones using µMRI at 17.6 µm Resolution
Ji Hyun Lee, Farid Badar, John Matyas, Yang Xia

12:25 PM  Paper No. 0311
Dynamic Mechanical Compression of Articular Cartilage Does Not Activate Latent TGF-β
Michael B Albro, Robert Nims, Alexander D Cigan, Jay J Shim, Yuen B Chen, Clark T Hung, Gerard A Ateshian

12:35 PM  Paper No. 0312
Deformation thresholds for chondrocyte death and the protective effect of the pericellular matrix
Stefan de Vries, Mark C van Turnhout, Cees Oomens, Keita Ito, Corrinus C van Donkelaar

Session 53
Fracture Therapies
Ballroom C2
Moderators: Magnus P Tagil, PhD and Elise F Morgan, PhD

11:45 AM  Paper No. 0313
Disruption of thrombospondin-2 accelerates ischemic fracture healing
Emily L Miedel, Derek Dopkin, Yan-Yiu Yu, Jaimo Ahn, Theodore Miclau, Ralph Marcucio, Kurt Hankenson

11:55 AM  Paper No. 0314
Thrombopoietin: A Novel Osteoinductive Agent
Jonathan Harris, Thomas Bemenderfer, Monique Bethel, Alexander Wessel, Jonathan Wilhite, Patrick Millikan, David Burr, Robyn Fuchs, Yinghua Cheng, Tien-Min Chu, Melissa Kacena

12:05 PM  Paper No. 0315
Endothelial Progenitor Cells Increase BMP-2 mRNA Expression in a Rat Bone Segmental Defects
Ru Li, Aaron Nauth, Claire Li, Jane Aubin, Kivanc Atesok, Emil Schemitsch

12:15 PM  Paper No. 0316
Transcutaneous application of CO2 accelerates fracture repair by promoting enchondral ossification in rat
Takaaki Koga, Takahiro Niikura, Sang Yang Lee, Yoshihiro Dogaki, Etsuko Okumachi, Takahiro Waki, Takeshi Ueha, Yoshitada Sakai, Keisuke Oe, Masahiko Miwa, Masahiko Kurosaka

12:25 PM  Paper No. 0317
Systematic Administration of Allogeneic Mesenchymal Stem Cells Promoted Fracture Healing
Shuo Huang, Kai Ming Chan, Gang Li

12:35 PM  Paper No. 0318
Analysis of Reamer Irrigator and Aspirator (RIA) System Aspirate Protein Content
Aaron M Stoker, Brett Crist, Theodore Choma, James L Cook, James Stannard
Session 54
Spine: Disc Repair
Ballroom C3
Moderators: Sibylle Grad, PhD and Nadeen O Chahine, PhD

11:45 AM  Paper No. 0319
Alterations in Mitochondrial Bioenergetics, Mass and Morphology in Cells of the Degenerating Human Annulus
Helen E Gruber, John A Watts, Frank Riley, Mary-Beth Fulkerson, H. J Norton, Edward N Hanley

11:55 AM  Paper No. 0320
The role of fibrosis in intervertebral disc degeneration and regeneration
Victor Y Leung, Darwesh M Aladin, Fengjuan Lv, Vivian Tam, Yi Sun, William W Lu, Ed X Wu, Keith D Luk, Danny Chan, Kenneth M Cheung

12:05 PM  Paper No. 0321
Macromer Concentration Influences Nucleus Pulposus-Like ECM Elaboration and TGF-β Family Gene Expression by hMSCs Encapsulated in Photocrosslinked Carboxymethylcellulose Hydrogels
Michelle Gupta, Steven Nicoll

12:15 PM  Paper No. 0322
Fibrin-Genipin Adhesive Hydrogel for Annular Repair in Large Animal Organ Culture Model: Biomechanics and Biocompatibility
Morakot Likhitpanichkul, Svenja Illien-Junger, Benjamin A Walter, Marcel Dreischarf, Andrew C Hecht, James C Iatridis

12:25 PM  Paper No. 0323
Effects of a Cyclooxygenase-2 Inhibitor in a Novel In-Vitro Model of Extruded Disc Herniation
Bart van Dijk, Esther Potier, Keita Ito

12:35 PM  Paper No. 0324
GDF6 Drives Discogenic Differentiation of Adipose Derived Mesenchymal Stem Cells
Louise E Clarke, Stephen M Richardson, Judith A Hoyland

Session 55
Infection
Room 217
Moderators: Britt Wildemann, PhD and Alexander C McLaren, MD

11:45 AM  Paper No. 0325
Anti-Glucosaminidase Antibodies as a Biomarker of Protective Immunity Against S. aureus in Patients with Orthopaedic Infections

11:55 AM  Paper No. 0326
Anti-biofilm fatty acid effects on osteoblast activity
Jessica A Jennings, Warren O Haggard

12:05 PM  Paper No. 0327
In Situ Forming Antimicrobial Loaded Hydrogels Cover Implant Surfaces and are Not Cytotoxic
Ryan McLemore, Keith Jarbo, Derek Overstreet, Richard Huynh, Brent Vernon, Alexander C McLaren

12:15 PM  Paper No. 0328
Establishment and Characterization of an Open Fracture-Associated Infection using Bioluminescent Staphylococcus aureus
Bingyun Li, Peter Farjo, Therwa Hamza, David McConda, Brock Lindsey, Nina Clovis, Suzanne Smith

12:25 PM  Paper No. 0329
Surface Modification Favors Osteoblast Cells in the Race for Implant Surfaces against Bacterial Cells
Bingyun Li, Bingbing Jiang, Hongshuai Li

12:35 PM  Paper No. 0330
Evaluating the Mechanism of Action of Anti-Glucosaminidase Antibodies as a Passive Vaccine for Methicillin-Resistant Staphylococcus aureus (MRSA) Orthopaedic Infections
Session 56
Tendon and Ligament: Progenitors and Stem Cells
Room 214
Moderators: Hani A Awad, PhD and Catherine K Kuo, PhD

11:45 AM Paper No. 0331
SPIO Labeling Tendon Stem Cells and Tracking Them In Vivo with MR Imaging
Yunfa Yang, Jianying Zhang, Yongxian Qian, Shiwu Dong, He Huang, Fernando Boada, Freddie H Fu, James H Wang

11:55 AM Paper No. 0332
In vivo identity of tendon stem cells and the roles of stem cells in tendon healing
Qi Tan, Yuk Wa Lee, Yin Mei Wong, Pauline Po Yee Lui

12:05 PM Paper No. 0333
Differences in Tendon Constructs Incorporating Peritenon- and Tendon Proper-Derived Stem/Progenitor Cells Suggest Unique Roles in Repair
Michael J Mienaltowski, David E Birk, Sheila M Adams

12:15 PM Paper No. 0334
CITED2 Protects Tendon Stem Progenitor Cells From Oxidative Stress By Upregulating Catalase

12:25 PM Paper No. 0335
The role of ADAMTS5 in regulating TGFb1/BMP7-mediated aggrecan production and turnover in equine bone marrow-derived pluripotent mesenchymal stem cells
Wenfeng Xiao, Daniel J Gorski, John Sandy, Vincent M Wang, Robert Wyzoki, Jorge Galante, Sabrina Brounts, John Kisiday, Anna Plaas

12:35 PM Paper No. 0336
Effect of Angiogenesis on the Regenerative Capacity of ACL-derived CD34+ cells in ACL reconstruction
Koji Takayama, Satoshi Terada, Ying Tang, Bing Wang, Yutaka Mifune, Tomoyuki Matsumoto, Ryosuke Kuroda, Masahiro Kurosaka, Freddie H Fu, Johnny Huard
### Session 57
**Stem Cell Chondrogenesis**
Ballroom C1
Moderators: Robert L Mauck, PhD and James E Dennis, PhD

1:45 PM  **Paper No. 0337**
ADAMT5 ablation promotes TGFβ1/BMP7-induced chondrogenic responses in pluripotent progenitor cells but not in differentiated chondrocytes
Daniel J Gorski, Jun Li, Wenfeng Xiao, John Sandy, Anna Plaas

1:55 PM  **Paper No. 0338**
ECM stiffness primes hMSCs for a specific and synergistic chondroinductive response to TGFβ
Joanna Rys, Jessica Allen, Tamara Alliston

2:05 PM  **Paper No. 0339**
mir-449a regulates the chondrogenesis of human mesenchymal stem cells through direct targeting of LEF-1
Minsung Park, Seulgi Lee, Seungil Paik, Woojin Choi, Sunghwan Kim, Jin Woo Lee

2:15 PM  **Paper No. 340**
MicroRNA-Mediated Rejuvenation of Adult Stem Cells through Young Stem Cell Matrix for Chondrogenesis
Jingting Li, Chenbo Dong, Cerasela Dinu, Ming Pei

2:25 PM  **Paper No. 0341**
Hedgehog Signaling Enhances Human Bone Marrow Derived Stem Cell Migration and Chondrogenesis in Alginate Gels
Juan M Taboas, Jinhua Li

2:35 PM  **Paper No. 0342**
Differing Effects of Interleukin-1α on the Response of Chondrocytes and Synovium Derived Stem Cells in Response to an Applied DC Electric Field
Andrea R Tan, Troy F Langford, Roy K Aaron, J. Chloe Bulinski, Gerard A Ateshian, Clark T Hung

### Session 58
**Future Perspectives on Fracture Healing**
Ballroom C2
Moderators: Per Aspenberg, MD and Louis C Gerstenfeld, PhD

1:45 PM  **Paper No. 0343**
A novel bio-microelectromechanical (BioMEMs) sensor to assess the in vivo fracture healing cascade
Kirk McGilvray, Ross Palmer, Jeremiah T Easley, Emre Unal, Hilmi V Demir, Christian Puttlitz

1:55 PM  **Paper No. 0344**
Contrast-Enhanced Computed Tomography for Quantitative Assessment of Multiple Stages of Fracture Healing
Chantal M de Bakker, Keri A Mroszczyk, Jason Pittman, Gabriel McDonald, Lauren N Hayward, Mark Grinstaff, Louis C Gerstenfeld, Elise F Morgan

2:05 PM  **Paper No. 0345**
Revealing Load-Adaptive Remodelling in Human Bone
Patrik Christen, Keita Ito, Rafaa Ellouz, Stephanie Boutroy, Roland Chapurlat, Bert van Rietbergen

2:15 PM  **Paper No. 346**
Correlation Between Local Mechanical Stimuli and Tissue Differentiation in an Experimental Model of Distraction Osteogenesis
Elise F Morgan, Alessandra Lelli, Gregory J Miller, Isabel P Leong

2:25 PM  **Paper No. 0347**
Caveolin-1 Regulates P2X7 Receptor Signaling in Osteoblasts during Mechanotransduction
Vimal Gangadharan, Anja Nohe, Jeffery Caplan, Kirk Czymmek, Randall Duncan

2:35 PM  **Paper No. 0348**
Computational exploration of loading-induced interstitial fluid flow in the lacunar-canicular network
Stefaan W Verbruggen, Ted J Vaughan, Laoise M McNamara
Session 59  
Peripheral Nerve and Spine Cord Injuries  
Ballroom C3  
Moderators: Sameer A Khaliq, MD and Thomas L Smith, PhD

1:45 PM  Paper No. 0349  
Anti-Apoptosis Effect of microRNA-21 in Control of Cell Death after Contusion Spinal Cord Injury in Rats  
Hongbin Lu, Jianzhong Hu, Jianghu Huang, Lei Zeng

1:55 PM  Paper No. 0350  
Chronic Nerve Compression Injury Alters Neurovascular Blood Flow in an In Vivo Animal Model  
James S Jung, Peter Hahn, Bernard Choi, Ranjan Gupta

2:05 PM  Paper No. 0351  
A Novel Method to Visualize the Three-dimensional Alteration of Microvasculature in a Rat Spinal Cord Injury Model: A Study with Synchrotron Radiation Micro-angiography  
Jianzhong Hu, Yong Cao, Hongbin Lu, Tianding Wu, Dongzhe Li

2:15 PM  Paper No. 352  
Transplantation of ex-vivo expanded human blood derived CD133+ cells for the treatment of spinal cord injury  
Naosuke Kamei, Takayuki Asahara, Mitsuo Ochi

2:25 PM  Paper No. 0353  
Administration of microRNA-210 promotes spinal cord regeneration  
Satoshi Ujigo, Naosuke Kamei, Hadoush Hikmat, Yuki Fujioka, Shigeru Miyaki, Tomoyuki Nakasa, Kazuyoshi Nakahishi, Nobuhiro Tanaka, Toru Sunagawa, Mitsuo Ochi

2:35 PM  Paper No. 0354  
Predicting Recovery after Peripheral Nerve Injury by Mapping Collagen and Myelin Damage with Functionality  
Surabhi Vijayaraghavan, Elaine B Sinclair, Mark Tseng, Damien Laudier, Michael R Hausman

Session 60  
Foot and Ankle  
Room 217  
Moderators: Douglas C Moore and Sheldon Lin, MD

1:45 PM  Paper No. 0355  
Alterations in Stress Distribution Pattern of the Subchondral Bone Plate after Low Tibial Closing Wedge Osteotomy for Asymmetric Ankle Osteoarthritis  
Christian Egloff, Geert Pagenstert, Beat Hintermann, Victor Valderrabano, Magdalena Müller-Gerbl

1:55 PM  Paper No. 0356  
Trabecular Bone Loss Affects Load Sharing in an Ankle Fusion Model Using a Compression-Generating Intramedullary Nail  
Ryan Anderson, Christopher M Yakacki, R. Dana Carpenter

2:05 PM  Paper No. 0357  
Contribution of the Medial Malleolus to Tibiotalar Joint Contact Characteristics  
Craig R Lareau, Jason T Bariteau, David J Paller, Sarath Koruprolu, Christopher W DiGiovanni

2:15 PM  Paper No. 358  
Plantar Loading in a Patient-Matched Computational Model of Adult Flatfoot before and after Surgery  
Edward M Spratley, Erika Matheis, Robert S Adelaar, Curtis W Hayes, Jennifer S Wayne

2:25 PM  Paper No. 0359  
Cadaveric Simulation of Flatfoot and Surgical Corrective Techniques: Evans Versus the Z-osteotomy  
Grant C Roush, Eric C Whittaker, James Meeker, Kelly Apostle, Bruce J Sangeorzan, William R Ledoux

2:35 PM  Paper No. 0360  
Evidence Supporting Isometric Function of Flexor Hallucis Longus and Flexor Digitorum Longus  
Cory Hofman, Nori Okita, Neil A Sharkey
Session 61
Meniscus: Injury and Repair
Room 214
Moderators: Marc E Levenston, PhD and Markus A Winnmer, PhD

1:45 PM  Paper No. 0361
IGF-I Facilitates the Formation of a Lubricin-Rich Surface Layer in Engineered Meniscus Tissue
Edward D Bonnevie, Jennifer L Puetzer, Lawrence J Bonassar

1:55 PM  Paper No. 0362
Porcine massive meniscal defect is regenerated by intraarticular injections of synovial stem cells
Daisuke Hatsushika, Ichiro Sekiya, Tomomasa Nakamura, Masafumi Horie, Hideyuki Koga, Kunikazu Tsuji, Takeshi Muneta

2:05 PM  Paper No. 0363
Anti-angiogenic role of chondromodulin-I in the inner meniscus
Masataka Fujii, Takayuki Furumatsu, Tomoko Kanazawa, Nobuhiro Abe, Shinichi Miyazawa, Yukimasa Okada, Toshifumi Ozaki

2:15 PM  Paper No. 0364
Inflammatory factors associated with injury stimulate early osteoarthritis pathways in the meniscus
Austin V Stone, Richard F Loeser, David L Long, Raghunatha Yammani, Cristin M Ferguson

2:25 PM  Paper No. 0365
Nuclear Remodeling During Fibrochondrogenesis Sensitizes Mesenchymal Stem Cells to Mechanical Stretch
Su-Jin Heo, Tristan P Driscoll, Robert L Mauck, Sohaib K Hashmi

2:35 PM  Paper No. 0366
Synergistic Action of Electrical Stimulation and Endothelial Cells on Meniscus Cell Migration
Xiaoning Yuan, Derya E Arkonac, Alanna B Taubman, Gordana Vunjak-Novakovic
**Session 62**  
**Cartilage Synthesis Development and Homeostasis**  
Ballroom C1  
Moderators: Charles W Archer, PhD and Russel J Fernandes, PhD  

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30 PM</td>
<td>0367</td>
<td>Disruption of Col2a1 Pre-mRNA Alternative Splicing Affects Matrix Assembly and Post-Natal Bone Development</td>
<td>Audrey McAlinden, Soumya Ravindran, Louisa Wirthlin, Geoffrey Traeger, Uwe Hansen, Russel J Fernandes</td>
</tr>
<tr>
<td>3:40 PM</td>
<td>0368</td>
<td>IGF-1 and Dex Reduced Matrix Degradation in IL-1α-Treated Bovine Cartilage and IL-1α ± Injury-treated Human Cartilage</td>
<td>Yang Wang, Yang Li, Paul Kopesky, Susanna G Chubinskaya, Birgit Schoeberl, Alan J Grodzinsky</td>
</tr>
<tr>
<td>3:50 PM</td>
<td>0369</td>
<td>Comparison of Efficacy of Endogenous and Exogenous IGF-I in Stimulating Matrix Production in Mature and Neonatal Chondrocytes</td>
<td>Izath N Aguilar, Stephen Trippel, Lawrence J Bonassar</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>0370</td>
<td>Differential Effects of Bone Morphogenetic Protein 2 and 9 on Chondroprotective Transforming Growth Factor β Signaling</td>
<td>Arjan P van Caam, Esmeralda N Blaney Davidson, Elly Vitters, Ellen van Geffen, Laurie de Kroon, Peter ten Dijke, Wim B van den Berg, Peter M van der Kraan</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>0371</td>
<td>Extracellular Matrix Turnover in Cartilage and Meniscus Tissues in Response to Adipokines</td>
<td>James Nishimuta, Marc E Levenston</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>0372</td>
<td>Both Chondrocyte Activity and Mechanical Forces Govern Aggrecan-related Matrix Turnover in a Cartilage-on-Cartilage Articulating System</td>
<td>Robert Trevino, Carol Pacione, Susanna Chubinskaya, Anne-Marie Malfait, Markus A Wimmer</td>
</tr>
</tbody>
</table>

**Session 63**  
**Fractures: From Risk Prediction to Treatment**  
Ballroom C2  
Moderators: Joyce H Keyak, PhD and X. Edward Guo, PhD  

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30 PM</td>
<td>0373</td>
<td>Effects of hip abductor muscle forces and knee boundary conditions on femoral neck forces and hip fracture risk during falls</td>
<td>Woochol J Choi, Stephen N Robinovitch</td>
</tr>
<tr>
<td>3:40 PM</td>
<td>0374</td>
<td>Fracture Testing of Normal, Osteopenic, and Osteoporotic Cadaveric Femora in a Fall on the Hip Configuration</td>
<td>Samad Javid, Sean McEligot, Vinod Kushvaha, Dan Dragomir-Daescu</td>
</tr>
<tr>
<td>3:50 PM</td>
<td>0375</td>
<td>Multiscale Experimental Analysis of Human Bone Fracture Toughness: From the Osteonal up to the Tissue Level</td>
<td>Orestis L Katsamenis, Thomas Jenkins, Sofia Michopoulou, Ian Sinclair, Philipp J Thurner</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>0376</td>
<td>Ultimate Fracture Load of Cadaveric Proximal Humeri Correlates More Strongly With Mean Combined Cortical Thickness than Cortical Index, DEXA Density, or CC Ratio</td>
<td>John G Skedros, Alex N Knight, Chad S Mears, Todd C Pitts, Wayne Z Burkhead</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>0377</td>
<td>Accurate and fast strength predictions of patient-specific HR-pQCT-based plate-rod models distinguish women with vertebral fractures</td>
<td>Ji Wang, Bin Zhou, X. Sherry Liu, Emily Stein, Elizabeth Shane, X. Edward Guo</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>0378</td>
<td>Static and dynamic RSA imaging of femoral neck fractures stabilized with internal fixation</td>
<td>Hannu T Aro, Niko Moritz, Niko Strandberg, Satu Timlin</td>
</tr>
</tbody>
</table>
### Session 64  
**Biomaterials - Inert**  
Ballroom C3  
Moderators: Jon P Moseley, PhD and Geoff Richards, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30 PM</td>
<td>0379</td>
<td>Crack Initiation under Static and Cyclic Loading from a Clinically Relevant Notch in Crosslinked UHMWPE</td>
<td>Pavana A Sirimamilla, Jevan Furmanski, Clare M Rimnac</td>
</tr>
<tr>
<td>3:50 PM</td>
<td>0381</td>
<td>PMMA Brush Two-solution Bone Cement for Orthopaedic Applications: Characterization and Influence of Composition on Cement Properties</td>
<td>Danieli Rodrigues, Julie M Hasenwinkel</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>0382</td>
<td>Quantitative Comparison of UHMWPE Wear Particles Generated from ProDisc-L Total Disc Replacements Tested Under Altered Simulation Inputs</td>
<td>Joanne L Tipper, Philip J Hyde, Thomas D Brown, Eileen Ingham, John Fisher, Richard M Hall</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>0383</td>
<td>Mechanism of Tribofilm Formation in Metal-on-Metal Hip Joint Bearings and Other Metal Junctions</td>
<td>Elizabeth Martin, Robin Pourzal, Shilpi Vajpayee, Mathew Mathew, Markus A Wimmer, Kenneth Shull</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>0384</td>
<td>Implant Surface Properties Regulate Canonical and Non-Canonical Wnt Signaling in HMSCs</td>
<td>Rene Olivares-Navarrete, Sharon L Hyzy, Christopher P Erdman, Zvi Schwartz, Barbara D Boyan</td>
</tr>
</tbody>
</table>

### Session 65  
**Hand and Wrist**  
Room 217  
Moderators: Zong-Ming Li, PhD and Kenneth J Fischer, PhD

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30 PM</td>
<td>0385</td>
<td>A Non-Invasive Technique for Estimating Carpal Tunnel Pressure by Measuring Shear Wave Speed in Tendon: A Feasibility Study</td>
<td>Yuexiang Wang, Bo Qiang, Xiaoming Zhang, James F. Greenleaf, Kai-Nan An, Peter C. Amadio, Chunfeng Zhao</td>
</tr>
<tr>
<td>3:40 PM</td>
<td>0386</td>
<td>Rotation Axes of the Normal Thumb Carpometacarpal Joint During In-vivo Range-of-Motion Tasks</td>
<td>Eni Halilaj, James C Tarrant, Joel B Schwartz, Amy L Ladd, Arnold-Peter C Weiss, Douglas C Moore, Joseph J Crisco</td>
</tr>
<tr>
<td>3:50 PM</td>
<td>0387</td>
<td>Biomechanical Responses of the Transverse Carpal Ligament to Contraction of the Thenar Muscles</td>
<td>Zhilei L Shen, Zong-Ming Li</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>0388</td>
<td>Is Surgical Reconstruction Effective in Restoring Normal Wrist Joint Mechanics after SL Ligament Injury? An In Vivo Modeling Study</td>
<td>Joshua E Johnson, Phil Lee, Terence McIff, Bruce Toby, Kenneth J Fischer</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>0389</td>
<td>Biomechanical Study Investigating Partial Trapeziectomy with Local Soft Tissue Interposition as Potential Treatment for Trapeziometacarpal Osteoarthritis</td>
<td>Christina Salas, Deana Mercer, Gavin O’Mahoney, James Love, Mahmoud Reda Taha, Moheb Moneim</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>0390</td>
<td>Will Pisiform Excision or Fusion Help the High Demand Athlete with Pisotriquetral Arthritis?</td>
<td>Kevin D O’Keefe, Melissa Boyette, Frederick W Werner, Marc Garcia-Elias, Brian J Harley</td>
</tr>
</tbody>
</table>
Session 66
Cartilage Lubrication
Room 214
Moderators: Robert L Sah, MD, PhD and Tannin Schmidt, PhD

3:30 PM  Paper No. 0391
Interstitial Fluid Pressurization in Lubrication of TMJ Disc and Condylar Cartilage
Brandon K Zimmerman, David L Burris, X. Lucas Lu

3:40 PM  Paper No. 0392
Characterization of binding and lubricating properties of biomimetic boundary lubricants for articular cartilage
Kirk Samaroo, Mingchee Tan, Aliyah R Barrett, Roberto Andresen-Eguiluz, Delphine Gourdon, Poul Petersen, David A Putnam, Lawrence J Bonassar

3:50 PM  Paper No. 0393
Tribosupplementation Reduces Whole Joint Coefficient of Friction in Lubricin Null Mouse Knees
Kimberly A Waller, Ling X Zhang, Gregory D Jay

4:00 PM  Paper No. 0394
Cartilage Boundary Lubricating Ability of PRG4 Monomers versus Multimers
Saleem Abubacker, M. Cecilia Alvarez-Veronesi, Phillip B Messersmith, Tannin A Schmidt

4:10 PM  Paper No. 0395
Friction-based detection of tribological damage in engineered cartilage
G. Adam Whitney, Antonia M DiMillo, James E Dennis, Joseph M Mansour

4:20 PM  Paper No. 0396
Realistic Fibril Distribution Based on DT-MRI Data Enhances Pressurization Prediction of Interstitial Fluid in Articular Cartilage
Shuqiang An, Alison Jones, Robin Damion, John Fisher, Zhongmin Jin
POSTERS
**POSTER SESSIONS**

The ORS will have two Poster Sessions in Antonio, Texas.

Posters will be on display in Hall C of the Convention Center.

Poster Session 1 (PS1): Posters displayed Saturday and Sunday
Poster Session 2 (PS2): Posters displayed Monday and Tuesday

The 40 NIRA finalists will display their poster the entire meeting, Saturday – Tuesday. AAOS Best Posters, Board of Specialty Societies (BOS) Posters, and the Women’s Health Issues Advisory Board (WHIAB) Poster will be displayed the entire meeting, Saturday – Tuesday.

**Dedicated poster and exhibit hours.**
Poster times indicated with * indicates authors will be at their poster to answer questions during their assigned poster session (PS1 or PS2).

---

**POSTER SESSION 1**

* Saturday, January 26
  8:00 am - 9:15 am
  12:30 pm - 1:30 pm
  3:00 pm – 4:00 pm *

* Authors available to answer questions:
  Even numbered posters – 3:00 pm - 3:30 pm
  Odd numbered posters – 3:30 pm - 4:00 pm

* Sunday, January 27
  9:30 am - 10:15 am
  1:00 pm - 2:00 pm
  3:00 pm – 4:00 pm *

* Authors available to answer questions:
  Even numbered posters – 3:00 pm - 3:30 pm
  Odd numbered posters – 3:30 pm - 4:00 pm

---

**POSTER SESSION 2**

* Monday, January 28
  9:30 am - 10:15 am
  12:30 pm - 1:30 pm
  3:00 pm – 4:00 pm *

* Authors available to answer questions:
  Even numbered posters – 3:00 pm - 3:30 pm
  Odd numbered posters – 3:30 pm - 4:00 pm

* Tuesday, January 29
  9:30 am - 10:30 am *

* Authors available to answer questions:
  Even numbered posters – 9:30 am - 10:00 am
  Odd numbered posters – 10:00 am - 10:30 am
<table>
<thead>
<tr>
<th>Poster Categories</th>
<th>Poster Session 1 #'s</th>
<th>Poster Session 2 #'s</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAOS Best Poster</td>
<td>AAOS1 - AAOS7</td>
<td>AAOS1 - AAOS7</td>
</tr>
<tr>
<td>Arthroplasty</td>
<td>988 - 1101</td>
<td>1704 - 1738, 1754 - 1869</td>
</tr>
<tr>
<td>Biomaterials</td>
<td>0437 - 0460</td>
<td>1215 - 1235A</td>
</tr>
<tr>
<td>Bone</td>
<td>0634 - 0750, 760-785</td>
<td>1411 - 1526, 1538 - 1566</td>
</tr>
<tr>
<td>BOS Best Posters</td>
<td>BOS1 - BOS10</td>
<td>BOS1 - BOS10</td>
</tr>
<tr>
<td>Cancer, Tumors</td>
<td>1181 - 1197</td>
<td>1956 - 1973</td>
</tr>
<tr>
<td>Cartilage</td>
<td>0461 - 0560</td>
<td>1236 - 1335</td>
</tr>
<tr>
<td>Diagnostic Imaging</td>
<td>1198 - 1214</td>
<td>1974 - 1994</td>
</tr>
<tr>
<td>Foot and Ankle</td>
<td>1155 - 1165</td>
<td>1927 - 1940</td>
</tr>
<tr>
<td>Fracture</td>
<td>0734-0759</td>
<td>1511 - 1537</td>
</tr>
<tr>
<td>Hand and Wrist</td>
<td>1147 - 1154</td>
<td>1915 - 1926</td>
</tr>
<tr>
<td>Hip</td>
<td>969 - 1020</td>
<td>1739 - 1788</td>
</tr>
<tr>
<td>Infection</td>
<td>1166 - 1174</td>
<td>1941 - 1950</td>
</tr>
<tr>
<td>Knee</td>
<td>873 - 968</td>
<td>1656 - 1738</td>
</tr>
<tr>
<td>Meniscus</td>
<td>0561 - 0572</td>
<td>1336 - 1347</td>
</tr>
<tr>
<td>Muscle</td>
<td>0617 - 0633</td>
<td>1396 - 1410</td>
</tr>
<tr>
<td>Nerve and Spinal Cord Injury</td>
<td>792-801</td>
<td>1573 - 1582</td>
</tr>
<tr>
<td>NIRA Finalists</td>
<td>0397 - 0436</td>
<td>0397 - 0436</td>
</tr>
<tr>
<td>Shoulder and Elbow</td>
<td>1102 - 1146</td>
<td>1870 - 1914</td>
</tr>
<tr>
<td>Spine</td>
<td>0786 - 0791, 802 - 872A</td>
<td>1567 - 1572, 1583 - 1655</td>
</tr>
<tr>
<td>Tendon and Ligament</td>
<td>0573 - 0616</td>
<td>1348 - 1395</td>
</tr>
<tr>
<td>Trauma</td>
<td>1175 - 1180</td>
<td>1951 - 1955</td>
</tr>
<tr>
<td>WHIAB Best Poster</td>
<td>WHIAB 1</td>
<td>WHIAB 1</td>
</tr>
</tbody>
</table>
BOS 1 American Association for Hand Surgery- AAHS
Chondroitinase and Insulin-like Growth Factor Promote Nerve Regeneration After Limb Transplantation
Nataliya Kostereva, Yong Wang, Jignesh Unadkat, Rami Zanoun, Wensheng Zhang, Timothy Ng, Xin Xiao Zheng, MD, Vijay Gorantla

BOS 2 The American Orthopaedic Society for Sports Medicine-AOSSM
First Time Patellofemoral Dislocation in Pediatric and Adolescent Patients
Laura W. Lewallen, Amy L. McIntosh, Diane L. Dahm

BOS 3 American Society for Surgery of the Hand-ASSH
How Effective is Conservative Treatment for Ulnar-Sided Wrist Pain?
Aleksey Dvorzhinskiy, Alison Kitay, Matthew Grosso, Aaron Daluiski

BOS 4 Cervical Spine Research Society-CSRS
Clinical Poster
Blockade of Interleukin-6 Signaling Improves the Survival Rate of Transplanted Bone Marrow Stromal Cells after Spinal Cord Injury
Hideaki Nakajima, Kenzo Uchida, Ying Tan, Alexander Rodriguez Guerrero, Shuji Watanabe, Hisatoshi Baba

BOS 5 Cervical Spine Research Society-CSRS
Basic Science Poster
The Kappa Line: A Predictor of Neurologic Outcome after Cervical Laminoplasty
Dong-Ho Lee, Hyoungmin Kim, Jae Jun Yang, Heesang Lee, Hyounmin Noh, Nam-Heun Kim, Changju Hwang, Samuel K Cho

BOS 6 North American Spine Society-NASS
Expressions of Nogo-66 receptor at mRNA and protein levels after spinal cord injury in rats
Huillin Yang, Jibin Wu, Tiansi Tang, Liang Chen, Jiayong Liu, Nabil A. Ebraheim

BOS 7 Orthopaedic Trauma Association-OTA
Inhibiting Macrophage Activation During Fracture Repair Improves Fracture Healing in Aged Mice
Yan Yiu Yu, Theodore Mclau, Ralph S Marcucio

BOS 8 Pediatric Orthopaedic Society of North America-POSNA
Biomechanics of Direct Transverse Plane Vertebro-vertebral Rotational Screw Interface: Do bicortical pedicle screws make a difference?
S.A. Albanese, N.R. Ordway, Y. Pun, S.A. Badve, W.F. Lavelle

BOS 9 Ruth Jackson Orthopaedic Society-RJOS
CT and X-Ray Examination of the Immature Acetabulum is Appropriate Only after Closure of the Triradiate Cartilage
Peter D. Fabricant, Brandon P. Hirsch, Ian Holmes, Bryan T. Kelly, Dean G. Lorich, David L. Helfet, Eric A. Bogner, Daniel W. Green

BOS 10 American Association of Hip and Knee Surgeons-AAHKS
Should Prophylactic Antibiotics be withheld Prior to Revision Surgery to Obtain Appropriate Cultures?
Matthew W. Tetreault, Nathan G. Wetters, Vinay Aggarwal, Michael A. Mont, Javad Parvizi, Craig J. Della Valle

AAOS 1 Best Hip Poster
Title TBD
Authors TBD

AAOS 2 Best Knee Poster
Total Joint Arthroplasty Can be Safe in the Super Morbidly Obese
Ronald Huang, Sarah M Callinan, Michael Bercik, Zachary Post, Fabio Orozco, Alvin C Ong

AAOS 3 Best Foot and Ankle Poster
The Tripod Index Part 1: New Radiographic Parameter Assessing Foot Alignment
Phinit Phistikul, Marut Arunanak, Jessica Goetz, John E Femino, Annuziato Amendola

AAOS 4 Best Hand and Wrist Poster
Ultrasound as a First Line Test in the Diagnosis of Carpal Tunnel Syndrome: A Cost-effectiveness Analysis
Asif M Ilyas, John R Fowler, Mitchell Maltenfort

AAOS 5 Best Shoulder and Elbow Poster
Platelet Rich Plasma Injection as an Alternative Treatment for Rotator Cuff Tendinitis of Shoulder
Aamir H Shaikh, Turlough O’Donnell

AAOS 6 Best Spine Poster
Modeling of Cost-Effectiveness of Adult Spinal Deformity Surgery at Five Years Follow Up
Charla R Fischer, Brian J McHugh, Jamie S Terran, Baron Lonner, Steven G Glassman, Keith H Birdwell, Frank J Schwab, Virginie Lafage

AAOS 7 Best Tumors Poster
Percutaneous Cementoplasty for Pelvic Bone Metastasis in Patients with Advanced Cancer
Hyun-Guy Kang, Min Wook Joo, June Hyuk Kim, Patrick P Lin, Han-Soo Kim

WHIAB1 Gender Differences in Muscle Activation Patterns After ACL Reconstruction
Chelsea Marsh, Scott Tashman
The following posters have been chosen as the ORS Best Posters and will be displayed at the American Academy of Orthopaedic Surgeons (AAOS) meeting in March. The ORS Best Posters will have a ribbon on their poster.

**Best Hip Poster**
**Poster Session 2**  **Poster 1740**
*Anterior Acetabular Rim Morphology in an Asymptomatic Population*

**Best Knee Poster**
**Poster Session 1**  **Poster 886**
*Association of Radiographic Knee Osteoarthritis and Pain with Gait Asymmetry: The Multicenter Osteoarthritis Study*
Rajshree Mootanah, Howard Hillstrom, Douglas Gross, Jingbo Niu, Michael C. Nevitt, Cora E. Lewis, James Torner, Jean Hietpas, David Felson

**Best Foot and Ankle Poster**
**Poster Session 1**  **Poster 1164**
*The Effect of Hindfoot Alignment on Frontal Plane Mechanics Following Total Ankle Replacement*
Robin M. Queen, Robert J. Butler, Samuel B. Adams, Mark E. Easley, James K. DeOrio, James A. Nunley

**Best Hand and Wrist Poster**
**Poster Session 2**  **Poster 1920**
Joshua E. Johnson, Phil Lee, Terence E. McIff, Bruce Toby, Kenneth J. Fischer

**Best Shoulder and Elbow Poster**
**Poster Session 2**  **Poster 1872**
*Determination of Humeral Head Size for Anatomic Shoulder Replacement in Glenohumeral Osteoarthritis*
Ari Youderian, Eric Ricchetti, Meghan Drews, Joseph P. Iannotti

**Best Spine Poster**
**Poster Session 1**  **Poster 786**
*Transverse Process Hooks at Upper Instrumented Vertebra Provide a More Gradual Transition to Normal Motion Compared to Pedicle Screws in Long Posterior Spinal Fusion Constructs*
David Glos, Dinesh Thawrani, Matthew Coombs, Kevin Louis, Donita Bylski-Austrow, Peter Sturm

**Best Tumors Poster**
**Poster Session 1**  **Poster 1195**
*In Vivo Tibial Compression Decreases Tumor Formation and Osteolysis in a Model of Human Breast Cancer Metastasis*
Maureen Lynch, Daniel Brooks, Sunish Mohanan, Kelsey Dent, Marjolein van der Meulen, Claudia Fischbach

New Investigator Recognition Award (NIRA) Posters
The following posters will also be presented in the NIRA Presentations on Saturday, January 26 from 4:00 – 5:00 pm. See session schedule for date and time of each presentation.
The 40 NIRA finalists will display their poster the entire meeting, Saturday – Tuesday.

**NIRA 1 - CARTILAGE OSTEOARTHRITIS**

**Poster No. 0397**
Disrupting IHH Signaling Pathway In Vivo Attenuates OA Progression in Col2a1-CreERT2; IHHFL/FL Mouse Induced by Surgery
Jingming Zhou, Yuzhi Wei, Xiaochun Wei, Shaowei Wang, Ge Zhang, Qian Chen, Richard Terek, Lei Wei

**Poster No. 0398**
The Effect of Intra-Articular Injection of MicroRNA-210 in a Rat Anterior Cruciate Injury Model
Takeshi Shoji, Tomoyuki Nakasa, Keiichiro Yamasaki, Shigeru Miyaki, Naosuke Kamei, Yuji Yasunaga, Mitsuo Ochi

**Poster No. 0399**
Dual Axis Gene-Therapy Using Stem Cells Overexpressing TGF-β3 in Combination With IL-1β and TNF-α RNA Silencing for Osteoarthritis Control in a Large Animal Osteochondral Chip Fracture Model
Ashlee Watts, Laila Begum, Michael Scimeca, Alan J Nixon

**Poster No. 0400**
In Vitro and In Vivo Intracellular Delivery of siRNA via Self-Assembled Nanopieces for Orthopaedic Therapeutics and Diagnostics
Yupeng Chen, Tianbin Zhou, Jorge Rosario, Hongchuan Yu, Eric Darling, Thomas Webster, Hicham Fenniri, Qian Chen

**Poster No. 0401**
Stromal Cell-Derived Factor 1 Regulates the Actin Organization of Chondrocytes and Chondrocyte Hypertrophy
Koichi Murata, Toshiyuki Kitaori, Hiroyuki Yoshitomi, Moritoshi Furu, Masahiro Ishikawa, Hideyuki Shibuya, Shuichi Matsuda, Hiromu Itô

**Poster No. 0402**
Magnetic Resonance Imaging and Clinical Evaluation of Chondral Lesions Treated with Allografts Juvenile Cells
Cecilia Pascual-Garrido, Stephanie L Gold, Hollis Potter, Russell F Warren, Riley J Williams, Scott A Rodeo

**Poster No. 0403**
Cartilage Transdifferentiation During Endochondral Bone Repair
Chelsea S Bahney, Diane Hu, Aaron Taylor, Theodore Miclau, Ralph Marcucio

**Poster No. 0404**
Patient Activity and In-Vivo Polyethylene Wear in Total Hip Arthroplasty
Rachel Senden, Matthijs Lipperts, Bernd Grimm
Poster No. 0405
Finite Element Analysis of Distal Femur Fixation: Fracture Gap Motion Predicts Radiographic Outcome

Poster No. 0406
Contracting Osteocytes Synchronized with Calcium Signaling Under Fluid Flow
Andrew D Baik, Ivo Kalajzic, Elizabeth M Hillman, Yingxiao Wang, Cheng Dong, X. Edward Guo

Poster No. 0407
Evaluation of Osteoprogenitor Cell Response to Bone Morphogenetic Protein and Demineralized Bone Matrix in a Critical Sized Defect Model using GFP Reporter Mice
Farhang Alae, Alex Dukas, Michael Pensak, Seung-Hyun Hong, David Rowe, Jay R Lieberman

Poster No. 0408
Potential Role of MicroRNA in Nonunion in Rat
Takahiro Waki, Sang Yang Lee, Takahiro Niikura, Takaaki Koga, Yoshihiro Dogaki, Etsuko Okumachi, Masahiro Kurosaka

Poster No. 0409
Parabiotic Pairing of Aged Dystrophic Mice with Young Counterparts Halts Progressive Bone Loss
Hongshuai Li, Aiping Lu, Johannes Schneppendahl, Ying Tang, Bing Wang, Johnny Huard

Poster No. 0410
Targeted Disruption of Heparan Sulfate in Osteoblasts Leads to a Severe Osteoporotic Phenotype in Mice
Satoshi Nozawa, Fumitoshi Irie, Shinji Iizuka, Thomas L Clements, Kazu Matsumoto, Yu Yamaguchi

Poster No. 0411
CT-Based Structural Rigidity Analysis Accurately Predicts Fracture Risk and Influences Treatment of Patients with Skeletal Metastases: A Prospective, Multi-Center Study

Poster No. 0412
Fibrin Accumulation Causes Heterotropic Ossification After Fracture
Masato Yuasa, Nicholas MignePi, Heather Cole, Justin Cates, Herbert Schwartz, Jonathan Schoenecker

Poster No. 0413
Combined Engineering of Schwann Cell Implants to Secrete Neurotrophin and Chondroitinase Promotes Axonal Regeneration and locomotion After Spinal Cord Injury
Haruo Kanno, Yelena Pressman, Alison Moody, Randall Berg, Elizabeth Muir, John Rogers, Hiroshi Ozawa, Eiji Ito, Damien D Pears, Mary B Bunge

Poster No. 0414
Deformation of Translamellar Cross Bridges during Shear Loading of the Annulus Fibrosus
Sang Kuy Han, Chao-Wei Chen, Yu Chen, Adam H Hsieh

Poster No. 0415
Prolyl Hydroxylase 3 (PHD3) Modulates Catabolic Effects of TNF-α on Cells of the Nucleus Pulposus Through Co-Activation of NF-κB/p65 Signaling
Nobuyuki Fujita, Shilpa Gogate, Kazuhiro Chiba, Morio Matsumoto, Yoshiaki Toyama, Irving Shapiro, Makarand R Risbud

Poster No. 0416
High Glucose-Induced Microglial Activation Deteriorates the Secondary Injury Via NF-κB Pathway After Experimental Spinal Cord Injury
Kazu Kobayakawa, Kensuke Kubota, Yukihide Iwamoto, Seiji Okada

Poster No. 0417
Autophagy Modulates Cellular Apoptosis, Senescence, and Extracellular Matrix Synthesis in the Intervertebral Disc
Takashi Yurube, William J Buchser, Hong Joo Moon, Robert A Hartman, Michael T Lotze, James D Kang, Gwendolyn A Sowa

Poster No. 0418
MRI is Predictive of ALVAL and Tissue Damage in Failed Metal-on-Metal Hip Arthroplasty
Danyal H Nawabi, Stephanie Gold, Alissa Burge, Stephen Lyman, Kara Fields, Matthew F Koff, Douglas E Padgett, Hollis G Potter

Poster No. 0419
Mesenchymal Stem Cells Residing Close to the Bone Surface are Functionally Distinct from Those in the Central Bone Marrow
Valerie A Siclari, Ji Zhu, Kentaro Akiyama, Fei Liu, Xianrong Zhang, Abhishek Chandra, Hyun-Duck Nah-Cederquist, Songtai Shi, Ling Qin

Poster No. 0420
Pro-Angiogenic and Pro-Survival Suctions of Glucose in Human Mesenchymal Stem Cells Upon Transplantation
Mickael Deschepper, Mathieu Manassero, Karim Oudina, Joseph Paquet, Laurent Emmanuel Monfoulet, Delphine Logeart-avramoglou, Morad Bensidhoum, Herve Petite

Poster No. 0421
Identification and Characterization of a Mesenchymal Progenitor Cell Population Involved in Fracture Healing
Brya Matthews, Danka Grcevic, Leping Wang, Yusuke Hagiwara, David W Rowe, Douglas J Adams, Ivo Kalajzic

Poster No. 0422
Dedifferentiation-Reprogrammed Mesenchymal Stem Cells Enhanced Cell Survival and Osteogenic Differentiation Potential
Yun-feng Rui, Ting Zhang, Ming Ni, Fanbiao Meng, Yang Lui, Chen Wang, Gang Li
Poster No. 0425
Development of Scaffold-Free Tissue-Engineered Construct (TEC) with Chondrogenic Differentiation Capacity Using Rabbit Embryonic Stem Cell-Derived Mesenchymal Stem Cells
Yu Moriguchi, Takeshi Teramura, Haruko Hasegawa, Morito Sakaue, Ryota Chijimatsu, Norihiko Sugita, Kota Koizumi, Hideki Yoshikawa, Akira Myoui, Norimasa Nakamura

Poster No. 0426
The Role of NFAT5 in Osmolarity-Mediated Improved Chondrogenic Differentiation of Progenitor Cells
Marjolein M Caron, Anna van der Windt, Pieter J Emans, Lodewijk W van Rhijn, Holger Fahr, Tim J Welting

Poster No. 0427
The Effects of Reoxygenation Using a Novel CO2 Therapy on Metastatic Potentials in Osteosarcoma
Risa Harada, Teruya Kawamoto, Takeshi Ueha, Hitomi Hara, Yasuo Onishi, Mitsunori Toda, Masaya Minoda, Masahiro Kurosaka, Toshihiro Akisue

Poster No. 0428
Vascularization for Bone Tissue Engineering via Modulation of Macrophage Behavior
Kara L Spiller, Kenneth R Nakazawa, Gordana Vunjak-Novakovic

NIRA 5: TENDON AND LIGAMENTS

Poster No. 0429
Deletion of Scleraxis Impairs Supraspinatus Enthesis Development
Megan L Killian, Stavros Thomopoulos

Poster No. 0430
Combined Treatment of a Tendon Gap with a Biomimetic Electrospun Scaffold, Stromal Cells and GDF5
Roshan James, MaCalus Hogan, Thomas C Keller, Gary Balian, Cato T Laurencin, A (Bobby) Chhabra

Poster No. 0431
The Influence of the Paratenon and Adjacent Struts on Patellar Tendon Healing
Nathaniel Dyment, Chia-Feng Liu, Namdar Kazemi, Lindsey Aschbacher-Smith, Keith Kenter, Andrew Breidenbach, Jason Shearn, Christopher Wylie, David Rowe, David L Butler

Poster No. 0432
Multiphase Meniscus Regeneration in a Preclinical Model by Spatiotemporal Delivery of CTGF and TGFβ3
Chang Lee, Scott A Rodeo, Lisa A Fortier, Jenny Y Sun, Jeremy J Mao

Poster No. 0433
Implantation of Autogenous Meniscal Fragments Wrapped with a Fascia Sheath Enhances Fibrocartilage Regeneration In Vivo in a Large Harvest Site Defect: An Experimental Study with Sheep
Yasuyuki Kawaguchi, Eiji Kondo, Nobuto Kitamura, Yasukazu Kobayashi, Masashi Kimura, Shunji Yunoki, Kazunori Yasuda

Poster No. 0434
Single-Step Projection Stereolithographic Fabrication of Gene-Activated Bone Scaffold Encapsulating Human Bone Marrow Stem Cells and Lenti-BMP-2 Viral Vector
Hang Lin, Ying Tang, Jian Tan, Bing Wang, Rocky Tuan

Poster No. 0435
Differences of Scapulothoracic and Glenohumeral Joint Motions Between Tennis Serve and Baseball Pitching: A Kinematic Perspective Based on Throw-Push Continuum
Shoji Konda, Toshimasa Yanai

Poster No. 0436
A Novel Molecular Targeted Therapy for the Musculoskeletal Infectious Diseases
Tetsuya Kuramoto, Ken Ishii, Shigenori Nagai, Haruki Funao, Yoshiomi Kobayashi, Masahiko Hirai, Aya Sasaki, Yasunori Okada, Kazuhiro Chiba, Shigeo Koyasu, Yoshiaki Toyama, Morio Matsumoto

Poster No. 0437
Changes in Osteoblast Morphology in Response to Surface Microroughness: An SEM and FIB Study

Poster No. 0438
Surface Mechanical Properties Control Mesenchymal Cell Fate Towards Osteoblastic and Chondrocytic Phenotypes
Rene Olivares-Navarrete, Kathryn Smith, Sharon L Hyzy, David Haithcock, Ken Gall, Barbara D Boyan, Zvi Schwartz

Poster No. 0439
Comparison of Chondrocyte Morphology and Metabolism During In Vitro Culture on Nanosprings And in Monolayer
Cole Linville, Aaron M Stoker, James L Cook

Poster No. 0440
Decellularized Human Dermal Matrix for Wound Healing
Gaetan J Delcroix, Laura Varela, Paul Morris, Nathan Kast, Gianluca D’Ippolito, Paul C Schiller, H. Thomas Temple

Poster No. 0441
Injectable Carboxymethylcellulose Hydrogels for Nucleus Pulposus Replacement
Devika Varma, Gittel Gold, Steven Nicoll

Poster No. 0442
PRP Hydrogels for Controlled Release of Growth Factors and Stimulation of MSC Proliferation, Differentiation, and Migration
Jacob Simson, Brian W Allen, Jennifer H Elisseeff

Poster No. 0443
Comprehensive Evaluation of Growth Factors Released From Platelets Activated by Collagen
Kohei Iio, Furukawa Ken-Ichi, Eiichi Tsuda, Yuji Yamamoto, Keiichiro Maniwa, Yasuyuki Ishibashi

Poster No. 0444
White Blood Cells in Platelet-Rich Plasma (PRP) Cause Inflammatory and Catabolic Responses in Tendon Cells
Jianying Zhang, Yunfa Yang, Ning Wang, Guangyi Zhao, Freddie H Fu, James H Wang
Poster No. 0445
Alignment of Fibrin Fibers within an Autologous Plasma Clot Cell Carrier Matrix
Manfred Koeller, Dominik Seybold, Birger Jettkant, Elvira Peter, Thomas Schildhauer, Jan Gessmann

Poster No. 0446
Primary Amine Derivatized Natural Polymer Electrospun Fibers for the Controlled Release of Nitric Oxide
Michael G Lancina, Connor W McCarthy, Katherine L Snyder, Megan C Frost, Rupak M Rajachar

Poster No. 0447
Osteochondral Tissue Engineering Using Human Adipose Derived Stem Cells
Stephen A Tuin, John Williams, Mahsa Mohiti-Asli, Morgan Dent, Arthi Kannan, Brandon Hluck, Elizabeth Loboa

Poster No. 0448
Development of an Acellular Xenogenic Osteochondral Biomaterial
Hazel L Fermo, Serena L Russell, Sophie Williams, John Fisher, Eileen Ingham

Poster No. 0449
Comparison of rhBMP-2 Adsorption to Porous Stoichiometric and Silicate Substituted Hydroxyapatite
Karina A. Hing, Marc-Krystelle Mafina, Alice Sullivan

Poster No. 0450
Effects of 3D Wavy Fiber Structure on Ligament Fibroblast Morphology and Gene Expression with Tensile Loading
Hsiao-Yun Tseng, Hsiang-Yi Hsu, Pen-hsiu Grace Chao

Poster No. 0451
Photocrosslinkable Microribbon-Based Scaffolds with Macroporosity and High Flexibility for Musculoskeletal Tissue Engineering
Fan Yang

Poster No. 0452
Effects of Sacrificial Fibers on PLLA Fiber Crimp
Hsiao-Yun Tseng, Pen-hsiu Grace Chao

Poster No. 0453
Electrospun Amphiphilic Polymer-Hydroxyapatite Composite as an Improved Musculoskeletal Tissue-Engineering Scaffold
Artem Kutikov, Jie Song

Poster No. 0454
Repair of Rabbit Tibia Defect by Implantation of Octacalcium Phosphate/Gelatin Composite
Kentaro Suzuki, Takahisa Anada, Kou Hayashi, Naohisa Miyatake, Masami Hosaka, Keisuke Saito, Hideki Imaizumi, Eiji Itoi, Osamu Suzuki

Poster No. 0455
A Rapid-Prototyped Composite Scaffold Material Incorporating an Osteopromotive Molecule Can Promote the Healing of Steroid-Associated Osteonecrotic Lesions in Emus
Le Huang, Lizhen Zheng, Ge Zhang, Zhong Liu, Ming Lei, Deming Xiao, Ling Qin

Poster No. 0456
Biological Responses Towards Cap Ceramic Materials in an Ectopic Bone-Forming Large Animal Model
Rhandy M Eman, R. Koraar, B. A van Oirschot, J. J van den Beucken, W. J Dhert, J. Alblas

Poster No. 0457
The Biomechanical Verification Regarding Surface Modification by an Elid Grinding System
Yoshiaki Okada, Nobuhiro Abe, Toshiaki Kaneeda, Noriyuki Hisamori, Shigeaki Moriyama, Tadashi Ohmori, Masayoshi Mizutani, Hiroyuki Yanai, Yoshitaka Tsunashima, Rikito Ishii, Reina Tanaka, Aki Yoshida, Yusuke Yokoyama, Toshifumi Ozaki

Poster No. 0458
Novel Porous Titanium Implants Demonstrate Bone Ingrowth in a Rabbit Model
Chau Ngo, Mathew Poggie, Gene Kulesha, Nick N Dong, Sue Coyle, Carlos Aponte, John Muth

Poster No. 0459
Bonding of Titanium Foam to Cobalt Chrome Substrates
Dirk Scholvin, Doug Linton, Jon Moseley

Poster No. 0460
Vitreous Carbon Foam as a Bone Graft Substitute Miller, S.a, Zacharias, N.a, White, J.a, Li, N.b, Reuter, K.a, and Wooley, Pa a Center of Innovation for Biomaterials for Orthopedic Research, Wichita, KS bAffiliated Hospital of Shandong University, Jinan, China
Steve Miller, Nora Zacharias, Paul H Wooley, Kim Reuter, Joel White, Li Nianhu

PS1 CARTILAGE & SYNOVIUM: CHONDROCYTE DIFFERENTIATION AND HYPERTROPHY

Poster No. 0461
Ca++/Calmodulin-Dependent Protein Kinase II Mediates Activation of Cytosolic Phospholipase A2 in 1α,25(OH)2D3 Membrane Signaling in Chondrocytes and Osteoblasts
Maryam Doroudi, Barbara D Boyan, Zvi Schwartz

Poster No. 0462
Role of Wnt/β-catenin Signaling in Early Osteochondrosis
Stacy Semevolos, Marc Kinsley, Katja Dueisterdieck-Zellimer

Poster No. 0463
Physiological and Excessive Loading Activate Tgf-Beta, Thereby Suppress Chondrocyte Terminal Differentiation in Articular Cartilage Explants
Wojciech Madej, Arjan V Caam, Eric de Mulder, Peter van der Kraan, Pieter Buma

PS1 CARTILAGE & SYNOVIUM: PROGENITORS AND CHONDROGENESIS

Poster No. 0464
HMGB1, a Key Activator of Chondrogenic Progenitor Cells and a Possible Trigger of Post Trauma Osteoarthritis
Hyeonghun Choe, Hongjun Zheng, Dongrim Seol, James A Martin
Poster No. 0465
Osmotic Regulation of Synovium-Derived Stem Cells
Sonal R Sampat, Matthew Dermksian, Gerard A Ateshian, Clark T Hung

Poster No. 0466
Negative Effect of Platelet Rich Plasma on the Differentiation of Synovium-Derived Mesenchymal Stem Cells
Joon Kyu Lee, Sahnghoon Lee, Hee Jung Park, Sun Ae Han, Sun Young Wang, Hyun Jin Min, Sang Cheol Seong, Myung Chul Lee

Poster No. 0467
Effects of rAAV-Mediated Overexpression of Human TGF-β in Human Bone Marrow-Derived Mesenchymal Stem Cells
Magali Cucchiarini, Jagadeesh K Venkatesan, Janina Frisch, Gertrud Schmitt, Dieter Kohn, Henning Madry

Poster No. 0468
Medium Conditioning and Hypoxia Enhance Chondrogenic Differentiation of Human Embryonic Stem Cells
Supansa Yodmuang, Darja Marolt, Ivan M Campos, Gordana Vunjak-Novakovic

Poster No. 0469
Inflammatory Stimuli Differentially Modulate the Transcription of Paracrine Signaling Molecules of Equine Bone Marrow Derived Mesenchymal Stem Cells
Raphaël Vézina, Anouk Lavoie-Lamoureux, Nadine Bouchard, Jean-Pierre Lavoie, Sheila Laverty

Poster No. 0470
Decellularized Matrix Benefits Expanded Human Stem Cell Chondrogenesis in Resistance to an Inflammatory Environment
Ying Zhang, Jingting Li, Ming Pei

Poster No. 0471
Mesenchymal Stem Cells in Chondrogenic 3D Culture are More Sensitive to Pro-inflammatory Cytokines than Chondrocytes
Bhavana Mohanraj, Megan M Schmidt, George R Dodge, Robert L Mauck

Poster No. 0472
Enhanced Stem Cell Chondrogenesis without Hypertrophic Transformation in TGF-β3 Conditioned Cultures
Ashlee Watts, Alan J Nixon

Poster No. 0473
A Possible Mechanism of Naproxen Induced Type X Collagen Expression in Human Mesenchymal Stem Cells from Osteoarthritis Patients
Abdulrahman M Alaseem, Padma Madiraju, Sultan A Aldebeyan, John Antoniou, Jackson Mwale

PS1 CARTILAGE & SYNOVIF: OSTEOARTHRITIS AND BIOMARKERS

Poster No. 0474
Genome-Wide Transcriptional Profiling Implicates ERK1/2-p38 MAPK Signaling and EDN1 in Osteoarthritis
Ahsan Choudary, Heather B Coan, Daniel Nicolella, Joanne Curran, Melanie Carless, Satish Kumar, Jack Kent, Laura Almasy, Harald Goring, John Blangero, Michael Mahaney, Lorena M Havill

Poster No. 0475
DNA and Histone Methylation in the SOX-9 Promoter in Osteoarthritic Cartilage
Gun-II Im, Kyung-II Kim, Si-Yeon Park

Poster No. 0476
The Role of Hemarthrosis on the Inflammatory and Oxidative Environment of ACL-Injured Knees
Jason L Dragoo, Hillary J Braun, Gaetano J Scuderi, Elizabeth A Regan

Poster No. 0477
Long-Term Cyclic Muscle Induced Submaximal Joint Loading Leads to Cartilage Degeneration in an In Vivo Model
Monika Horisberger, Rafael Fortuna, Victor Valderrabano, Walter Herzog

Poster No. 0478
Non-Invasive Detection of PTOA Using Targeted Nanosomes in a Mechanically Loaded Mouse Model
Hongsik Cho, Jeb Williams, Andrew Walker, Davis Berry, Karen A Hasty

Poster No. 0479
The Loss of Progranulin Accelerates, Whereas Recombinant Progranulin Protects, Osteoarthritis Development And Progression
Yunpeng Zhao, Qingyun Tian, Chuanju Liu

Poster No. 0480
Decoy Receptor 3 Influences the Gene Expression of Various Key Molecules Including IL-12β in Rheumatoid Synovial Fibroblasts
Koji Fukuda, Yasushi Miura, Toshihisa Maeda, Shinya Hayashi, Masayasu Takahashi, Masahiro Kurosaka

Poster No. 0481
Cartilage Oligomeric Matrix Protein: A Potential Diagnostic, Prognostic and Therapeutic Biomarker of Knee Osteoarthritis
Utkarsh Shahi, Neha P Shahi, Vikram Khanna, Ashish Gupta, Sudhir Singh, Jayant Bajpayi

Poster No. 0482
An Oral Preparation Containing Hyaluronic Acid (Oralvisc*) can Significantly Decrease the Production of Leptin Levels in the Serum and Synovial Fluid of Osteoarthritic Knee Patients
William Wu, Raimond Zvuirbulis, Barbara Zonca, Magdalena Pasierb, Peter Wilton, Daniel Martinez-Puig, Fred Nelson

Poster No. 0483
Serum and Synovial Fluid Biomarkers of Cartilage and Matrix Turnover in Human Subjects with Anterior Cruciate Ligament and Degenerative Meniscus Tears
Cortlyn W Brown, Cecilia H Huang, Constance R Chu

Poster No. 0484
Biochemical Profiles of Synovial Fluid From Patients with Severe Osteoarthritis and Acute ACL Injury Using High Field NMR
Keerthi Shet, Samuel Wu, John Kurhanewicz, Michael Ries, C. Benjamin Ma, Xiaojuan Li
Poster No. 0485
Role of Montelukast in Osteoarthritis Susceptibility and Chondrocyte Cell Death in Experimental Osteoarthritic Mice
Christina Kane G Kane, April Mason-Savas, Christopher M Raskett, David C Ayers, Paul J Fanning

Poster No. 0486
Intra-articular Delivery of Micronized Amniotic Membrane Attenuates Osteoarthrisitis Development
Nick J Willett, Tanushree Thote, Shamus Moran, Angela Lin, Yazdan Raji, Hazel Y Stevens, Robert E Guldberg

Poster No. 0487
Intra-Articular Injection of Small Interfering RNA (siRNA) Against MMP13 Reduce Development of Knee Osteoarthritis Ryuichi Akagi, Takahisa Sasho, Masahiko Saito, Kentaro Okada, Shunsuke Mukoyama, Yuta Muramatsu, Satoshi Yamaguchi, Kazuhisa Takahashi

Poster No. 0488
Spin Trapping Reduces IL-1β Induced Chondrocyte Death Roubin Wu, Rebecca W Pak, Tarik Onur, Hubert T Kim, Alexis Dang

Poster No. 0489
Synthetic Biolubricant Reduces Cartilage Wear by Reducing Coefficient of Friction During Long-Duration Torsional Testing Ben Lakin, Luai Zakaria, Daniel Grasso, Michel Wathier, Brian Snyder, Mark Grinstaff

Poster No. 0490
Intra-Articular Parathyroid Hormone (1-34) Improved Knee Osteoarthritis and Function in Guinea Pig with Spontaneous Osteoarthritis Chung-Hwan Chen, Yi-Shan Lin, Yin-Chih Fu, Mei-Ling Ho, Je-Ken Chang, Sung-Yen Lin, Chih-Kuang Wang

Poster No. 0491
An Oral Preparation Containing Hylauronic Acid (Oralvisc®) can Reduce Osteoarthrisitis Knee Pain Fred Nelson, Raimond Zvirbulis, Barbara Zonca, Magdalena Pasierb, Peter Wilton, Daniel Martinez-Puig, William Wu

Poster No. 0492

Poster No. 0493
A Potential In Vitro Pain Model for Osteoarthritis Andrew Sullivan, Dominick Blasioli, Peter DiBenedetto, Gloria Matthews

Poster No. 0494
The Role of Spinal MicroRNA-146a and -183 Cluster in Knee Joint Osteoarthritic Pain Xin Li, Hee-Jeong Im, Jeffrey S Kroin, Gary Gibson, Di Chen, Guozhi Xiao, Sana Fayyaz, Joon Suh, Ranjan Kc, Andre van Wijnen

Poster No. 0495
Repeated Intra-Articular Injections of Acid Produce Long-Lasting Hyperalgesia in Rat Knee Natsuki Sugimura, Masahiko Ikeuchi, Masashi Izumi, Koji Aso, Jing Zahn, Reika Shiraishi

Poster No. 0496
Transcriptomic Analysis of Postnatal Maturation in Articular Cartilage in Vitro: Evidence for Subchondral Bone - Cartilage Crosstalk Christopher R Fellows, Bronwen A Evans, Charles W Archer, Ilyas M Khan

Poster No. 0497
Normal Synovium from Both Adolescent and Adult Sheep is Homogenous Throughout the Joint Nathan Solbak, Armin Karmane, Cyril Frank, Nigel Shrive

Poster No. 0498
Regulation of Superficial Zone Protein/Lubricin by Wnt Proteins in Bovine Synoviocytes Atsuyuki Inui, Takashi Iwakura, A. Hari Reddi

PS1 CARTILAGE & SYNOVIUM: MATRIX PROTEINS, COLLAGEN AND PROTEOGLYCANS
Poster No. 0499
Effect of Glucosamine on Extracellular Matrix Metabolism in Rabbit Nucleus Pulposus Cells Eric Hempen, Paulo Coelho, James Kang, Nam V Vo, Gwendolyn Sowa

Poster No. 0500
The Effect of Kartogenin on CD44-Mediated Functions in Articular Cartilage and Chondrocytes Yohei Ono, Emily B Askew, Cheryl B Knudson, Warren Knudson

Poster No. 0501
Glycosaminoglycan Contents and Thickness of Cartilage in Sub-Tissue Zones Vary in the Medial Tibia of Canine Knee Cartilage by µMRI Ji Hyun Lee, Farid Badar, John Matyas, Yang Xia

PS1 CARTILAGE & SYNOVIUM: MATRIX DEGRADATION
Poster No. 0502
Laminar Evaluation of T1p Relaxation Time in Human Knee Articular Cartilage Under Static Loading Joseph A Schooler, Justin Singh, Xiaojuan Li, Thomas Link, Sharmila Majumdar

Poster No. 0503
CCAAT/Enhancer-Binding Protein Be-Ta(C/EBPβ) Promotes Osteoclast Differentiation Through RANKL Expression From Synovial Fibroblast-Like Cells In Rheumatoid Arthritis Hidetoshi Tsushima, Ken Okazaki, Takahiro Ushijima, Yukihide Iwamoto

Poster No. 0504
The Chondroprotective Role of the Melanocortin System in Murine Osteoarthritis Susanne Grässel, Julia Kaps, Gerit Hackmayer

Poster No. 0505
The Combined Effects of Radiation and Simulated Microgravity in Articular Cartilage Liliana Mellor, Warren Knudson, Jeffrey Willey, Julie T Oxford
Poster No. 0506
Radiation Causes Active Degradation, Lowers Matrix Synthesis, and Impairs IGF-1 Signaling in Human and Pig Articular Cartilage
Jeffrey S Willey, David L Long, Richard F Loeser

PS1 CARTILAGE & SYNOVIUM: CYTOKINES, GROWTH FACTORS AND INFLAMMATION
Poster No. 0507
Interleukin-1β Inhibits Chondrogenesis by Human Synovium-Derived Stromal Cells Through Cooperation Between C/EBPβ and NF-κB
Sun AeHan, SahghoonLee, JoonKyu Lee, HeejungPark, Sun-youngWang, HyunJinMin, SangCheolSeong, MyungChulLee

Poster No. 0508
Anti-Inflammatory Effect of PRP via S1P Receptor in Human Osteoarthritic Synovial Cells and Chondrocytes
Sun AeHan, SahghoonLee, JoonKyu Lee, HeejungPark, Sun-youngWang, HyunJinMin,SangCheolSeong, MyungChulLee

Poster No. 0509
Protection of Cartilage Matrix in IL-1α-Treated Cartilage Explants by a Novel Anti-Inflammatory Solution Prepared from Blood
JenniferWoodell-May, AndreaMatuska, KristaO'Shaughnessey

Poster No. 0510
Interleukin-32 Developed Inflammatory Arthritis with TNFalpha Induction via Protease 3 and Protease Activated Receptor 2-TIR-Domain-Containing Adapter-Inducing Interferon-Be-Ta Axis
MasanoriNakayama, YasuoNiki, YukiTakeda, HiroyasuIkegami, YoshiakiToyama, TakeshiMiyamoto

Poster No. 0511
A Hyaluronan Synthesis Inhibitor Suppresses Inflammatory Response And Joint Destruction in Murine Collagen-Induced Arthritis
YutakaYoshioka, EijiKozawa, HiroshiUراكawa, NaohisaFutamura, LishegZhuo, KojiKimata, NaokiIshiguro, YoshihiroNishida

Poster No. 0512
Inhibition of mTOR Reduces Osteoarthritis Related Changes in a Murine Model
KojiTakayama, SatoshiTerada, FreddieH Fu, JohnnyHuard

Poster No. 0513
Bovine Lactoferricin Promotes Anti-Catabolism and Anti-Inflammation via Temporally Separated Mechanisms in Human Articular Chondrocytes
DongyaoYan, DiChen, JoonSuh, Hee-JeongIm

PS1 CARTILAGE & SYNOVIUM: TISSUE ENGINEERING AND REPAIR
Poster No. 0514
Tibial Plateau Osteochondral Allograft Preservation using Serum-free Media at 37°C
JosephTGarrity, AaronMStoker, HannahSims, JamesLCook

Poster No. 0515
Rapid Photochemical Crosslinking of Collagen Fibers
IvanJWong, MarcLevenston

Poster No. 0516
Temporal Development of Functional Properties in Scaffold-Free Cartilage Tissue Analogs
BhavanaMohnanraj, AlexandraFarran, RobertLMauck, GeorgeRDodge

Poster No. 0517
Articular- and Auricular-Derived Chondrocytes Respond Dramatically Differently to Oxygen Tension
HisashiMera, G AdamWhitney, ThomasJ Kean, RussellJ Fernandez, ShigeyukiWakitani, JamesEDennis

Poster No. 0518
Tissue Damage Provides a Mechanism for Enhanced Cell Migration in Cell Therapy for Cartilage Repair
RobertAF Godoy, JemmaGKerns, AllenEGoodship

Poster No. 0519
Size Dependent Transport of Nanoparticles and Macromolecules into Cartilage: Relevant to Particle Based Osteoarthritis Drug Delivery Systems
AmbikaG Bajpayee, CliffRWong, Moungi GBawendi, AlanJ Grodzinsky

Poster No. 0520
Selection of an Optimal Microsphere for Targeted Delivery of Mesenchymal Stem Cells
SharonAnsboro, UdoGreiser, JessicaHS Hayes, ValerieBarron, ShaneBrowne, FrankBarry, AbhayPandit, MaryMurphy

Poster No. 0521
Trajectory-Based Tissue Engineering for Cartilage Repair: A Methodology to Better Predict In-Vivo Success
MatthewBFisher, NicoleSoegaard, ElizabethAHenning, GeorgeRDodge, DavidRSteinberg, RobertLMauck

Poster No. 0522
Cartilage Tissue Engineering Application of Visible Light-Activated Gelatin Hydrogel with in Situ Gelation Capability in Both Air and Aqueous Solution
HangLin, AnthonyWai-MingCheng, PeterGAlexander, AngelaMBeck, JianTan, RockySTuan

Poster No. 0523
The Influence of Hydrostatic Pressure on the Functional Development & Phenotypic Stability of Cartilaginous Grafts Engineered using Mesenchymal Stem Cells Isolated from Bone Marrow & Infrapatellar Fat Pad
SimonCarroll, ConorTBuckley, DanielKelly

Poster No. 0524
Hypoxia Enhances Stem Cell Mediated Chondrogenesis within a Chondro-Inductive Collagen-Hyaluronic Acid Scaffold
AmosMatsiko, JohnPGleeson, FergalJO'Brien

Poster No. 0525
Attachment, Proliferation, and Chondroinduction of Mesenchymal Stem Cells on Chitosan-Calcium Phosphate Scaffolds
StevenElder, Anuhyagottipati, LynkolnLong
Poster No. 0526
Confined and Unconfined Creep: A Comparative Study of Swine Cartilage and PVA Hydrogels
Hatice Boduguz-Senturk, Doris Ling, Christopher Serrano, Orhun K Muratoglu

Poster No. 0527
Novel Hydromechanical Stimulation of Agarose-Chondrocyte Constructs
Homeyra Pourmohammadali, Naveen Chandrashekar, John B Medley

Poster No. 0528
Inferior Mechanical Properties Reflect Suboptimal Spatial Distribution of Matrix Components in Engineered Cartilage
Uday P Palukuru, Michael J Shockley, Cushla M McGoverin, Padraig B Glenn, Richard G Spencer, Elliot H Frank, Alan J Grodzinsky, Nancy Pleshko

Poster No. 0529
Development of Engineered Articular Cartilage Supported by Internal Release of Dexamethasone
Brendan L Roach, Timothy H Chen, Arta Kelmendi-Doko, Kacey Marra, Gerard A Atshian, Clark T Hung

Poster No. 0530
Mechanical Evaluation of an Engineered Zone of Calcification at the Interface Between Bone and Hydrogel
Jérôme Hollenstein, Alexandre Terrier, Esther B Cory, Albert C Chen, Robert L Sah, Dominique Pioletti

Poster No. 0531
Bone Marrow Aspiration Concentrate and Platelet Rich Plasma for Osteochondral Repair
Marcel Betsch, Pascal Jungbluth, Mohssen Hakimi, Michael Wild

Poster No. 0532
In Vitro Simulation of Microfracture in a Cartilage-Bone Explant Model
Miri Park, Anna Sung, Brandon K Zimmerman, Enoch Cheung, Yilu Zhou, X. Lucas Lu

Poster No. 0533
In Situ Calcium Signaling of Chondrocytes in Serum-Free Culture
Yilu Zhou, Enoch Cheung, X. Lucas Lu

Poster No. 0534
Treatment of Cartilage Defects by Subchondral Drilling Combined with Covering with Atelocollagen Membrane Induces Osteogenesis in a Rat Model
Michio Hamanishi, Tomoyuki Nakasa, Naosuke Kamei, Hiromi Kazusa, Goki Kamei, Mitsuo Ochi

Poster No. 0535
Five Year Experience of Patello-Femoral Autologous Chondrocyte Implantation(ACI)-Clinical and Histological Perspective
A. Bhattacharya, H. McCarthy, B. Johnson, S. Roberts, J. B Richardson

Poster No. 0536
Mechanical Performance of Matrix-Induced Autologous Chondrocyte Implantation (MACI) Grafts in an Equine Model at 53 Weeks

Poster No. 0537
A Genetic Model of Chondroprotection and Combinatorial Gene Therapy for the Treatment of Osteoarthritis
Merry Ruan, Ayelet Erez, Kilian Guse, Brian Dawson, Yuqing Chen, Brendan Lee

Poster No. 0538
Administration of MicroRNA-146 Ameliorate Joint Arthritis via Suppression of Catabolic Factors
Tomoyuki Nakasa, Takuya Niimoto, Shigeru Miyaki, Tomohiro Kato, Mitsuo Ochi

Poster No. 0539
Wnt10b-rAAV In Vivo Gene Therapy Influenced Measures of Osteoarthritis Progression in Transduced Rat Stifle Joints
Jeffrey B Mason, Brittney L Gurda, James M Wilson, Kurt Hankenson, Dean W Richardson

Poster No. 0540
Arthroscopic Implantation of Autologous Chondrocytes Transduced with rAAV5-IGF-I Improves Long-Term Cartilage Repair in Full-Thickness Chondral Defects in the Equine Trochlear Ridge Model
Kyla Orved, Laila Begum, Alan J Nixon

Poster No. 0541
Integrin Mediated Binding to the Pericellular Matrix and Microtubule Reorganization Play a Role in the Response of Mesenchymal Stem Cells to Dynamic Compression
Andrew J Steward, Diane R Wagner, Daniel J Kelly

Poster No. 0542
Roles of ColVI and Dcn on Cytoskeletal Organization and Mechanotransduction in hMSCs Undergoing Chondrogenesis
Julianne D Twomey, Ben A Bulka, Dana A Hartman, Kenny M Rosenberg, Pratiksha I Thakore, Adam H Hsieh

Poster No. 0543
TRPV4 is an Important Modulator of Chondrogenic Mechanotransduction in ATDC5
Toki Takemoto, Toshihisa Kojima, Nobunori Takahashi, Shinya Hirabara, Kenya Terabe, Naoki Ishiguro

Poster No. 0544
Chondrocyte Membrane Mechanics at Different Loading Rates
Eng Kuan Moo, Matthias Amrein, Noor Azuan Abu Osman, Bellinda Pingguan-Murphy, Walter Herzog

PS1 CARTILAGE & SYNOVIM: GENE THERAPY

PS1 CARTILAGE & CHONDROGENESIS: MECHANOBIOLOGY
Poster No. 0545
Mechanical Injury of Cartilage Explants Induces Depth-Dependent, Transient Changes in p38 Kinase Activity Associated with Apoptosis
Derek H Rosenzweig, Mellissa J Djap, Sing J Ou, Thomas M Quinn

Poster No. 0546
AKT Phosphorylation in Human Chondrocytes is Regulated by P53R2 In Response to Mechanical Stress
Kohhei Kawakita, Takayuki Nishiyama, Takaaki Fujishiro, Shinya Hayashi, Shingo Hashimoto, Noriyuki Kanzaki, Kenjiro Iwasa, Shuhei Sakata, Masahiro Kurosaka

Poster No. 0547
Progressive Cell-Mediated Changes in Articular Cartilage and Bone in Mice are Initiated by a Single Loading Session
Frank C Ko, Cecilia Dragomir, Darren A Plumb, Allison W Hsia, Steven R Goldring, Timothy M Wright, Mary B Goldring, Marjolein C van der Meulen

Poster No. 0548
Effect of Impaction in Combination with Pro-Inflammatory Cytokines on Osteochondral Allograft Survival and Metabolism
Samantha L Gitelis, Rylee Olewinski, Ariel Bodker, Spencer Kirk, Arnavaaz Hakimiyan, Lev Rappoport, Carol Pacione, Giuseppe Filardo, Brian J Cole, Markus A Wimmer, Susan Chubinskaya

Poster No. 0549
Mechanics of In-Situ Chondrocytes Near Cartilage Lesions: Experimental and Finite Element Study
Eng Kuan Moo, Sang Kuy Han, Azim Jinha, Ziad Abusara, Salvatore Federico, Noor Azuan Abu Osman, Belinda Pingguan-Murphy, Walter Herzog

Poster No. 0550
Tensile Strains May be More Important than Compressive Strains to Modulate Proteoglycan Synthesis in Dynamically Loaded Articular Cartilage
Petri K Tanska, Petro Julkunen, Mikko J Lammi, Rami K Korhonen

Poster No. 0551
Role of AQP1 Water Channel During Chondrocyte Migration in an Applied DC Electric Field
Andrea R Tan, Troy F Langford, Pen-hsiu Grace Chao, Roy K Aaron, J Chloe Bulinski, Gerard A Ateshian, Clark T Hung

Poster No. 0552
Biphasic Effects of Zoledronic Acid on The Calcium Signaling of Chondrocytes
Miri Park, Yilu Zhou, Anna Sung, Enoch Cheung, X. Lucas Lu

Poster No. 0553
Integrin α1β1 is Required for Chondrocyte Intracellular Calcium Response to Osmotic Stress
Christina Jablonski, Danielle Curry, Jessica Chan, Ambra Pozzi, Andrea Clark

PS1 CARTILAGE MECHANICS
Poster No. 0554
The Mechanical Properties of the Chondrocyte Pericellular Matrix Exhibit High Resistance to Enzymatic Digestion of Glycosaminoglycans
Rebecca E Wilusz, Farshid Guilak

Poster No. 0555
Mechanical Loading Negatively Impacts Cartilage-Scaffold Integration
Moira M McCarthy, Tony Chen, Russell Warren, Suzanne A Maher

PS1 MENISCUS
Poster No. 0561
The Effects of Boundary Conditions on the Development of Circumferential Collagen Organization and Mechanical Anisotropy in Tissue Engineered Menisci
Jennifer L Puetzer, Lawrence J Bonassar

Poster No. 0562
Improved Meniscus Integration via Controlled Degradation of the Wound Interface
Feini Qu, Jung-Ming G Lin, John L Esterhai, Matthew B Fisher, Robert L Mauck

Poster No. 0563
Friction Properties of Bovine Meniscus and Articular Cartilage
Lutz Dürselen, Carsten Hoffart, Helga Joos, Rolf Brenner, Anita Ignatius

Poster No. 0564
Structured 3D Co-Culture of Mesenchymal Stem Cells with Meniscus Cells Promotes Meniscal Phenotype without Hypertrophy
Xiaofeng Cui, Akihiko Hasegawa, Martin Lotz, Darryl D’Lima
Poster No. 0565
Fibrin Clot: Quantitative Analysis of Growth Factors and Promotion of Human Meniscal Cell Proliferation and Migration
Sanae Kuroda, Tatsuo Mae, Keisuke Kita, Takashi Kanamoto, Hideki Yoshikawa, Ken Nakata

Poster No. 0566
3D Meniscus and Tibio-Femoral Kinematics from MRI During Joint Motion and Loading
Daniel Watling, Gemma Whatling, Cathy Holt

Poster No. 0567
Regional Mechanical Properties of Meniscus Pericellular and Extracellular Matrix via Atomic Force Microscopy
Johannah Sanchez-Adams, Rebecca E Wilusz, Farshid Guilak

Poster No. 0568
The Effect of Growth Factor Augmentation on Scaffold-Meniscus Integration
Ian D Hutchinson, Tony Chen, Russell Warren, Suzanne A Maher

Poster No. 0569
Biomechanical Consequences of a Complete Radial Tear Adjacent to the Medial Meniscus Posterior Root Attachment Site: In-Situ Pullout Repair Restores Derangement of Joint Mechanics
Jeffrey Padalecki, Kyle Jansson, Sean D Smith, Grant Dornan, Casey Pierce, Coen A Wijdicks, Robert LaPrade

Poster No. 0570
Biomechanical Effects of Meniscal Allograft Fixation: A Physiological Model
Albert O Gee, Tony Chen, Ian Hutchinson, Kirsten Stoner, Florain Wanivenhaus, Russell Warren, Suzanne A Maher

Poster No. 0571
Clinically Relevant OA Progression in a Rabbit Knee Survival Model of Medial Meniscus Destabilization
Yuki Tochigi, Marut Arunakul, Jessica E Goetz, Douglas C Fredericks, James A Martin, Bryce W Diestelmeier, Thomas D Brown, Todd McKinley

Poster No. 0572
Experimentally Derived Spatial Distribution of Human Meniscus Components and Mechanical Properties for Input and Fitting of a FE-Model
Juan Manuel Parraga Quiroga, Carlos Chávarri Leal, Pieter Emans, Wouter Wilson, Keita Ito, René van Donkelaar

PS I TENDON AND LIGAMENT: CELL BIOLOGY

Poster No. 0573
CD105-Negative Progenitors Present in Injured Tendons Contribute to Chondroid Degeneration
Shuji Asai, Satoru Otsuru, Yoichi Ohta, Naoki Ishiguro, Maurizio Pacifci, Keith L Wapner, Louis J Soslowsky, Edwin M Horwitz, Motomi Enomoto-Iwamoto

Poster No. 0574
BMP12 and BMP14 Induce Tenogenesis in Adipose-Derived Stem Cells
Hua Shen, Richard H Gelberman, Matthew J Silva, Shelly Sakiyama-Elbert, Stavros Thomopoulos

Poster No. 0575
An In Vitro Tendon Model System Employing the Tools of Mouse Genetics to Study and Manipulate Gene Function
Alice Huang, Brian Pryce, Sara Tufo, Doug Keene, Ronen Schweitzer

Poster No. 0576
Retropatellar Fat Pad And Peripheral Blood Derived Mesenchymal Stem Cells Enhance ACL Fibroblast Performance
Benedikt Proffen, Carla M Haslauer, Chad Harris, Martha M Murray

Poster No. 0577
The Effect of Different Strains of Cyclic Tensile Loading on the Expression of Chondro-Osteogenic BMPs in Tendon-Derived Stem Cells (TDSCs) Isolated from the Collagenase-Induced Failed Tendon Healing and Healthy Animals
Yin Mei Wong, Pauline Po Yee Lui

Poster No. 0578
Tendon-Derived Stem Cells (TDSCs) Exhibit Low Immunogenicity
Yin Mei Wong, Pauline Po Yee Lui, Siu Kong Kong, Pui Man Lau, Yuk Wa Lee, Qi Tan, Chun Lai Tan, On Tik Wong

Poster No. 0579
Evaluating the Tenogenic Potential of TGFβ in a 3D Tendon Model System Using Mouse Embryonic Fibroblasts
Alice Huang, Ronen Schweitzer

Poster No. 0580
Defining the Effects of Platelet-Rich Clot Gel on Tendon Stem Cells
Jianying Zhang, James H Wang

Poster No. 0581
Spatially-Patterned Collagen-Glycosaminoglycan Scaffolds for Engineering the Tendon-Bone Junction and Regulating MSC Fate
Steven R Caliari, Daniel W Weisgerber, Ziad Mahmassani, Douglas O Kelkhoff, Marni D Boppart, Brendan A Harley

Poster No. 0582
Immunohistochemical Localization of Mesenchymal Stem Cells in Human Spinal Ligament
Shunfu Chin, Ken-Ichi Furukawa, Toru Asari, Yoshifumi Harada, Atsushi Ono, Kanichiro Wada, Toshihiro Tanaka, Toshitada Sawada, Wataru Inaba, Hiroki Mizukami, Soroku Yagihashi

Poster No. 0583
Embryonic Tendon Cells Respond Differentially to Mechanical Environment in 3-Dimensional Gels
Joseph E Marturano, Nathan R Schiele, Jeffrey J Thibodeau, Thomas V Galassi, Catherine K Kuo

Poster No. 0584
Effect of Donor Age on the Properties of Anterior Cruciate Ligament-Derived Mesenchymal Stem Cells
Keiichiro Maniwa, Yuji Yamamoto, Yasuyuki Ishibashi, Eiichi Tsuda, Shuya Nohmi, Shigeru Motomura, Satoshi Toh, Ken-Ichi Furukawa
Poster No. 0585  
A Comparison of the Effects of Mesenchymal Stem Cells and Fibroblasts Adhered to the Surface of Equine Tendon In-Vitro  
Elaine R Garvican, Roger K Smith, Jay Dudhia

Poster No. 0586  
Do Antioxidants Inhibit Oxidative-Stress-Induced Autophagy of Tenofibroblasts?  
Chang-Meen Sung, Hyung Bin Park, Young-Sool Hah, Ra-Jeong Kim

Poster No. 0587  
The Effect of Gender on the Molecular Profile of Tendon Healing from Laceration  
Nisha S George, Peter J Taub, Evan L Flatow, Nelly Andarawis-Puri

Poster No. 0588  
Electric Field-Induced Lipid Raft Polarization Guide Fibroblast Directional Migration  
Bo-Jiang Lin, Pen-hsiu Grace Chao

PS 1 TENDON AND LIGAMENT: MECHANICS

Poster No. 0589  
Tendon Mineralization: A Potential Novel Approach to Enhance Tendon-to-Bone Healing  
Jin Qu, Andrew R Thoreson, Kai-nan An, Peter C Amadio, Chenfeng Zhao

Poster No. 0590  
Differentiation of Ligament and Tendon with Near Infrared Spectroscopy  
Mugdha V Padalkar, Cushla M McGoverin, Scott Barbash, Eric Kropf, Nancy Pleshko

Poster No. 0591  
Elastic Fibres Contribute to the Pericellular Matrix of Tendon  
Tyler Grant, Jing Yu, Jill Urban, Richard Murphy, Andrew Carr, Mark Thompson

Poster No. 0592  
Effect of Extracorporeal Shockwave Dosage on Delayed Tendon-Bone Insertion Healing  
Dick Ho Kiu Chow, Pui Kit Suen, Lai Hong Fu, Wing-hoi Cheung, Ling Qin

Poster No. 0593  
Repeated Micro-Trauma Stimulates Tendon Healing via a Gene Expression Pattern Similar to Early Mechanical Loading, Study on Rat Achilles Tendons  
Pernilla Eliasson, Malin Hammerman, Per Aspenberg

Poster No. 0594  
PTH Treatment in Partial Thickness Tears Assessed using Histology and Biomechanics  
Margaret Thomas, Michael Zuscik, John C Elfar

Poster No. 0595  
Cell Traction and Strain Dependent Collagen Degradation Predict Tissue Adaptation  
Corrinus C van Donkelaar, Tommy A Heck, Wouter Wilson, Keita Ito

Poster No. 0596  
Rehabilitative Mechanical Conditioning Regime for the Development of Tissue Engineered Tendon/Ligament  
James C Goh, Thomas K Teh, Siew Lok Toh

Poster No. 0597  
Mechanical Effect of In-Vitro Exogenous CrossLinking on Equine Tendons with Chemically Induced Core Lesions  
Joseph S Bader, Paul Slusarewicz, Thomas Hedman

Poster No. 0598  
Surgical Menopause in Rabbits Leads to Increases in Cyclic Creep Strain and Unique Elevations in the Expression of Lubricin/PRG4 in the Medial Collateral Ligament  
Gail M Thornton, Carol R Reno, Ian K Lo, David A Hart

Poster No. 0599  
Engineering the Mechanical Behavior for the Next-Generation Composite Anterior Cruciate Ligament  
Jason S Bach, Laurent Corté, David N Ku

Poster No. 0600  
Can Anatomic Tunnel Placements be Performed Using a Modified Transtibial Technique without Tunnel Expansion for Single Bundle Anterior Cruciate Ligament Reconstruction? A cadaver study  
Joon Kyu Lee, Saehoon Lee, Hee Jung Park, Sun Ae Han, Sun Young Wang, Hyun Jin Min, Sang Cheol Seong, Myung Chul Lee

Poster No. 0601  
In Vivo Evaluation of Radioprotected Tendon Allografts for ACL Reconstruction in Sheep  
Grace Bundens, Aaron Seto, Charles Gatt, Michael Dunn

Poster No. 0602  
The Relationship Between Dynamics of the Pivot Shift Test Evaluated by Acceleration and Clinical Assessment  
Yuichiro Nishizawa, Ryosuke Kuroda, Yuichi Hoshino, Takehiko Matsushita, Seiji Kubo, Tomoyuki Matsumoto, Kouki Nagamune, Masahiro Kurosaka

Poster No. 0603  
The Effect of the Hyaluronic Acid on the Tendon-to-Bone Healingafter the Acute Rotator Cuff Repair in a Rabbit  
Hideaki Shibata, Masafumi Gotoh, Tomonoshin Kanazawa, Yasuhiro Mitsui, Takahiro Okawa, Yoshihiro Kai, Fujio Higuchi, Kensei Nagata

Poster No. 0604  
10-Weeks Uphill Treadmill Running Decreases Plantaris Tendon Stiffness in Aged Mice  
Lauren Wood, Susan V Brooks

Poster No. 0605  
Cyclic Creep and Recovery in Tendon - In Vitro and In Vivo Studies  
Michael Lavagnino, Asheesh Bedi, Christopher Walsh, Shahin Sheibani-Rad, Steven P Arnoczky

Poster No. 0606  
Distal Attachment of Flexor Tendon Allograft: A Biomechanical Study of Different Reconstruction Techniques in Human Cadaver Hands  
Zhuang Wei, Andrew R Thoreson, Peter C Amadio, Kai-Nan An, Chunfeng Zhao
PS1 TENDON AND LIGAMENT: INJURY AND REPAIR

Poster No. 0607
Dexamethasone Induces Differentiation of Human Tendon Stem Cells into Non-Tenocytes: Implications for Dexamethasone Treatment of Tendon Injury
Jianying Zhang, Camille Keenan, James H Wang

Poster No. 0608
Muscle Fatty Infiltration Influences Tenocytes of the Rotator Cuff In Vitro
Franka Klatte-Schulz, Stephan Pauly, Markus Scheibel, Stefan Greiner, Christian Gerhardt, Gerhard Schmidmaier, Britt Wildemann

Poster No. 0609
Effect of High Fat-High Sugar Diet and Swimming Exercise on Male C57BL/6 Mice Achilles Tendon Biomechanical Properties
Greg P Boivin, Jonathan Corbett, Jeffrey Reeves, Roberta L Pohlman, Egleide Y Elenes, Shawn A Hunter

Poster No. 0610
Pentosidine Deposition Deteriorates Biomechanical Properties of Achilles Tendon in Diabetic Rats
Yoshimasakakoma, Takayukifurumatsu, Toshifumiozaki

Poster No. 0611
Increased Tendon Fiber Modulus and Strength and Decreased Failure Strain in a Rat Model of Type 2 Diabetes
Joseph M Wallace, Armando Diaz Gonzalez, Max A Gallant, David B Burr

Poster No. 0612
Effect of High Fat and Exercise on C57BL/6 Achilles Tendon Biomechanical Properties
Greg P Boivin, Kristen M Platt, Jonathan Corbett, Jeffrey Reeves, Egleide Y Elenes, Shawn A Hunter, Kevin J Pearson

Poster No. 0613
Effects of Decorin and Biglycan on Re-Alignment and Mechanical Properties of Aging Supraspinatus Tendons
Brianne K Connizzo, David E Birk, Renato V Iozzo, Louis J Soslowsky

Poster No. 0614
Dynamic Mechanical Properties of Tendon Repair Tissue are Unaffected by Aging
Andrew A Dunkman, Mark R Buckley, Michael J Mienaltowski, Akash Kumar, David P Beason, Lydia Pathmanathan, David E Birk, Louis J Soslowsky

Poster No. 0615
Injured Achilles Tendon Exhibits Inferior Mechanical and Structural Response During Fatigue Loading
Benjamin R Freedman, Joseph J Sarver, Pramod B Voleti, Mark R Buckley, Louis J Soslowsky

Poster No. 0616
Achilles Tendon Repair Response to Injury is Enhanced by the Absence of Decorin
Sarah Ilkhani-Pour, Pramod B Voleti, Mark R Buckley, Benjamin R Freedman, Renato Iozzo, David E Birk, Louis J Soslowsky

PS1 MUSCLE

Poster No. 0617
Muscle-Derived Cells (MDCS) Responsible for Myogenesis Differ from Mdcs Involved in Adipogenesis in Dystrophin/Utrophin-/-Mice
Jihee Sohn, Ying Tang, Aiping Lu, Bing Wang, Johnny Huard

Poster No. 0618
Loss of MMP-9 Reduces Muscle Ischemia-Reperfusion Injury in Adult Mice
Heejae Kang, Julie Jin, Alexander Boehme, Hubert T Kim, Xuhui Liu

Poster No. 0619
Effects of TNF-a Inhibition on Muscle Regeneration Following Muscle Trauma
Ioannis Stratos, Christian Anselm, Aldebarani Gonzalez, Ann-Kathrin Behrendt, Thomas Mittlmeier, Brigitte Vollmar

Poster No. 0620
Minced Muscle Autografts Improve Skeletal Muscle Tissue Regeneration and Functional Recovery after Volumetric Muscle Loss
Benjamin T Corona, Thomas Walters, Christopher R Rathbone

Poster No. 0621
Progression of Muscular Dystrophy in Dystrophin/Utrophin-/-Mice is Associated with Rapid Muscle Progenitor Cell Exhaustion
Aiping Lu, Jonathan Proto, Xiaodong Mu, Ying Tang, Minakshi Poddar, Bing Wang, Johnny Huard

Poster No. 0622
Mouse Primary Muscle Cells in 3D Constructs for an In Vitro Model of Heterotopic Ossification
Laura Meszaros, Melissa A Shaw, Kimimasa Tobita, Anand Kumar

Poster No. 0623
Suppression of Skeletal Muscle Inflammation by Muscle Stem Cells is Associated with Hepatocyte Growth Factor in Wild Type and Mdx:p65-/- Mice
Jonathan Proto, Ying Tang, Aiping Lu, Paul D Robbins, Bing Wang, Johnny Huard

Poster No. 0624
Promotion of Skeletal Muscle Repair in Rat Skeletal Muscle Injury Model by Local Injection of Human Adipose Tissue-Derived Regenerative Cells
Ryo Mori, Naosuke Kamei, Shingo Ohkawa, Akihiro Nakabayashi, Kazunori Yokota, Yukihito Higashi, Mitsuo Ochi

Poster No. 0625
MMP-2 is Required for Skeletal Muscle Hypertrophy
Qia Zhang, Byron Zhang, Hubert T Kim, Xuhui Liu

Poster No. 0626
Gene Therapy Combined with NF-κappaB Inhibition for Duchenne Muscular Dystrophy
Ying Tang, Robert B Kang, Kara Imbrogno, Arvydas Usas, Qing Yang, Aiping Lu, Freddie H Fu, Johnny Huard, Bing Wang

Poster No. 0627
Adult Wild Type Muscle-Derived Stem/Progenitor Cells Rescue Progeria Stem Cell Dysfunction
Seth D Thompson, Mitra Lavasani, Mingjung Song, Aiping Lu, Bahar Ahani, Johnny Huard
Poster No. 0628
Enhanced Myogenic Potential of Human Dental Pulp and Amniotic Fluid Stem Cells by Use of a Demethylation Agent and Conditioned Media
Alessandra Pisciotta, Aiping Lu, Burhan Gharaibeh, Anto De Pol, Johnny Huard

Poster No. 0629
Low-Magnitude High-Frequency Vibration Improves Functional Outcomes of Reloading Muscle and Promotes Fast-Twitch Fiber Type-Specific Morphometric and Cellular Improvements
Keng Ting Sun, Kwok Sui Leung, Wing Hoi Cheung

Poster No. 0630
FTO Variant is Associated with Increased Muscle Soreness in Males Post-Exercise
Kirsten N Norrell, Hugo Clifford, Jason S Lipof, Mai Abdel-Ghani, Victoria I Rentas, Nathanael Leo, Courtney Sprouse, Hanwool R Choi, Heather Gordish-Dressman, Priscilla M Clarkson, Laura L Tosi, Joseph M Devaney

Poster No. 0631
Ankle Position Modifies Tibialis Anterior Muscle Oxygenation and Vasomotor Tone in the Human Leg
Ronald B Crater, Larry L Bachman, Roshmi Bhattacharya, Bing Zhang, Timothy F Tirrell, Douglas G Chang, Alan R Hargens

Poster No. 0632
Architectural and Biochemical Adaptations of Skeletal Muscle Following Rotator Cuff Injury in a Rat Model

Poster No. 0633
Antagonizing PPARγ Reduces Lipid Deposition and Fatty Macrophage Accumulation Following Rotator Cuff Tear
Jonathan Gumucio, Patrick L Stafford, Corey J Schiffman, Joshua R Bradley, Stuart M Roche, Evan B Lynch, Max E Davis, Julie A Harning, Caleb W Bromley, Dennis R Claflin, Asheesh Bedi, Christopher L Mendias

Poster No. 0634
The Balance of Coagulation is Essential for Postnatal Skeletal Development
Heather Cole, Masato Yuasa, Nicholas Mignemi, Jeffry S Nyman, Jonathan Schoenecker

Poster No. 0635
Development of the Murine Proximal Femur
Heather Cole, Masato Yuasa, Jeffry S Nyman, Justin M Cates, Jonathan Schoenecker

Poster No. 0636
The ESET Histone Methyltransferase is Critical to Osteoblast Differentiation and Trabecular Bone Formation
Kevin A Lawson, David P Patterson, Steven D Bain, Andrew C Ghata, Anna Z Kwiatkowska, Junhui Zou, Mei Qi, Jidi Gao, Howard A Chansky, Liu Yang

Poster No. 0637
Serum IGF-1 is Insufficient to Restore Skeletal Growth in the Absence of Growth Hormone Receptor
Yingjie Wu, Oran Kennedy, Hui Sun, Jelena Basta-Pljakic, Luis Cardoso, Clifford J Rosen, Mitchell Schaffler, Shoshana Yakar

Poster No. 0638
Enhancement of Limb Growth by Non-Thermal Plasma Generated Reactive Species
Natalie Shiansky, Marla Steinbeck, Jun Zhang, Greg Fridman, Alexander Fridman, Gary Friedman, Theresa Freeman

Poster No. 0639
Pathogenesis of Cervical Vertebral Bone Disease in Mucopolysaccharidosis I During Postnatal Growth
Joseph A Chiaro, Matthew D Baron, Chelsea del Alcazar, Eileen M Shore, Dawn M Elliott, Katherine P Ponder, Mark E Haskins, Lachlan J Smith

Poster No. 0640
The Importance of Mechanical Forces Induced by Muscle Contractions for Prenatal Joint Morphogenesis
Mario Giorgi, Sandra J Shefelbine, Niamh C Nowlan

PS1 BONE: AGING

Poster No. 0641
Age-Related Deterioration in the Osteocytic Canalicular Network of Human Femoral Cortices: Implications for Altered Mechanosensitivity in Aged Individuals
Bjorn Busse, Petar Milovanovic, Michael Hahn, Danijela Djonic, Klaus Pueschel, Marija Djuric, Michael Amling

Poster No. 0642
Age-Related Effects on the Post-Yield Nanomechanics of Human Cortical Bone in Compression
Bijay Giri, Chandan Shome, Ahmed J Mostafa, Jonathan D Almer, Xiaodu Wang

Poster No. 0643
Aging Mice Exhibit Reduced Periosteal and Greater Endosteal Bone Formation in Response to Two Weeks of Axial Compressive Loading Compared to Adult Mice
Ian Mahaffey, Whitney Cole, Ashley Russell, Alesha B Castillo

Poster No. 0644
Wnt3a Reverses the Fatty Degeneration of Aged Bone Marrow Through its Control of Mesenchymal Stem Cell Fate
Phillipp Leucht, Jie Jiang, Whitney Cole, Bo Liu, R Lane Smith, Alesha B Castillo, Jill A Helms

Poster No. 0645
A Mouse Model of Geriatric Fracture Healing: Toward the Elucidation of Aged Fracture Healing Deficiencies
Nicole S Belkin, Luke A Lopas, Michael R Karp, Derek Dopkin, Michael I Dishowitz, Allison Williams, Patricia L Mutyaba, Kurt Hankenson, Jaimo Ahn

Poster No. 0646
Longitudinal Changes in Lumbar BMD Distribution Increase the Risk of Wedge Fractures
Hugo Giambini, Sundeep Khosla, Ahmad Nassr, Chunfeng Zhao, Kai-Nan An
Poster No. 0647
Age and Impaired Healing: The Systemic Environment Compromise the Regenerative Capacity of Mesenchymal Stromal Cells (Mscs) via the Mitochondrial/Oxidative Stress Pathway
Sven Geissler, Martin Textor, Oliver Klein, Katharina Schmidt-Bleek, Grit Kasper, Patrick Strube, Georg N Duda

Poster No. 0648
Reductions in Serum IGF-1 During Aging Protect Against Metabolic Deterioration, but Compromise Bone Quality
Oran Kennedy, Hui Sun, Jelena Basta-Pljakic, Luis Cardoso, Clifford J Rosen, Mitchell Schaffler, Shoshana Yakar

Poster No. 0649
Divergence in Predicted and Measured Material Properties in Aging Mouse Femora
David K Barton, Katherine E Cilwa, Franklin J Asuncion, Michael S Ominsky, Paul J Kostenuik, Bernie Halloran, Michael D Morris, Kenneth Kozloff

PS1 BONE: MATRIX PROTEINS
Poster No. 0650
Spatial Detection of Bone Collagen Crosslinking: Importance of Tissue History
Erin M McNerny, Bo Gong, Michael D Morris, David H Kohn

Poster No. 0651
Localized Radiation Induces Late-Onset Accumulation of Advanced Glycation End Products in Bone
Megan E Oest, Savannah Wentz, Joseph A Spadaro, Timothy A Damron

PS1 BONE: GENETICS, GENOMICS AND PROTEOMICS
Poster No. 0652
RNAseq Reveals Gene Expression Changes in Bone Tissue Due to Mutations in LRP5
Ugur Ayturk, Ryan Neff, Christina Jacobsen, Danos Christodoulou, Jon Seidman, Alexander Robling, Matthew Warman

Poster No. 0653
Fibroblast Growth Factor-21 (FGF-21) Enhances BMP-2 Dependent Osteogenesis via Activating Smad Pathway
Kazunari Ishida, Dominik R Haudenschild

Poster No. 0654
Genetic Perturbations Affecting the Natural Variation in Bone Size also Affect Muscle Size
Karl J Jepsen, Bonnie T Nolan, Erin M Bigelow, Meghan Faillace, Melissa Ramcharan, Louis C Gerstenfeld, Joseph H Nadeau

Poster No. 0655
SPP1 Variant is Associated with Upper Arm Bone Volume in Males
Courtney A Sprouse, Laura L Tosi, Brennan Harmon, Heather Gordish-Dressman, Joseph Devaney, Eric P Hoffman

PS1 BONE: CELL BIOLOGY OSTEOBLASTS
Poster No. 0656
Protein Kinase Inhibitory (PKly) Reciprocally Regulates Osteoblast and Adipocyte Differentiation by Inactivating Protein Kinase a (PKa) and Down-Regulating Leukemia Inhibitory Factor (LIF)
Xin Chen, Bryan Hausman, Guangbin Luo, Murakami Shunichi, Guang Zhou, Edward Greenfield

Poster No. 0657
Opposite Effects of Bone Gene Expression Due to Kidney Disease in Two Commonly used Mouse Strains
Ryan M Clark, Laura C Shum, Marco S Loayza, Xiaoxin Wang, Moshe Levi, Virginia Ferguson, Karen B King

PS1 BONE: MECHANOBIOLOGY
Poster No. 0658
Experimental Investigation of the Mechanical Environment of Osteoblasts and Osteocytes
Stefaan W Verbruggen, Myles J McGarrigle, Muriel C Voisin, Matthew G Haugh, Laoise M McNamara

Poster No. 0659
A Novel Multiwell Plate Loading System for Oscillatory Fluid Flow Experiments
Kenneth Mann, Mark Miller, Karen I Howard, Megan E Oest

Poster No. 0660
Oscillatory Fluid Flow Induced Osteoblastic ERK1/2 Response in 3D Scaffolds
Yanghui Xing, Henry J Donahue, Jun You

Poster No. 0661
Visualization of Cytoplasmic and Endoplasmic Reticulum Calcium Dynamics in Bone Cells using FRET-Based Approach
Isabel P Leong, Andrew D Baik, Hio T Cheong, X. Edward Guo

Poster No. 0662
The Role of Integrin αVβ3 in Osteocyte Mechanotransduction
Matthew G Haugh, Laoise M McNamara

Poster No. 0663
Substrate Stiffness and Intercellular Separation Regulates Osteocyte Differentiation
Conleth A Mullen, Matthew G Haugh, Laoise M McNamara

Poster No. 0664
The Effects of Hyperglycemia on Osteocytes’ Intracellular Calcium Response to Fluid Flow
Wen Li, X. Lucas Lu, Liyun Wang

Poster No. 0665
Altered Osteocyte Mechanosensitivity in Response to Elevated Extracellular Glucose Levels
Chao Liu, Hashem Al-Dujaili, Christian Fischer, Liyun Wang, Lidan You

Poster No. 0666
The Effect of Mechanical Stimulation on Osteocyte Chemo-Sensitivity
Jia Ning Zhang, Chao Liu, Lidan You
Poster No. 0667
Osteocyte Lacunar and Canalicular Cyto-Architecture in Type I Diabetic Bones
Xiaohan Lai, Christopher Price, Andrew Paul Maniscalco, Shannon Modla, Kirk J C Czymmek, Liyun Wang

Poster No. 0668
Substrate Curvature Influences the Mechanics of Osteoblast ECM Deposition
Marcello Pillia, Teja Guda, Stefanie Shiels, Mark Appleford

PS1 BONE: PROGENITORS AND STEM CELLS

Poster No. 0669
Prostaglandin Receptor Subtype1 (EP1) Regulates Mesenchymal Progenitor Cell Fate
Marina Feigenson, Jennifer H Jonason, Minjie Zhang, Tzong-jen Sheu, Edward M Schwartz, Regis O’Keefe

Poster No. 0670
Implications of Adipose-Derived Stromal Cells in a 3-Dimensional Culture System for Osteogenic Differentiation: An In Vitro and In Vivo Investigation
Brian C Werner, Adam J Katz, Hulan Shang, Francis H Shen

Poster No. 0671
Real-Time Detection of Osteogenic Maturation in Mesenchymal Stromal Cells by Raman Spectroscopy
Carol Y Kuo, Pei-san Hung, Oscar K Lee

Poster No. 0672
The Effect of the Quality of Human Bone Marrow Mesenchymal Cells (hMSCs) on Bone Formation
Tsuyoshi Yamada, Masato Yuasa, Tomokazu Masaoka, Takashi Taniyama, Toshitaka Yoshii, Atsushi Okawa, Shinichi Sotome

Poster No. 0673
Engineering a Tissue-Specific Microenvironment for Reprogramming Synovium-Derived Stem Cell Chondrogenesis
Jingteng Li, Chenbo Dong, Cerasela Dinu, Ming Pei

Poster No. 0674
Comparative Osteogenesis of Equine Progenitor Cells Isolated from Bone Marrow, Synovium and Adipose Tissue
Matthew Stewart, Antonella P Andrietti, Yuwen Chen, Sushmitha Durgam, Allison A Stewart

Poster No. 0675
Enhancing Osteogenetic Capacity of Human Muscle Stem Cells by Ex Vivo Gene Transfer of BMP2
Ying Tang, Xueqin Gao, Arvydas Usas, Kara Immogno, Qing Yang, Freddie H Fu, Johnny Huard, Bing Wang

Poster No. 0676
Human Muscle Derived Stem Cells are Similar to Mesenchymal Stem Cells in Terms of their Marker Expression Profiles and Multi-Potent Differentiation Capacities
Xueqin Gao, Aiping Lu, Ying Tang, Bing Wang, Arvydas Usas, James H Cummins, Burhan Gharaibeh, Johnny Huard

Poster No. 0677
Comparison of Human Muscle-Derived Stem Cells Versus Bone Marrow Mesenchymal Stem Cells for Bone Regeneration in Critical Size Calvarial Bone Defect Model
Xueqin Gao, Arvydas Usas, Aiping Lu, Ying Tang, Jian Tan, Bing Wang, Rocky Tuan, James Cummin, Johnny Huard

Poster No. 0678
Orchestrating Osteogenic Differentiation of Stem Cells-Identification of Placental Growth Factor as a Mechanosensitive Gene with a Pro-Osteogenic Role
Ryan J McCoy, Karen Watters, Raymond L Stallings, Garry Duffy, Fergal J O’Brien

Poster No. 0679
Sm51 Promotes Osteogenic Differentiation Of Rat Bone Marrow Mesenchymal Stem Cells By Upregualting Runx2
Fanbiao Meng, Yun-feng Rui, Xu Liangliang, Gang Li

Poster No. 0680
SOX11 Regulates Differentiation and Migration of Mesenchymal Stem Cells and Improves Fracture Healing in an Open Femur Fracture Rat Model
Fanbiao Meng, Liangliang Xu, Gang Li

Poster No. 0681
Creating a Culture System to Study Heterotopic Ossification
Husain Bharmal, Gregory Christopherson, Youngmi Ji, Wesley Jackson, Leon Nesti

Poster No. 0682
Stromal Cell-Derived Factor-1 Induction of Vascularization in Ectopic Bone
Rhandy M Eman, E. T Hoornije, F. C Oner, W. J Dhert, J. Alblas

Poster No. 0683
The New Strategy for Non-Union Fracture Healing by Ex-Vivo Expanded Bone Marrow CD34 Positive Progenitor Cells Using Bioscaffold
Yohei Kawakami, Masaaki Ii, Atsuhiko Kawamoto, Tomoyuki Matsumoto, Taro Shoji, Yutaka Mifune, Tomoaki Fukui, Ryosuke Kuroda, Masahiro Kurosaka, Takayuki Asahara

Poster No. 0684
Similarities Between Periosteum and Paratenon Progenitor Cells
Nathaniel Dyment, Brya Matthews, Yusuke Hagiwara, Ivo Kalajzic, Douglas J Adams, Namdar Kazemi, Andrew Breidenbach, David L Butler, David W Rowe

Poster No. 0685
Paracrine Effects by Differentiating Human Bone Marrow Mesenchymal Stem Cells
Feng Li, Na Song, Christopher Niyibizi

Poster No. 0686
Cyclooxygenase-2 Contributes to Osteogenic-Differentiation via P27KIP1 in Murine Bone Marrow Mesenchymal Stem Cells
SHu-Chun Chuang, I-Chun Tai, Je-Ken Chang, Mei-Ling Ho

Poster No. 0687
A PCR-Based Method for Estimating the Contributions of Cells in Xenografts
Erin L Ealba, Richard A Schneider
Poster No. 0688
A Minimally Invasive Laparoscopic Technique to Surgically Establish Osteoporosis in Sheep Utilized in Comparative Orthopaedic Research
Jeremiah T Easley, Eileen Hackett, Stephen Garofolo, Dana Ruehlman, A. Simon Turner, Ross Palmer, Howard Seim

Poster No. 0689
Long-Term Bisphophonate Intake Suppressed Bone Turnover in Osteoporosis Patients - A Biochemical Study
Shu-lu Chung, Kwok Sui Leung, Hoi Wa Mok, Wing Yin Hung, Wing Hoie Cheung

Poster No. 0690
Evaluation of Patients’ Response Toward an Automated Osteoporosis Intervention Program
Matt Varacallo, Ed J Fox, Emmanuel Paul, Susan Hassenbein, Pam Warlow

Poster No. 0691
CaMKK2 Inhibition in Mice as a Potential Anabolic and Anti-Catabolic Treatment for Osteoporosis
Michael J Voor, Uma Sankar

Poster No. 0692
Genome-Wide Correspondence Between Lymphocyte and Cortical Bone Derived Transcriptional Profiles
Heather B Coan, Michael C Mahaney, Matthew P Johnson, Katy Freed, Jennifer Harris, Harold Goring, Joanne E Curran, Laura A Cox, John Blangero, Lorena M Havill

Poster No. 0693
Decreased Cortical Tissue Toughness Upon Remobilization after Anti-Resorptive Treatment with Risedronate
Devendra Bajaj, Paolo E Palacio-Mancheno, Mansi Patel, Gabriella Reyes, Luis Cardoso, Mitch B Schaffler, James C Fritton

Poster No. 0694
Extractions of Davallia Formosana (WL1101) Inhibit RANKL-Induced Osteoclast Differentiation and Ovariectomy-Induced Osteoporosis in Rats
Tzu Hung Lin, Rong Sen Yang, Kuan Chin Wang, Wen Mei Fu

Poster No. 0695
Design and Implantation of Implantable Micro-Electrical Stimulator for Osteoporosis Prevention
Roy Yuen-chi A Lau, Lu Ming Li, Hong Wei Hao, Hu Cheng Zhao, Xing Qing, Xia Guo, Kevin Po

Poster No. 0696
Electrical Stimulation at Dorsal Root Ganglion by Means of Implantable Micro-Electrical Stimulator Preserves Bone Mineral Content in Hindimb Unloaded Rats
Roy Yuen-chi A Lau, Kevin Po, Xia Guo

Poster No. 0697
A New Metaphyseal Bone Defect Model in Osteoporotic Rats to Study Effects of Biomaterials for the Enhancement of Bone Healing in Osteoporotic Fractures

Poster No. 0698
Endoxifen Enhances Bone Mass in Ovariectomized Mice
Anne Gingery, Malayannan Subramaniam, Muzaffer Cicek, Kevin Pitel, Urszula Iwaniec, Russell Turner, James Ingle, Matthew Goetz, Thomas C Spelsberg, John Hawse

Poster No. 0699
Precision of Transiliac Bone Raman Measurements in the Assessment of Bone Quality
Gurjit S Mandair, Jaclynn M Kreider, Steven A Goldstein, Robert R Recker, Michael D Morris

Poster No. 0700
Raman Spectroscopy: A Novel Technique for the Diagnosis of Osteoporosis and Predicting Frailty Fractures
Christian Smith, Panagiotis Gikas, Jemma G Kerns, Kevin Buckley, Tony Corner, Anthony Parker, Pavel Matousek, Allen E Goodship

Poster No. 0701
Digital Tomosynthesis-Derived Microstructural Parameters Predict Cancellous Bone Stiffness in Human Vertebrae
Woong Kim, Daniel Oravec, Edward Sander, George W Divine, Michael J Flynn, Yener Yeni

Poster No. 0702
Forced Running (60km in 6wks) Reverses Bone and Articular Cartilage Degeneration Induced by Ovariectomy in C57BI/6 Mice
Jun Yamada, Kunikazu Tsuji, Kazumasa Miyatake, Yu Matsukura, Kahaer Abula, Yoshinori Arai, Ichiro Sekiya, Takeshi Muneta

Poster No. 0703
Therapeutic Impact of Whole Body Vibration on Bone in Osteogenesis Imperfecta Mouse
Maximilien Vanleene, Sandra J Shefelbine

Poster No. 0704
Onion Extract and Exercise Improves Steroid-Induced Bone Loss in Rats

Poster No. 0705
The Influence of Limb Selection and Blast Medium on Heterotopic Ossification Following Blast Amputation in a Rat
David Jaffe, David Yoo, Jason Blevins, Gregory Gasbarro, Thao Nguyen, Tyler Hughes, Ebrahim Paryavi, Vincent Pellegrini

Poster No. 0706
Experimental and Computation Investigation into Thermal Elevations Experienced during Orthopaedic Cutting Procedures
Eimear B Dolan, Ted J Vaughan, Glen L Niebur, Laoise M McNamara

Poster No. 0707
Assessing the Strength of Mouse Vertebral Bodies with µCT-Derived Finite Element Analysis
Jeffry S Nyman, Alexander J Makowski, Sasidhar Uppuganti, Julie A Sterling, Daniel S Perrien

PS1 BONE: MECHANICS AND FINITE ELEMENT ANALYSIS
Poster No. 0708
Simulating Cortical Bone Failure Mechanisms using the eXtended Finite Element Method (XFEM)
Emer Feerick, Xiangyi (Cheryl) Liu, Patrick McGarry

Poster No. 0709
CT Landmark-Based Semi-Automated Mesh Morphing and Mapping Techniques: Generation of Patient Specific Models of the Human Pelvis without Segmentation
Zoryana Salo, Maarten Beek, Cari M Whyne

Poster No. 0710
Experimental and Finite Element Analysis of Strains Induced by Axial Tibial Compression in Young and Old C57Bl/6 Mice
Tarpit Patel, Michael Brodt, Matthew J Silva

Poster No. 0711
Ex Vivo Determination of Tissue Strains for an In Vivo Mouse Tibial Loading Model
Alessandra Carriero, Lisa Abela, Andrew Pitsillides, Sandra J Shefelbine

Poster No. 0712
Distribution of Material and Structural Properties in the Horse Metacarpal Bone using Quantitative CT and Raman Spectroscopy
Ian McCarthy, Derar Seyoum, Jemma G Kerns, Allen E Goodship

Poster No. 0713
Alterations in Diabetic Bone Revealed by Co-localized Raman and Reference Point Indentation
Max A Hammond, Maxime A Gallant, David B Burr, Joseph M Wallace

Poster No. 0714
Dynamic 3D Micro-Imaging of Human Bone During Mechanical Testing
Matthew Teeter, Hristo Nikolov, Steven Pollmann, Cynthia Dunning, Maria Drangova, David Holdsworth

Poster No. 0715
Stochastic Assessment of 2D Projection Images of Trabecular Bone Predicts its Strength and Microarchitecture
Xuanliang N Dong

Poster No. 0716
Influence of CT Image Reconstruction Kernel on the Estimation of Cortical Bone Density
Muhammad Qasim, Sean McEligot, Kevin Bennet, L. J Melton, Sundeepe Khosla, Shreyasee Amin, Dan Dragomir-Daescu

Poster No. 0717
Image Voxel Size Dependence of Trabecular Bone Mechanical Parameters Representative of the Yield and Post-Yield Behavior Estimated by Micro-Finite Element Modeling
Ning Zhang, Jeremy Magland, Chamith Rajapakse, Felix Wehrli

Poster No. 0718
Automated Image Analysis Algorithms to Revisit, Validate Pauwels’ Mechanobiological Hypotheses
Shannon R Moore, Stefan Milz, Melissa L Knothe Tate

Poster No. 0719
Comparison of Trabecular Bone Microarchitecture Using Stochastic Geometric Techniques
Dana N Mecke, Sergio A Montelongo, Sunderam Krishnan, Xiaodu Wang

Poster No. 0720
Influence of Partial Volume Effects on the Estimation of Proximal Femur Strength and Stiffness
Muhammad Qasim, Rachel C Entwistle, Sean McEligot, Kevin Bennet, L. J Melton, Sundeepe Khosla, Shreyasee Amin, Dan Dragomir-Daescu

Poster No. 0721
Determination of Trabecular Mechanical Strength Using Micro Finite Element Analysis Following Principal Structural Orientation Prediction by Quantitative Ultrasound
Liangjun Lin, Frederick Serra-Hsu, Wei Lin, Yi-Xian Qin

Poster No. 0722
Prediction of Trabecular Bone Post-Yield Behavior by Nonlinear Micro-Finite Element Modeling Using In-Vivo MR Images
Ning Zhang, Jeremy F Magland, Chamith S Rajapakse, Yusuf Bhagat, Felix W Wehrli

Poster No. 0723A
Novel Approach to Estimate Trabecular Bone Anisotropy Using a Database Approach
Javad Hazrati Marangalou, Keita Ito, Bert van Rietbergen

Poster No. 0724
Trabecular Microstructure Differs Greatly between Trabecular Groups in Proximal Femurs of Postmenopausal Women
Ji Wang, Bin Zhou, X. Edward Guo

Poster No. 0725
Modeling of Trabecular Bone Microarchitecture in 3D by Voronoi Tessellation
Peter T Mancuso, Sergio A Montelongo, Dana N Mecke, Xiaodu Wang

Poster No. 0726
Effects of Variation in Tissue-Level Ductility on Femoral Strength
Shashank Nawathe, Hosna Akhlaghpour, Mary Bouxsein, Tony Keaveny

Poster No. 0727
Computed Tomography Based Finite Element Models Can Accurately Predict Stiffness and Strength of Proximal Tibiae Loaded in Torsion
W. B Edwards, Thomas J Schnitzer, Karen L Troy

Poster No. 0728
Trabecular Bone Apposition Under High Mechanical Loads
Lutz Claes, Tim Wehner, Martina Reusch, Anita Ignatius

Poster No. 0729
Strain Induced Optical Changes in Demineralized Bone
Michael R Hardisty, Tonya Kuhl, Daniel F Kienle, Susan M Stover, David P Fyhrie

Poster No. 0730
Resonance in the Mouse Tibia as a Predictor of Frequencies and Locations of Loading-Induced Bone Formation
Todd Dodge, liming Zhao, Hiroki Yokota

Poster No. 0731
Residual Stresses for Bone Axial Direction in Bovine Femoral Diaphysis - Growing Effect -
Satoshi Yamada, Shigeru Tadano, Masahiro Toshoh
Poster No. 0732
Predicting Bone Adaptation at the Human Distal Radius Using Cadaveric Specimens and the Daily Strain Stimulus Theory
Varun Bhatia, W. B Edwards, Karen L Troy

Poster No. 0733
Relation of Human Periosteal Thickness and Cellularity to Loading History
Shannon R Moore, Stefan Milz, Melissa L Knothe Tate

PS1 BONE FRACTURE

Poster No. 0734
Homing of Culture-Expanded Mesenchymal Stem Cells to Fracture Site
Zijun Zhang, Tina Dreger, Tracy Watson, Walter Akers

Poster No. 0735
The Role of Substance P and Norepinephrine in Callus Differentiation
Tanja Niedermair, Richard Stange, Britta Wieskötter, Anja Pasoldt, Rainer H Straub, Andreas Zimmer, Joachim Grifka, Susanne Grässel

Poster No. 0736
Influence of Anti TNF-Alpha Monoclonal Antibody Treatment on Fracture Healing under Chronic Inflammation
Richard Stange, Melanie Timmen, Heriburg Hidding, Britta Wieskoetter, Thomas Pap, Michael Raschke, Georg Schett, Jochen Zwerina

Poster No. 0737
Early Stage Vascular Response and Bone Formation During Segmental Bone Defect Repair with or without Concomitant Vascular Injury
Brent A Uhrig, Nick J Willett, Hazel Y Stevens, Robert E Guldberg

Poster No. 0738
Anti-Midkine Antibody Treatment Enhances Fracture Healing in Mice
Astrid Liedert, Melanie Haffner, Thorsten Schinke, Michael Amling, Anita Ignatius

Poster No. 0739
Low Intensity Pulsed Ultrasound Accelerates Chondrogenic Differentiation of Human Fracture Hematoma-Derived Cells In Vitro
Etsuko Okumachi, Takahiro Niikura, Sang Yang Lee, Takaaki Koga, Yoshihiro Dogaki, Takahiro Waki, Masahiro Kurosaka

Poster No. 0740
In Vivo Tracking, Using an Osteoclast-Specific Florescent Label, of Osteoclast Precursors Cell Homing from Blood to Bone in a Repairing Murine Fracture Callus and the Bones of Growing Mice
Christian Jacone Galarza, Do Yu Soung, Hicham M Drissi, Sun-Kyeong Lee, H Leonardo Aguilera, Joseph Lorenzo

Poster No. 0741
Low Intensity Pulsed Ultrasound Accelerates Fracture Healing through Enhanced Mesenchymal Stem Cell Recruitment in Osteoporotic Animal Model
Fang Yuan Wei, Kwok-Sui Leung, Gang Li, Ling Qin, Simon K Chow, Wing-hoi Cheung

Poster No. 0742
Expression Patterns of Estrogen Receptors-Alpha, -Beta and Their Ratio are Related to Callus Formation During Osteoporotic Fracture Callus
Simon K Chow, Kwok-Sui Leung, Ling Qin, Wing-hoi Cheung

Poster No. 0743
Surface Strain Analysis Using Digital Image Correlation in Induced Vertebral Wedge Fracture
Hugo Giambini, Huajun Wang, Ahmad Nassr, Kai-Nan An, Dan Dragomir-Daescu

Poster No. 0744
What is the Best Material for Molding Casts in Children?
Steven B Daines, David D Aronsson, Daniel Sturrock, Bruce D Beynnon, Jennifer Lisle, Shelly Naud, Mack Gardner-Morse

Poster No. 0745
Subchondral Bone Failure in Overload Arthrosis: A Morphological Study in Equine Athletes
Sean M Turley, Ashvin Thambayah, Neil Broom

Poster No. 0746
The Effect of Nebulized Captopril on Triolein-Induced Pulmonary Fat Embolism
Aaron Heller, Agostino Molteni, Daniel Rhoades, Terence McIff

Poster No. 0747
Analysis of Distal Radius Fracture Healing with High Resolution Peripheral Quantitative CT Imaging
Joost de Jong, Chris Arts, Paul Willems, Sandrine Bours, Peter Brink, Piet Geusens, Joop van den Bergh, Keita Ito, Bert van Rietbergen

Poster No. 0748
Expression of Htra1 Serine Protease And DDR2 in Mechanically Stable Fractures and Upregulation in Mechanically Unstable Fractures
Marie E Walcott, Christopher M Raskett, Monica Thim, David C Ayers, John J Wixted, Paul J Fanning

PS1 FRACTURE FIXATION

Poster No. 0751
Novel Method of External Fixation for Mice Tibia Fractures
Yusuke Hagihara, Douglas J Adams, Nathaniel Dyment, David W Rowe

Poster No. 0752
The Research of Patient-Specific Biological-Safe Anterior Transpedicular Drill Template of Cervical Spine
Jianyi Li, Maoqing Fu, Lijun Lin, Xiangxue Kong, Weidong Zhao, Jun Ouyang
Poster No. 0753
The Role of Soft Tissues in Rigidity of Fracture Fixation of Upper and Lower Extremities
Elizabeth A Ouellette, Winston Elliott, Loren Latta, Edward Milne, Jason Lowe, David Kaimrajh, Anna-Lena Makowski, Eleanor Herndon, Check Kam, Prasad Sawardeker

Poster No. 0754
3-Point Bending Strength of Layered Fiberglass Cast Material After Lubrication with Hand Soap
John R West

Poster No. 0755
The Effect of Contouring on Fatigue Resistance of Reconstruction Plates
Angela Lin, Chelsea Fechter, Mark Magill, Felix Wipf, Thomas Moore, Robert Guldberg

Poster No. 0756
Distal Locking of the Humerus Using an Electromagnetic Field Guided Instrumented Probe
Andy Whitten, Jacob L Cartner, Markus Graf

Poster No. 0757
Clinical Results and Biomechanical Analysis of Proximal Femoral Neck Fractures Treated by Dual SC Screw
Yohei Kawakami, TakaFumi Hiranaka, Yuichi Hida, Nobuaki Chinzei, Akiko Suzuki, Harunobu Uemoto, Minoru Doita, Mitsuo Tsuji, Masahiro Kurosaka

Poster No. 0758
Biomechanical Analysis of Plate Stabilized Extra-Articular Distal Humerus Fractures
Ferris M Pfeiffer, Brett D Crist, Alan Anz

Poster No. 0759
A Biomechanical Comparison of an Internal Radiocarpal-Spanning Plate Applied with the Wrist in Neutral and in Extension
John C Elfar, Tobias Mann, Jason Dahl, Margaret Thomas, Erin Coppola

PS1 BONE: TISSUE ENGINEERING, REPAIR AND BIOMATERIALS

Poster No. 0760
Analytical Investigation of Novel Nanocomposite Scaffolds Based on Gelatin and Bioactive Glass Intended for Femoral Head Tissue Engineering
Melika Sarem, Masoud Mozafari, Fathollah Mozatarzadeh

Poster No. 0761
PLGA/TCP/icaritin Composite Scaffolds Enhance Angiogenesis in Bone Defect Healing
Shihui Chen, Ming Lei, Xinhui Xie, Lizhen Zheng, Wei Li, Zhe Zhao, Xinlun Wang, Dong Yao, Anthony Kong, Deming Xiao, Daping Wang, Xiaohua Pan, Xiyang Wang, Ling Qin

Poster No. 0762
Three Dimensional Porous Titanium Scaffolds Enhance Osteoblast Differentiation and Local Factor Production
Xiaokun Wang, Rolando A Gittens, Zvi Schwartz, Haifeng Chen, Barbara D Boyan

Poster No. 0763
Characterisation and High Resolution Finite Element Models of PCL/TCP Bone Scaffold Materials
Heather Doyle, Stefan Lohfeld, Peter McHugh

Poster No. 0764
Osteogenically Treated Human Adult Adipose-Derived Stem Cells Promote Vascular Invasion and De Novo Bone Formation in Hydroxyapatite-Reinforced Collagen Scaffolds In Vivo
Holly E Weiss, Joshua A Gargac, Matthew J Meagher, Ryan K Roeder, Glen L Niebur, Diane R Wagner

Poster No. 0765
Composite Scaffolds for the Delivery of Autologous Bone Marrow Derived Stem Cells; A Rabbit Femoral Core Defect Study
Michael Strunk, Jerry Chang, Tom Ricketts

Poster No. 0766
Addition of Nanohydroxyapatite to Collagen Scaffolds Results in Enhanced Stiffness, Osteogenesis and Bone Repair In Vitro and In Vivo
Caroline M Curtin, Emmet Thompson, Grainne Cunniffe, Glenn Dickson, Fergal J O’Brien

Poster No. 0767
Remineralization of Decellularized Bone Collagen Matrix via Alternate Solution Immersion (ASI)
Matthew Soicher, Blaine Christiansen, Susan Stover, David Fyhrie

Poster No. 0768
Physical Properties and In Vitro Evaluation of Collagen-Chitosan-Calcium Phosphate Microparticle-Based Scaffolds for Bone Tissue Regeneration
Monica V Zugaru, Richard A Smith, Benjamin T Reves, Jessica A Jennings, Jared O Cooper, Warren O Haggard, Joel D Bumgardner

Poster No. 0769
Utilization of Human Periosteum to Promote New Tissue Formation in Allograft Bone
Jessica M Kempfainen, John Alexander, Thomas J Scharschmidt, Robin Jacquet, Qing Yu, William J Landis

Poster No. 0770
Periosteum’s Intrinsic Permeability Depends on Anatomic Sampling Site and Perfusion Osmolarity
Sarah Lemonnier, Thibault Lemaire, Salah Naii, Melissa Knothe Tate

Poster No. 0771
Reconstruction of Temporomandibular Condyle in a Pig Model by Living Bone Grafts Engineered using Autogenous Mesenchymal Stem Cells, Scaffolds and Perfusion Bioreactors

Poster No. 0772
PDGF Mediates Multi-Lineage Differentiation of Adipose-Derived Stem Cells to Engineer Vascularized Bone
Daphne L Hutton, Erika Moore, Jeffrey Gimble, Xiaofeng Jia, Warren L Grayson
Poster No. 0773
Decellularized Matrix from Urine Stem Cells Benefits Human Bone Marrow Stromal Cell Chondrogenesis
Ming Pei, Jingting Li, Mark Shoukry, Yuanyuan Zhang

Poster No. 0774
The Development of Degradable Alginate Microbeads for the Delivery of Stem Cells for Bone Regeneration
Shirae Leslie, Barbara D Boyan, Zvi Schwartz

Poster No. 0775
Characterization of an Empty Segmental Defect for Stem Cell Delivery in the Femur of the Rat
Christopher R Dosier, Nick J Willet, Laxminarayanan Krishnan, Robert Guldberg

Poster No. 0776
Investigation of the Optimal Timing for Chondrogenic Priming of MSCs to Recreate the Endochondral Ossification Process In Vitro
Fiona E Freeman, Matthew G Haugh, Laoise M McNamara

Poster No. 0777
Effect of Silicon-Doped Calcium Phosphate Bone Grafting Materials on Bone Formation and Osteoblastic Phenotype Expression In Vivo
Christine Knabe, Dirk Barnemitz, Antje Genzel, Fabian Peters, Wolf-Dietrich Hübner

Poster No. 0777A
Development of a Collagen-Ceramic Bone Substitute with Sustained-Release Calcitonin for Improving Bone Defect Repair
Yuan-Ming Hsu, Chih-Hung Chang, Hsu-Wei Fang

Poster No. 0778
Live-Animal Imaging of Growth Factor-Mediated Long Bone Defect Repair in a Xenopus Tissue Engineering Model System
Iwona Jasiuk, Derek Milner, Patrick Redwood, Deepika Chitturi, Howon Lee, Nick Fang, Jo Ann Cameron

Poster No. 0779
An Osteoinductive Synthetic Graft as an Instructive Micro-Environment for Posterolateral Fusion
Tomonori Yamaguchi, Ameya Phadke, Nozomu Inoue, Robert L Sah, Hiroshi Asahara, Shyni Varghese, Koichi Masuda

Poster No. 0780
Repair of Osteoporotic Rat Calvarial Defects using Poly(lactic-co-glycolic acid) with Adipose Stem Cells
Jingting Li, David McConda, Nina Clovis, Suzanne Smith, Ming Pei

Poster No. 0781
Massive Bone Reconstruction with Heat-Treated Bone Allograft
Thomas Willett, Brianne Burton, Marc Grynpas

Poster No. 0782
How to Toughen Irradiation-Sterilized Bone Allograft
Thomas Willett, Brianne Burton, Luc Grynpas

Poster No. 0783
Investigation into the Role of TCDD in Smoking-Mediated Bone Healing Inhibition

Poster No. 0784
Material Specific Effects of Wear-Particle-Induced Osteolysis at the Bone-Implant Interface
Lisa Longhofer, Alexander Chong, Nora Zacharias, Shang-You Yang, Paul Wooley

Poster No. 0785
Synthesis and Characterization of Aspartic Acid Modify PLGA-g-PEG Nanoparticles for Bone Targeting
Chih-Kuang Wang, Yin-Chih Fu, Tzu-Fun Fu, Hung-Jen Wang, Chau-Zen Wang, Mei-Ling Ho

PS1 SPINE: SCOLIOSIS

Poster No. 0786
Transverse Process Hooks at Upper Instrumented Vertebra Provide a More Gradual Transition to Normal Motion Compared to Pedicle Screws in Long Posterior Spinal Fusion Constructs
David Glos, Dinesh Thawrani, Matthew Coombs, Kevin Louis, Donita Bylski-Austrow, Peter Sturm

Poster No. 0787
The Utility of an Allograft Tendon for Scoliosis Correction via the Costotransverse Foreman
Dong Sun, Michael McCarthy, Sandra G McLaren, Raghu H Ramakrishnaiah, Larry J Suva, Richard E McCarthy

Poster No. 0788
Inter and Intra Observer Reliability of X-ray Assessments of Apical Vertebral Rotation
Remel A Salmingo, Shigeru Horiga, Manabu Ito, Yuichiro Abe

Poster No. 0789
Influence of Spinal Rod Curvature on Scoliosis Sagittal Correction
Remel A Salmingo, Shigeru Horiga, Manabu Ito, Yuichiro Abe

Poster No. 0790
Genetic Determinants of Severe Scoliosis in NF1 Patients
Nancy H Miller, Heejong Sung, Kandice Swindle, Alex Pemov, Cristina Justice, Alexander Wilson, Douglas R Stewart

Poster No. 0791
Analysis of Cell Viability in Intervertebral Disc Under IGF-1 Treatment
Qiaojiao Zhu, Xin Gao, Chun-Yuh Huang, Weiying Gu

PS1 NERVE AND SPINAL CORD INJURY

Poster No. 0792
Evaluation of Injured Axons Using Two-Photon Excited Fluorescence Microscopy after Spinal Cord Contusion Injury in EYFP H-Line Mice
Hideki Horiuchi, Tadanori Ogata, Tadao Morino, Gotaro Ymaoka, Hiromasa Miura, Atsuhiko Hikita, Yusuke Oshima, Takeshi Imamura
Poster No. 0793
The Expression of Keratan Sulfate after Spinal Cord Injury at Far from the Lesion Site
Ryuichi Shinjo, Shiro Imagama, Zennya Ito, Kei Ando, Ryoji Tauchi, Kenji Kadomatsu, Naoki Ishiguro

Poster No. 0794
The Development and Validation of a Physical Surrogate of an Animal Spinal Cord Undergoing Traumatic Compression Loading
Carolyn J Sparrey, Sheldan Manansala

Poster No. 0795
Overexpression of GRP78 Protects Glial Cells from Cytotoxic Factors in Spinal Cord Injury
Kaori Suyama, Masahiko Watanabe, Kou Sakabe, Masahiro Kuroiwa, Yoshinori Okada, Joji Mochida

Poster No. 0796
Stem Cell Injection Suppresses Apoptosis in Rat Spinal Cord Injury Model
Zorica Buser, Christine Thang, Yalda Safai, Linda E A Kanim, Li Zhao, Rick B Delamarter

Poster No. 0797
Novel Polysaccharide-Derived Hydrogel Prevents Perineural Adhesions and Develops Functional Recovery after the Operation for the Chronic Nerve Entrapment Syndrome
Katsuyuki Iwatsuki, Nobuyuki Endo, Michihiro Yamamoto, Hitoshi Hirata

Poster No. 0798
Spinal GLT1 Modulation after Painful Nerve Root Injury Requires a Mechanical Contribution
Kristen Nicholson, Taylor Gilliland, Yu-Wen Chang, Beth Winkelstein

Poster No. 0799
Keratan Sulfate in Neurodegenerative Disease
Kazuyoshi Kobayashi, Tomohiro Ohgomori, Shiro Imagama, Zenya Ito, Kei Ando, Kenichi Hirano, Tomohiro Matsumoto, Kenji Kadomatsu, Naoki Ishiguro

Poster No. 0800
Correlation between Injury Severity and Response to Erythropoietin Treatment for Sciatic Nerve Crush Injury
Haiyan Li, John C Elfar

Poster No. 0801
Erythropoietin Accelerates Neural Axon Regeneration and Myelin Repair after Sciatic Nerve Crush Injury in Mice
Haiyan Li, Michael Zuscik, Mark Noble, John C Elfar

PS1 SPINE BIOMECHANICS

Poster No. 0802
Effects of Exogenous Crosslinking on the Mechanical Strength of Lumbar Vertebral Endplate
Shih-Youeng Chuang, Hsiu-Jen Lin, Leou-Chyr Lin, Weng-Pin Chen

Poster No. 0803
Osteophyte-Proof Method to Quantify Subject-Specific 3D Vertebral Morphology
Alejandro A Espinoza Orias, Tinh-Hsien Kao, Gunnar B Andersson, Howard S An, Nozomu Inoue

Poster No. 0804
Lumbar Foraminal Geometry: In Vivo 3D Measurements and Influence of Disc Degeneration
Isse Senoo, Alejandro A Espinoza Orias, Daniel K Park, Gunnar B Andersson, Howard S An, Nozomu Inoue

Poster No. 0805
Relevance of Disc Tissue Composition, Morphology and Annular Lesions with Respect to Lumbar Disc Degeneration
Raghu N Natarajan, Howard An, Gunnar B Andersson

Poster No. 0806
Effect of Follower Load Application on Intact Cervical Spine Kinetics
Kevin M Bell, Yiguo Yan, Tiffany Dugan, James D Kang

Poster No. 0807
Directed Vertebroplastic Cement Injection at Lytic Metastatic Lesion Restores Strength with Minimum Cement Volume
Ata M Kiapour, Eeric Truumees, Vijay K Goel, Constantine K Demetropoulos

Poster No. 0808
PEEK Rod and TI Screw Fixation Provides Construct Stability Similar to TI Rod And Screw System
Anand K Agarwal, Manoj Kodigudla, Dhanvin S Desai, Aakash Agarwal, Vivek Palepu, Vijay K Goel

Poster No. 0809
Biomechanical Effects of a Novel Load Sharing Lumbar Interbody Fusion Device (InterPlate®) Compared to the Pedicle Screw System
Vivek Palepu, Manoj Kodigudla, Aakash Agarwal, Dhanvin Desai, Vijay K Goel, James Moran

Poster No. 0810
Activated Deep Trunk Muscles Can Reduce Superficial Trunk Muscles Activity
Takuya Miura, Masanori Yamanaka, Takumi Kobayashi, Naoki Takeda

Poster No. 0811
Kinematic Behavior of the Lower Lumbar Spine in Flexion
Tina M Nagel, Jared L Zitnay, Victor H Barocas, David J Nuckley

Poster No. 0812
Simultaneous Multi-Planar Loading to Quantify the Correction Potential of Ponte Osteotomies in a Cadaveric Biomechanical Model
Sean L Borkowski, Sophia N Sangiorgio, Richard Bowen, Anthony Scaduto, Juliana Kwak, Edward Ebromzadeh

Poster No. 0813
Medial-to-Lateral Trajectory Pedicle Screws (Cortical/Pars Screws): A Biomechanical Analysis of Construct Rigidity Using a Novel Screw Design
Gurvinder Deol, Nitin Khanna, Bradley Heiges, Zachary A Dooley, Alexander W Turner

Poster No. 0814
Spinal Traction Improves Assessment of Unrecognized Occipital Cervical Dissociation Injury
Michael Liebschner, Javier Matta, John Hipp, Bruce Ehni, Sharon Derrick
Poster No. 0815
A New Paradigm on the Passive Stability of the Human Lumbar Spine
Shaun B Jeffs, Anton E Bowden

Poster No. 0816
Contribution of Cancellous Bone to the Mechanical Properties of the Entire Vertebra: Development of a New Experimental Model
Alexandra M Deal, Eric Ledet, Deepak Vashishth

Poster No. 0817
Biomechanical Efficacies of an Interspinous Spacer Combined with Posterior Lumbar Fusion with Pedicle Screws
Yeong-Hyeon Kim, Kyeong-Sik Ryu, Kwon-Yong Lee, Sung-Jae Lee

Poster No. 0818
Lumbar Facet Joint Motion in Patients with Degenerative Spondylolisthesis
Shoaib Wang, Qi Yao, Jae-Hyuk Shin, Kirkham Wood, Guoan Li

Poster No. 0819
A Novel Method for Measurement of the Lumbar Spinal Range of Motion with Three Dimensional Motion Analysis: Repeatability and Reliability Compared with Electrogoniometer
Michio Tijima, Naoshi Ogata, Masahiko Sumitani, Arito Yozu, Shuang Jiao, Haruhi Inokuchi, Yasuo Nakahara, Nobuhiko Haga

Poster No. 0820
A Kinematic Evaluation of Cervical Allograft Facet Spacers Which Can be Used to Provide Indirect Decompression Through Distraction
Kirk McGilvray, Charles Sansur, Christopher Maulucci, Vaneet Singh, Christain Puttlitz

Poster No. 0821
Biomechanical Evaluation of Revising Failed Pedicle Screws in Osteoporotic Vertebra Using Cortical Bone Dowels
Ferris M Pfeiffer, Theodore J Choma, Mike Reiter, Jesse Hirner, Kelsey Kleinhans

Poster No. 0822
Lamina Open Angles of 30 Degree Can Sufficiently Decompress Spinal Cord without Overstretching C5 Nerve Root for An Expansion Open-door Laminoplasty (EOLP) - An In Vitro Porcine Model

Poster No. 0822A
Response of Facet Joint Stiffness to Elevated Loading Frequencies
Rebecca Chung, Emily Noonan, Hannah Sidoti, Arthur Ritter, Thomas Errico, Antonio Valdevit

Poster No. 0823
Comparison of the Rigid and Flexible Screw-Rod Implantation System on the Load-Sharing Pattern of an Unstable Spinal Column
Wen-Kai Chou, Yen-Kai Huang, Wan-Ju Lin, Jaw-Lin Wang

Poster No. 0823A
Development of a Biomechanical Model Producing Proximal Pedicle Pullout of Long Fusion Spinal Constructs
Audrey J. Martin, Peter M. Wanberg, Jeremi Leasure, Jenni Buckley, Dimitriy Kondrashov, Christopher Ames

PS1 SPINE: DISC BIOMECHANICS

Poster No. 0824
Lumbar Segmental Axial Motion and Low Back Pain: Preliminary Report of a Five-Year In Vivo Longitudinal Study
Yusuke Oshita, Alejandro A Espinoza Orias, Howard S An, Gunnar B Andersson, Nozomu Inoue

Poster No. 0825
Effects of Mechanical Loading on Extracellular ATP Content in Porcine Nucleus Pulposus
Chong Wang, Silvia D Gonzalez, Wei Yong Gu, Chun-Yuh Huang

Poster No. 0826
Comparison of Age-Related Disc Degeneration Patterns Between Humans and Non-Human Primates
Jeannie F Bailey, Ellen Liebenberg, Aaron J Fields, Jeffrey C Lotz, Patricia A Kramer

Poster No. 0827
Alterations in Cartilage Endplate Material Properties Associate with Damage in the Human Lumbar Spine
Aaron J Fields, David Rodriguez, Ellen C Liebenberg, Jeffrey C Lotz

Poster No. 0828
Effect of Degeneration on Fluid-Solid Interaction within Intervertebral Disc under Cyclic Loading - A Poroelastic Finite Element Model Optimized by Backward Algorithm
Mohammad Nikkhoo, Ya-Wen Kuo, Yu-Chun Hsu, Mohammad Haghpanahi, Mohammad Parnianpour, Jaw-Lin Wang

Poster No. 0829
Biomechanical Evaluation of Rigid and Dynamic Cervical Plate Fixation under Follower Load
Yiguo Yan, Kevin M Bell, Robert A Hartman, James D Kang, Joon Y Lee

PS1 SPINE: MECHANICS AND FINITE ELEMENT ANALYSIS

Poster No. 0830
Negative Supraspinous Ligament Pre-Strain Increases Stress in the Ligamentum Flavum
Daniel J Robertson, Gregory A Von Forell, Anton E Bowden

Poster No. 0831
Effect of Psoas Muscle Spasm in L4-L5 Spinal Load: A Finite Element Study Simulating Active Response of Skeletal Muscle in Low Back Pain
Mehran Kasra, Forough Madeh Khaksar, Masoud Ramezanadeholdeh

Poster No. 0832
Finite Element Models Extended by Statistical Shape Modeling Methods Accurately Describe the Variability in Loading Response of a Set of Individual Cervical Spine Models under Simulated Flexion-Extension Conditions
Todd L Bredbenner, Travis D Eliason, William Francis, Glenn Paskoff, Barry Shender, Daniel P Nicolella

Poster No. 0833
Morphologic Analysis of Cervical Spine Using Reconstructive Computed Tomography of Cervical Spondylotic Myelopathy Patients Versus Normal Controls
Shunichi Toki, Kosaku Higashino
Poster No. 0834
New Constitutive Model for Cell Viability in Intervertebral Disc Under Dynamic Loading: 3D Finite Element Analysis
Alicia R Jackson, Qiaqiao Zhu, Weiyou Gu

Poster No. 0835
The Influence of Infiltrated Cement Volume and Morphology on Retention of Pedicle Screws: A Finite Element Study
Wenhai Wang, George Baran, Patrick Cahill

Poster No. 0836
Perivascular Stem Cells (PSCs) Induce Rat Posterolateral Lumbar Spinal Fusion
Greg Asatrian, Aaron W James, Choon G Chung, Raghav Goyal, David Stoker, Xinli Zhang, Kang Ting, Bruno Peault, Chia Soo

Poster No. 0837
Co-Culture of Mesenchymal Stem Cells and Nucleus Pulposus Cells Under an Intervertebral Disc-Like Chemical Microenvironment Enhances Discogenic Differentiation of Mesenchymal Stem Cells
Shahnaz Khan, Stephen M Richardson, Judith A Hoyland

Poster No. 0838
Repair of Rat Annulus Fibrosus Defects Using High Density Collagen Gels In Vivo
Brandon Borde, Peter Grunert, Michael Macielak, Roger Härtl, Lawrence J Bonassar

Poster No. 0839
Nanofibrous Disc-Like Angle Ply Structures Maintain Disc Height in the Rat Caudal Spine
John T Martin, Lachlan J Smith, Deborah J Gorth, Alexei Adan, Nader M Hebeia, Dawn M Elliott, Robert L Mauck

Poster No. 0840
Mechanical Properties and Cyto-Compatibility of an Injectable Hydrogel Implant for Nucleus Pulposus Repair

Poster No. 0841
Normoxic Isolation and Expansion of Human Nucleus Pulposus Cells Compromise the Quality of Regenerative Matrix in Later 3-Dimensional Culture under Hypoxia
Shu-Hua Yang, Ming-Hsiao Hu, Yuan-Hui Sun, Feng-Huei Lin

Poster No. 0842
PDGF Inhibits Apoptosis of Human Intervertebral Disc Cells in 3D Cultures
Steven M Presciutti, Teja Karukonda, Rosa Guzzo, Do Yu Soung, Isaac Moss, Hicham Drissi

Poster No. 0843
Can Notochordal Cells Promote Bone Marrow Derived Stromal Cell Potential for Intervertebral Disc Repair?
Keita Ito, Bart van Dijk, Esther Potier

Poster No. 0844
Co-Culture of Nucleus Pulposus and Mesenchymal Stem Cells in a Nutrient Limited In Vitro System- Implications for Intervertebral Disc Regeneration Strategies
Sean C Maguire, Syeda M Naqvi, Milena K Tryfon, Conor T Buckley

Poster No. 0845
Tissue Engineering Construct (TEC) Derived from Synovial Mesenchymal Stem Cells Prevents Disc Degeneration after Nucleotomy in a Rat Model
Yu Moriguchi, Kensiuke Ikuta, Haruko Hasegawa, Tokimitsu Morimoto, Masafumi Kashi, Takashi Kaito, Motoki Iwasaki, Hideki Yoshikawa, Norimasa Nakamura

Poster No. 0846
Biglycan Downregulates TNF-Alpha-Induced Protease and Cytokine Gene Expression in Human Intervertebral Disc Cells
Samuel Buchanan, David Gerard, Yejia Zhang, Ana Chee, Howard An, Gabriella Cs-Szabo

Poster No. 0847
Biglycan Inhibits Substance P Release by Cultured Primary Sensory Neurons from the Rabbit Dorsal Root Ganglion
Yejia Zhang, Peng Shi, Ana Chee, Er-Yun Chen, Gabriella Cs-Szabo, Howard S An

Poster No. 0848
Fullerol Nanoparticles Suppress Inflammatory Response and Adipogenesis of Vertebral Bone Marrow Stromal Cells- A Novel Treatment for Intervertebral Disc Degeneration
Qihai Liu, Li Jin, Francis H Shen, Xudong Li

Poster No. 0849
The Relationship between Serum Vitamin D levels, Successful Fusion and Fusion Strength: A Quantitative Analysis
Melodie F Metzger, Linda "LEA" Kanim, Li Zhao, Samuel T Robinson, Zorica Buser, Rick Delamarter

Poster No. 0850
Three-Dimensional Visualization of Microvasculature of Rat Spinal Cord In Vitro by Synchrotron Radiation Micro-Angiography
Hongbin Lu, Yong Cao, Jianzhong Hu, Tianding Wu, Dongzhe Li

Poster No. 0851
Mesenchymal Stem Cells Exert an Anti-Inflammatory, Anti-Catabolic Phenotypic Change in Degenerate Nucleus Pulposus Cells and NP Tissue Explants
Liam McMorrough, Francesca Ludwinski, Stephen M Richardson, Judith A Hoyland
Poster No. 0855
The Effect of Interleukin-1 and Hypoxia on the Discogenic Differentiation of Mesenchymal Stem Cells
Liam McMorrow, Francesca Ludwinski, Stephen M Richardson, Judith A Hoyland

Poster No. 0856
CCN2 Functions as an Anti-Inflammatory Molecule in Nucleus Pulposus Cells of the Intervertebral Disc
Cassie M Tran, Makarand V Risbud, Irving Shapiro

Poster No. 0857
Link Protein Peptide (LPP) Stimulates the Production of the IVD Matrix Components Aggrecan, Collagen II, and SOX9
Through the Enhancement of the Smad1/5 Phosphorylation
Zili Wang, William C Hutton, Sangwook T Yoon

Poster No. 0858
The Role of α5β1 Integrin in the Mechanically Initiated Intervertebral Disc Degeneration
Takuto Kurakawa, Kenichiro Kakutani, Yusuke Morita, Toru Takada, Koichiro Maeno, Takashi Yurube, Junya Yamamoto, Hiroaki Hirata, Shingo Miyazaki, Minoru Doita, Masahiro Kurosaka, Kotaro Nishida

Poster No. 0859
Identifying the Molecular Phenotype of Cells in the Human Intervertebral Disc Reveals the Existence of a Unique Notochordal-Like Cell Population
Xinyan Tang, Liufang Jing, Lori Setton, William Richardson, Robert Isaacs, Robert Fitch, Christopher Brown, Jun Chen

Poster No. 0860
Disc Degeneration in the Adolescent and in the Adult Occurs by the Same Mechanism
Bashar AlKhatib, Rahul Gawri, Peter Roughley, Jean Ouellet, Lisbet Haglund

Poster No. 0861
Senescent Disc Cells Exhibit Severely Perturbed Matrix Homeostasis
Nam Vo, Kevin Ngo, Hong Joo Moon, Gwendolyn Sowa, James Kang

Poster No. 0862
Human Degenerated Nucleus Pulposus Tissues Induce Mechanical Allodynia and Molecular Expression in the DRG: the Disc Xenograft-Radiolipathy Model
Tomonori Yamaguchi, Rajeswari Pichika, Tatsuhiko Fujiwara, Mary Ellen Lenz, Jade He, Iris Shieh, Hiroshi Asahara, Nozomu Inoue, Koichi Masuda

Poster No. 0863
Exogenous SIRT1 Activates the Proliferation Activity of Human Intervertebral Disc Cells via Autophagy in Low Nutritional Condition
Shingo Miyazaki, Kenichiro Kakutani, Zhongying Zhang, Koichiro Maeno, Takuto Kurakawa, Hiroaki Hirata, Junya Yamamoto, Takashi Yurube, Toru Takada, Minoru Doita, Masahiro Kurosaka, Kotaro Nishida

Poster No. 0864
Development of a Novel Decellularized ECM-Biomaterial for Nucleus Pulposus Replacement
Svenja Illien-Junger, Dillon D Sedaghettapour, Andrew C Hecht, Sheeraz A Qureshi, Steven B Nicoll, James C Iatridis

Poster No. 0865
Endochondral Ossification as a Model for Intervertebral Fusion in the Sacrum of Mice
Meghan M Moran, Renata Skubautyte, Makarand V Risbud, Sharon Usip, JGM Hans Thewissen

PS1 SPINE THERAPEUTICS: IN VIVO PRECLINICAL

Poster No. 0866
Pentosan Polysulfate Provides Mild Reversal of Spinal Alterations in Rats with Mucopolysaccharidosis Type VI (MPS VI)
Alon Lai, Calogera Simonaro, Edward Schuchman, Gary Striker, Yi Ge, Meghan Faillace, Damien Laudier, James C Iatridis

Poster No. 0867
The Effects of Nimodipine and Nicotine on Intervertebral Disc Trans-Endplate Transport
Sarah E Linley, Joshua Peterson, Rosemarie Mastropolo, James Lawrence, Luciana Lopes, Jeffrey C Lotz, Eric Ledet

Poster No. 0868
A Nano-Textured Growth Factor Carrier Substrate Delivers Minimized Doses of rhBMP-2 and Attenuated Adverse Swellings in an Animal Model of Posterior Spinal Fusion
Soo Yein Toh, Ming Wang, Sunny-Akogwu Abbah, James Goh, Hee-Kit Wong

Poster No. 0869
Efficacy of E.Coli Expressed rhBMP-2 on Canine Posterolateral Lumbar Fusion
Hiroyuki Irie, Kumi Ogi, Masahiro Nagaya, Kazushige Sugama, Daisuke Shoji, Tomiya Matsumoto, Sho Dohzono, Hiroaki Nakamura, Kunio Takaoka

PS1 SPINE THERAPEUTICS: CLINICAL

Poster No. 0870
Markov Cost Effectiveness Analysis: Total Hip Arthroplasty for Osteoarthritis vs. Posterior Spinal Fusion for Degenerative Spondylolisthesis
Ryan McLemore, Brian Cunningham, Dennis Crandall, Alexander C McLaren

Poster No. 0871
VEPTR Expansion Thoracoplasty in a Rabbit Model of Thoracic Insufficiency Syndrome: Earlier Treatment Provides Improved Outcomes
Casey Olson, Ayuko Takahashi, Michael Glotzbecker, Jay Wilson, Brian Snyder

Poster No. 0871A
The Effect of Mesenchymal Stem Cell Allograft on Cervical and Lumbar Spinal Fusion
Emily Putney, Kalman Blumberg

Poster No. 0872
Pulsed Electromagnetic Fields Have an Acute Anti-Inflammatory Effect on Intervertebral Disc Cells
Rachel Willardson, Dezba Coughlin, Ashraf El Naga, Sean Degmetich, David Sing, Jeffrey Lotz
Use of OsteoAMP® in Lumbar Spine Fusion Results in Higher Density Fusion Mass as Compared to Autograft and rh-BMP-2
Jeffrey Roh

A Novel Approach to Measure Decrease of Gait Adjustability in Older Adults
Yuki Tochigi, Neil A Segal

Developing a Measure to Assess Lower Extremity Biomechanical Exposures in People Working on Mezzanine Surfaces made from a Wood Composite vs. Concrete
Steve Lavender, Jay P Mehta, W. Gary Allread

Effects of Yoga on Gait Performance in Obese Youth
Keri Hainsworth, Pippa Simpson, Ann Swartz, Susan Tran, Gustavo Medrano, Bryant Mascarenhas, Steven Weisman, XueCheng Liu

Is the Contralateral Knee a Valid Reference When Quantitatively Assessing Secondary Knee Kinematics?
Jarred Kaiser, Robert Bradford, Rachel Lenhart, Rick Kijowski, Darryl Thelen

Opening-Wedge High Tibial Osteotomy Changes Three-Dimension Knee Kinematics
Agnes G d’Entremont, Simon Horlick, Mojieb Manzary, Trevor Stone, Robert G McCormack, David R Wilson

The Outcome of a Novel Biomechanical Therapy for Patients Suffering from Anterior Knee Pain
Amit Mor, Amir Haim, Ganim Segal, Avi Elbaz, Gabriel Agar, Yaron Bar-Ziv, Yifat Beer, Guy Morag, Ronen Debi, Ehud Atoun

Effect of Reference Frame on Reduction of Calculated Knee Adduction Moment in Response to Laterally-Wedged Insole
Satoshi Yamaguchi, Masako Kitamura, Tomohiro Ushikubo, Atsushi Murata, Takahisa Sasho, Ryuichiro Akagi, Yuta Muramatsu, Shunsuke Mukoyama, Kazuyoshi Gamada

Knee Osteoarthritis Patients Undergoing A Non-Invasive Biomechanical Training Program Demonstrate Alterations in Sagittal Plane Knee Kinetics: A Prospective Clinical Study
Amir Haim, Eytan M Debbi, Yulia Goryachev, Alon Wolf

New Technique for Rehabilitation Using the Robot Suit HAL: A Feasibility Study
Shigeki Kubota, Yoshio Nakata, Kiyoshi Eguchi, Kiyotaka Kamibayashi, Ryoohei Ariyasu, Hiroaki Kawamoto, Masataka Sakane, Yoshiyuki Sankai, Naoyuki Ochiai

The Effect of Unstable Surfaces on Biomechanical Risk Factor Profile of Elite Female Athletes
Rebecca Slutz, Hillary J Braun, Maria Malone, Amy Slider, Robert Andrews, Daniel Garza, Jason L Dragoo

The Characteristics of Lower Limb Kinematics Associated with Greater Knee Abduction Moment during a Drop Vertical Jump
Tomoya Ishida, Masanori Yamanaka, Shohei Taniguchi, Yuta Koshino, Hisashi Matsumoto, Naoki Takeda, Yoshimitsu Aoki

Intraoperative Knee Kinematics Captured with Navigation is not Correlated with Pre-Operative Gait Kinematics
Kathryn Young, Janie L Astephen Wilson, David A Wilson, Michael J Dunbar

Association of Radiographic Knee Osteoarthritis and Pain with Gait Asymmetry: The Multicenter Osteoarthritis Study
Rajshree Mootanah, Howard Hillstrom, Douglas Gross, Jingbo Niu, Michael C Nevitt, Cora E Lewis, James Torner, Jean Hietpas, David Felson

Progression of Abnormal Knee Kinematics During Squatting in Primary Knee Osteoarthritis: A 3D-to-2D Registration Technique
Futoshi Ikuta, Kei Yoneta, Takeshi Miyaji, Ken-ichi Kidera, Akihiko Yonekura, Kou Chiba, Hiroyuki Shindou, Kazuyoshi Gamada

Alterations in Knee Joint Muscle Activation and Tissue Stresses-Strains during Gait Associated with Knee Osteoarthritis
M. Adouni, A. Shirazi-Adl

Amount of Lateral Joint Shift during Stance Phase of Gait can be Used as Clinical Index for Medial Knee Osteoarthritis
Takeo Nagura, Yasuo Niki, Yoshimori Kiriyama, Hiroyuki Enomoto, Yoshiaki Toyama, Yasunori Suda

Kinematics and Contact Mechanics of the Human Knee during Gait and Stair Climb: A Cadaveric Model
Suza Gilbert, Tony Chen, Ian Hutchinson, Dan Choi, Clifford Voigt, Russell Warren, Suzanne A Maher

Relationship between Meniscal Integrity and Anterior-Posterior Laxity of the Knee
Sally Arno, Christopher Bell, KellyAnne McGorty, Xia Ding, Ravinder Regatte, Svetlana Krasnokutsy Samuels, Jonathan Samuels, Steven Abramson, Peter S Walker

ACL-Injured Subjects Have a Smaller Tibial Spine than Uninjured Controls and Females Have a Smaller Tibial Spine than Males
Javad Hashemi, Ariful Bhuyian, Hossein Mansouri, James Slauterbeck, Bruce Beynon
Poster No. 0893
Effects of Gender and ACL Reconstruction Status on Muscle Activity of the Lower Limb during a Jump-Cut Task
Maggie S Coats-Thomas, Daniel L Miranda, Braden C Fleming

Poster No. 0894
Three-Dimensional Representation of Knee Ligaments Reflects Realistic Joint Kinematics: a Finite Element Study
Vikas Kaul, Ali Kiapour, Ata M Kiapour, Carmen E Quatman, Samuel C Wordeman, Timothy E Hewett, Constantine K Demetropoulos, Vijay K Goel

Poster No. 0895
Effect of Knee Abduction Moments on ACL Strain during Simulated Landing
Ata M Kiapour, Carmen E Quatman, Vijay K Goel, Samuel C Wordeman, Jason W Levine, Timothy E Hewett, Constantine K Demetropoulos

Poster No. 0896
Effect of Inhibited Tibial Rotation on Valgus Torque Upon ACL Failure During Simulated Landing
Hossein Mokhtarzadeh, Andrew Ng, Chen Hua Yeow, Fatemeh Malekipour, Denny Oetomo, Peter V Lee

Poster No. 0897
Effect of ACL Surgery on Bone Surface Interactions during a Jump-Cut Maneuver
Daniel L Miranda, Michael J Rainbow, Braden C Fleming

Poster No. 0898
Effect of Anterior Cruciate Ligament (ACL) Compliance on ACL Strain: Analysis using Finite Element Methods
Jesal Parekh, Scott G McLean, Mark Palmer

Poster No. 0899
Restricted Hip Internal Rotation Associated with FAI Increases ACL Strain during a Simulated Pivot Landing
Youkeun K Oh, Asheesh Bedi, Bryan T Kelly, Edward M Wojtys, James A Ashton-Miller

Poster No. 0900
The Effect of Coronal Location of the Tibial Anteromedial Tunnel in Double Bundle Anterior Cruciate Ligament Reconstruction
Shigehiro Asai, Donghwi Kim, Yuichi Hoshino, Chan Woong Moon, Akira Maeyama, Monica Linde-Rosen, Patrick Smolinski, Freddie H Fu

Poster No. 0901
Biomechanical Comparison of Anatomic Single and Double Bundle ACL Reconstructions: An In Vitro Study
Mary T Goldsmith, Kyle Jansson, Sean D Smith, Lars Engebretsen, Robert LaPrade, Coen A Wijdicks

Poster No. 0902
Effect of Increased Iliotibial Band Load on Tibiofemoral Kinematics and Force Distributions: A Direct Measurement in Cadaveric Knees
Hemanth R Gadikota, Shinsuke Kikuta, Wei Qi, Thomas J Gill, Guoan Li

Poster No. 0903
Modulation of the Relationship Between Peak Knee Adduction Moments and Medial Contact Forces Across Subjects and Activities
Markus O Heller, Adam Trepczynski, Ines Kutzner, William R Taylor, Georg Bergmann

Poster No. 0904
Impacts of Stiff Joint Remodeling on Vertical Ground Reaction Forces Following MCL Transection and Medial Meniscectomy
Rebecca Nesbitt, Marc Galloway, Samuel Harms, Cindi Gooch, David Butler, Jason Shearn

Poster No. 0905
Biomechanical Comparison of Lateral Meniscus Posterior Horn Root Avulsions and Radial Tears and in Situ Pull Out Repairs of Root Avulsions and Radial Tears
Christopher M LaPrade, Kyle Jansson, Grant Dornan, Sean D Smith, Coen A Wijdicks, Robert F LaPrade

Poster No. 0906
Maturational Contributions to Comparative Lower Limb Muscle Volumes: Implications for Knee Joint Injury
Steven P Davidson, Jessica M Deneweth, Scott G McLean

Poster No. 0907
T2 Mapping and Functional Outcome of Patients with Medial Knee Osteoarthritis after the use of Unloader Bracing
Hillary J Braun, George Pappas, Oluansanjo Adeoye, Michael R Chen, Garry E Gold, Jason L Dragoo

Poster No. 0908
The 3D Quadriceps Vector in Healthy and Osteoarthritic Knees
Tomoharu Mochizuki, John D Blaha, Osamu Tanifuji, Shin Kai, Hiroshi Yamagiwa, Takashi Sato, Go Omori, Yoshio Koga, Naoto Endo

Poster No. 0909
Does Native Hip Morphology Predetermine the Pattern of Knee Osteoarthritis?
Adam Boissonneault, Elise Pegg, David Murray, Hemant Pandit

Poster No. 0910
Knee Subchondral Bone Shape Prior to Clinical Osteoarthritis Onset is Significantly Different in Individuals with a Family History of Total Knee Replacement
Jason D Wiemers, Todd L Bredbenner, Dawnlee J Roberson, Daniel P Nicolella, Lorena M Havill

Poster No. 0911
Difference in Lower Extremity Biomechanics in Division I Field Hockey and Lacrosse Female Athletes
Hillary J Braun, Rebecca Shultz, Maria Malone, Amy Slider, Robert Andrews, Daniel Garza, Jason L Dragoo

Poster No. 0912
Evidence that Individual Mechanical Mechanisms Work Synergistically in the Initiation and Progression of Early Cartilage Damage in Injured Sheep
Jillian E Beveridge, Nigel G Shrive, Cyril B Frank

Poster No. 0913
A Stepwise, Subject-Specific Approach for Calculating Knee Joint Cartilage Stresses and Strains during Gait
Antti Valkeapää, Juha-Pekka Kulmala, Mika Mononen, Adam Klodowski, Rami Korhonen, Janne Avela, Ilkka Kiviranta, Jukka Jurvelin, Aki Mikkola

Poster No. 0914
Analysis of the Knee Rotational Kinematics in ACL-ruptured Patients Using 3.0 Tesla Magnetic Resonance Image
Jong-Min Kim, Allen Seol, Samuel Wu, Subburaj Karupppasamy, Julien Rivoire, Xiaojuan Li, C.Benjamin Ma
Poster No. 0915
Which Auto Graft Can Reproduce the Native ACL Footprint Size? A Cadaver Study
Takanori Iriuchishima, Freddie H Fu

Poster No. 0916
Correlation Between Femoral Intercondylar Notch Width and Guide Pin Exit Point When Preparing Anterior Cruciate Ligament Femoral Tunnel Through Far Anteromedial Portal: A Cadaveric Study
Atsunori Murase, Masahiro Nozaki, Masaaki Kobayashi, Hideyuki Goto, Yasuhiro Nishimori, Masahito Yoshida, Tetsuya Takenaga, Yuko Nagaya, Hiroto Mitsui, Hirotaka Iguchi, Takanobu Otsuka

Poster No. 0917
Does Fractionation of High-Dose Irradiation Preserve Tissue Properties of ACL Allografts? An In Vivo Animal Study
Tanja Schmidt, Jan-Hendrik Grotewohl, Arnd Hoburg, Axel Pruss, Mark Smith, Uwe Gohs, Sven Scheffler

Poster No. 0918
Tibiofemoral Joint Space During Hopping Following ACL Reconstruction
Eric Thorhauer, Ermias Abebe, Joshua Gyory, Marcus Hofbauer, Scott Tashman

Poster No. 0919
Biomechanical Comparison of Four Methods of Anatomic ACL Reconstruction Techniques using Quadriceps Tendon in a Human Cadaveric Model
Donghwi Kim, Sun Chul Hwang, Sahnhungh Lee, Vincent Pronesti, Monica Linde-Rosen, Patrick Smolinski, Freddie H Fu

Poster No. 0920
Size Prediction of Quadriceps Tendon Autograft for ACL Reconstruction
Yoshimasa Fujimaki, Shugo Maeda, Kellie K Middleton, Eric Thorhauer, Motoko Miyawaki, Paulo H Araujo, James J Iriuchishima, Scott Tashman, Freddie H Fu

Poster No. 0921
Evaluation of Osteointegration in Tunnels using MR Arthrography after Double Bundle ACL Reconstruction with Hamstring Tendon
Jaeeang Sim, Jihoon Kwak, Yongseuk Lee, Sheenwook Lee, Kwanghui Kim, Shinwoo Nam, Wonseok Oh, Beomkoo Lee

Poster No. 0922
Potential Risk of Anterior Tibial Cortex Damage in Transtibial Technique for Anatomical Double Bundle Anterior Cruciate Ligament Reconstruction
Yasuhiro Nishimori, Masahiro Nozaki, Masaaki Kobayashi, Hideyuki Goto, Atsunori Murase, Masahito Yoshida, Tetsuya Takenaga, Hiroto Mitsui, Yuko Nagaya, Hirotaka Iguchi, Takanobu Otsuka

Poster No. 0923
Biomechanical Comparison of Eight Soft Tissue Devices for Tibial Fixation of Anterior Cruciate Ligament Reconstruction Grafts
Cathrine Aga, Matthew T Rasmussen, Sean D Smith, Kyle Jansson, Benjamin Petre, Robert F LaPrade, Lars Engebretsen, Coen A Wijdicks

Poster No. 0924
Measurement of Native ACL Tibial Insertion Site Morphology: A Cadaveric Study
Motoko Miyawaki, Shugo Maeda, Paulo H Araujo, Yoshimasa Fujimaki, Eric Thorhauer, Kellie K Middleton, James J Iriuchishima, Scott Tashman, Freddie H Fu

Poster No. 0925
The Morphology of the Medial Wall of the Lateral Femoral Condyle
Sebastian Kopf, Sheila Ingham, Cesar A Martins, Patrick Smolinski, Freddie H Fu

Poster No. 0926
Tissue Safety During Arthroscopic Creation of an Anatomically Based Femoral ACL Tunnel
Rebecca Wozniak, Jack Andrich, Jason Halloran

Poster No. 0927
Biomechanical Evaluation of Femoral Soft Tissue Fixation Techniques for ACL Reconstruction
Benjamin Petre, Sean D Smith, Kyle Jansson, Peter-Paul de Meijer, Thomas Hackett, Robert F LaPrade, Coen A Wijdicks

Poster No. 0928
Defining Safe Zones for Tibial Tunnel Placement in Posterior Cruciate Ligament (PCL) Reconstruction: A Computer Simulation Study
Liying Zheng, Rodrigo Salim, Robert E Carey, Christopher Harner, Xudong Zhang

Poster No. 0929
Statistical Shape Analysis of Cruciate Ligaments and Meniscal Root Insertions on the Tibia
Liying Zheng, Robert E Carey, Christopher Harner, Xudong Zhang

Poster No. 0930
Risks of Low Profile Supplemental Fixation in ACL Reconstructions in Patients with Decreased Bone Mineral Density
Bryan Vopat, David Paller, Jason Machan, Anthony Avery, Patrick Kane, Sharath Koruprolu, Melissa Cristina, Paul Fadale

Poster No. 0931
Enhanced Tendon To Bone Healing: An MRI and Histological Study Comparing Poly-D, L-lactide (PLDLA) Vs. Tricalcium Phosphate (TCP) Coated Interference Screws in ACL Surgery
Xinning Li, Beth E Shubin Stein, Frank Cordasco, Asheesh Bedi, Jo A Hannafin, Scott A Rodeo, Hollis G Potter, Peter Torzilli, Russell Warren

Poster No. 0932
Cross-Sectional Area of the Anterior Cruciate Ligament Mid-substance with Knee Flexion Angle
Sun Chul Hwang, Shige Asai, Bunsei Goto, Scott Kramer, Monica Linde-Rosen, Patrick Smolinski, Freddie H Fu

Poster No. 0933
Bioresorbable Polylactide (PLA) Sponges - Platelet Rich Plasma (PRP) Composite Implants as a Means to Enhance Ossification in the Bone Tunnel in Ligament Reconstruction Surgery
Krzysztof Ficek, Jerzy Cholewinski, Stanislaw Blazewicz, Ewa Stodolak-Zych, Arkadiusz Wiatr, Mateusz Stolarz
Poster No. 0934
Comparison of Alternate References for Femoral Rotation in Total Knee Arthroplasty
Hyung-min Ji, Ye-Yeon Won, Myung-Hyun Baek, Hyo-Sung Lee

Poster No. 0935
Periarticular Steroid Injection for Pain Management in Total Knee Arthroplasty
Masahiko Ikeuchi, Masashi Izumi, Koji Aso, Natsuki Sugimura, Toshikazu Tani

Poster No. 0936
Assessment of Aggressive Physiological Load Testing of Total Knee Implants
Scott M VanValkenburg, Safia Bhimji, Frederick W Werner

Poster No. 0937
Patellar Height in 90 Degrees Flexion Before and After Posterior Stabilized Type Total Knee Arthroplasty
Makoto Kawasaki, Ryuji Nagamine, Keiichi Kondo, Weijia Chen, Yoshinori Yoh, Kei Osano

Poster No. 0938
Effect of Design Factors on Initial Stability of Cementless Tibial Implants
Alex Stoller, Brett Levine

Poster No. 0939
A Flexible Baseplate with a Partially Porous Keel can Withstand Clinically Relevant Loading
Vincent Alipit, Safia Bhimji, Michael Meneghini

Poster No. 0940
Is the Standardized Performance Requirement for Tibial Tray Cantilever Fatigue Strength Appropriate?
Alex Stoller

Poster No. 0941
Comparison of in Vivo Polyethylene Wear Particles in Oxidized Zirconium and CoCr Total Knee Arthroplasties
Maki Itokazu, Yukihide Minoda, Kanako Hata, Hiroyoshi Iwaki, Mitsuhiro Ikebuchi, Fumiaki Inori, Yusuuke Hashimoto, Shigekazu Mizokawa, Yusuke Sasaki, Hiroshi Ito

Poster No. 0942
A New Digital Radiographic Method to Measure Polyethylene Wear in Total Knee Arthroplasty (TKA)
John M Martell, Darlene M Urlaub, Michael C Martell, Michael Chinander

Poster No. 0943
Oxidation Induced Changes in Crosslink Density of Retrieved, Highly Crosslinked UHMWPE Tibial Bearings
Steven D Reinitz, Barbara H Currier, Meagan E Tibbo, Katherine R Menge, Tanille J Paniogou, Rayna A Levine, John P Collier

Poster No. 0944
Polyethylene Wear Damage Versus BMI of Two Artificial Knee Joints
Darren Hart, Ingrid Baragar, Eric Bohm, Jan M Brandt, Shabnam Pejhan, Urs Wyss

Poster No. 0945
Assessment of Mobile and Fixed Bearing Implants Using 3-Dimensional Laser Scanning
Kirsten Stoner, Nader Nassif, Timothy Wright, Douglas Padgett

Poster No. 0946
Outcome Following Revision Knee Arthroplasty: The Role of Posterior Condylar Offset
David F Hamilton, Nicholas Clement, Richard Burnett

Poster No. 0947
Wear of Patella Femoral Joint: Effect of Patella Design and Kinematics
Raman Maiti, Zhongmin Jin, John Fisher, Liam Rowley, Louise Jennings

Poster No. 0948
Femoral Shaft Bowing and Femoral Component Flexion in Total Knee Arthroplasty
Adam Norton, Justin Greiner, Steve Liu, Yubo Gao, Annunziato Amendola, Phinit Phisitkul, John Callaghan

Poster No. 0949
Digital Evaluation of Tibial Component Positioning in Total Knee Arthroplasty: Impact of Rotational Alignment on Undersizing and Bony Coverage
Yifei Dai, Kim Bertin, Samih Tarabichi, Ashok Rajgopal, Jeffrey E Bischoff

Poster No. 0950
The Relationships between Rotational Alignment of the Femoral Component to the Flexion Gap Balance and to the Tibial Mechanical Axis When a Balanced Gap Technique is Used in Posterior-Stabilized Total Knee Arthroplasties
Hitoshi Nochi, Satomi Abe, Takuya Ruike, Hiroshi Kobayashi, Yusuke Sasaki, Hiroshi Ito

Poster No. 0951
Robert A Siston, Sean Lemke, Megan A Nesline, Matthew Beal, Stephen J Piazza

Poster No. 0952
Influence of Intra-Operative Joint Component Gaps on Post-Operative Knee Flexion in Unicompartmental Knee Arthroplasty
Tokio Matsuzaki, Tomoyuki Matsumoto, Seiiji Kubo, Hirotugu Muratsu, Nao Shibanuma, Takehiko Matsushita, Katsumasa Tei, Shinya Oka, Yuichiro Nishizawa, Kanto Nagai, Atsuo Uefuji, Masahiro Kurosaka, Ryosuke Kuroda

Poster No. 0953
Three Dimensional Assessment of Medial-Lateral Laxity after Cruciate-Substituting and -Retaining TKA
Ryuichi Gejo, Kazuhito Sugimori, Hiraku Motomura, Isao Matsushita, Yoshiaki Ito, Makiko Nogami, Tomoatsu Kimura

Poster No. 0954
PCL Over-Tightness Increases Tibial Insert Stress in Cruciate Retaining Total Knee Arthroplasty
Bo Gao, Laurent Angibaud
Poster No. 0955
Most Flexion Contracture do not Require Posterior Cruciate Ligament Resection in Total Knee Arthroplasty
Ryutaku Kaneyama, Hideaki Shiratsuchi, Kazuhiro Oinuma, Yoko Miura, Tatsuya Tamaki, Hideaki Fukuda, Yusuke Ueda

Poster No. 0956
Soft Tissue Balancing using Offset-Type Tensor with a Navigation System in Posterior-Stabilized and Cruciate-Retaining Total Knee Arthroplasty
Tomoyuki Matsumoto, Seiji Kubo, Hirotugu Muratsu, Takehiko Matsushita, Shinya Oka, Tokio Matsuzaki, Yuichiro Nishizawa, Kanto Nagai, Atsuro Uefuji, Ryosuke Kuroda, Masahiro Kurosaka

Poster No. 0957
A Loose Extension Gap during TKA Leads to Increased Mid-flexion Laxity
Michael B Cross, Gregory Klingenstein, Christopher Plaskos, Angela Li, Denis Nam, Stephen Lyman, Andrew Pearle, David Mayman

Poster No. 0958
Initial Experiences with a Custom Device to Measure Stability During TKA
Erin E Hutter, Jeffrey Granger, Matthew Beal, Robert Siston

Poster No. 0959
Computational and Experimental Study on the Effect of Centre of Rotation on Wear Performance in TKR
Abdellatif Abdelgaied, Claire Brockett, Louise Jennings, John Fisher

Poster No. 0960
The Angular Relationship of the Femoral Mechanical Axis and Epicondylar Axis in Knees with Varus Deformity - An Anatomic Study Utilizing Computed Tomography
Kory B Reed, Donald W Hohman, Sridhar Rachala, Kenneth A Krackow

Poster No. 0961
Post-Cam Engagement during Dynamic Activity with Current Posterior-Stabilized TKA
Clare K Fitzpatrick, Chadd Clary, Paul Rullkoetter

Poster No. 0962
Assessing the Effect of Finer Increments of Tibial Inlay Thickness on Laxity and Kinematics in Total Knee Arthroplasty - An Experimental and Numerical Investigation
Marc Bandi, Erik Sigelkow, Wolfgang Klauser, Francesco Benazzo, Iris Sauerberg

Poster No. 0963
Functional Mobility Following Total Knee Arthroplasty with a Medial Pivot Knee during Sit-Stand Maneuver
Mario Lamontagne, Sarah Reynolds, Geoffrey F Dervin

Poster No. 0964
Intra-Operative Passive Flexion Kinematics of Osteoarthritic Knees Before and After TKA with Hyper-Congruent Design Implant
Takatoshi Morooka, Daisuke Seino, Fumiaki Imamura, Hiroshi Nakayama, Shinichi Yoshiya

Poster No. 0955
Patient-Specific Implants and Cutting Guides Better Approximate Natural Kinematics than Standard Total Knee Arthroplasty
Shantanu Patil, Adam Bunn, William D Bugbee, Clifford W Colwell, Darryl D D’Lima

Poster No. 0966
A Novel Knee Simulator that Reproduces the Active and Natural Knee Motion to Evaluate Kinematics and Kinetics of TKA
Shunji Hirokawa, Michihiko Fukunaga, Yoshiaki Hayashi, Masaaki Sawata

Poster No. 0967
Kinematics of Bicompartmental Knee Arthroplasty during Weight-Bearing Activities
Brian H Park, Joerg Leffler, Alois Franz, Nicholas J Dunbar, Scott A Banks

Poster No. 0968
Intraoperative Joint Gap Affects Postoperative Knee Kinematics in Posterior-Stabilized Total Knee Arthroplasty
Toshifumi Watanabe, Takeshi Muneta, Ichiro Sekiya, Ryosuke Saito, Nicholas Dunbar, Alex Iorgulescu, Scott A Banks

PS1 HIP: MECHANICS AND KINEMATICS

Poster No. 0969
Effect of Body Mass Index (BMI) on Gait Biomechanics
Shihab Asfour, Sonila Cami, Moataz Eltoukhy, Loren Latta

Poster No. 0970
The Influence of Hip Size, Clearance, Cartilage Properties and Cartilage Thickness on the Contact Mechanics of Natural Hip Joint with Biphasic Layers
Junyan Li, Zhongmin Jin, Todd Stewart, Ruth Wilcox, John Fisher

Poster No. 0971
Decrease in Articular Cartilage Thickness of a Loaded Hip Joint Before and After Excision of the Labrum
Hiroshi Ito, Hiromasa Tanino, Yasuhiro Yamanaka, Tatsuya Sato, Yasuhiro Nishida, Toshiaki Nakamura, Masaru Higa

Poster No. 0972
The Role of Piriformis in Hip Joint Stability: Intraoperative Gap Measurement Using a Tensor
Isao Matsushita, Yoshiaki Ito, Hiraku Motomura, Ryuichi Gejo, Tomoatsu Kimura

Poster No. 0973
Are Joint Force Predictions with Musculoskeletal Models Sensitive to Various Degrees of Subject Specificity?
Valentine Vanheule, Pavel Galibarov, Vincenzo Carbone, Pim Pellikaan, Lara M Vigneron, Michael Damsgaard, Marjolein van der Krogt, Nico Verdonschot

Poster No. 0974
Hip Kinematics in Ice Hockey Goaltenders Performing a Butterfly Motion and the Effects of a Mandated Change in Goalie Pad Width
Coen A Wijdicks, Marc Philippon, David Civitarese, Kerry Costello, Jennifer Wages, Erik Giphart, Robert LaPrade
Poster No. 0975
Accuracy and Feasibility of Dual Fluoroscopy and Model-based Tracking to Quantify In Vivo Hip Kinematics during Clinical Exams
Ashley L Kapron, Stephen K Aoki, Christopher L Peters, Andrew E Anderson

Poster No. 0976
A Novel Dual Fluoroscopy Imaging Determination of In-Vivo Kinematics in Native Hip and THA
Tsung-Yuan Tsai, Jing-Sheng Li, Shaobai Wang, Hao Lin, Henrik Malchau, Guoan Li, Young-Min Kwon

Poster No. 0977
Influence of Beam Hardening on the Estimation of Cortical Bone Density in the Proximal Femur
Muhammad Qasim, Rachel C Entwistle, Sean McEligot, Kevin Bennet, L. J Melton, Sundeep Khosla, Shreyasee Amin, Dan Dragomir-Daescu

Poster No. 0978
Experimental Animal Model for Alcohol-Induced Osteonecrosis of the Femoral Head
Shunichiro Okazaki, Satoshi Nagoya, Kenji Tateda, Ryuichi Katada, Keisuke Mizuo, Satoshi Watanabe, Hiroshi Matsumoto

Poster No. 0979
Activation of Innate Immune Signaling is Required for the Development of Corticosteroid-Induced Osteonecrosis of the Femoral Head
Shunichiro Okazaki, Satoshi Nagoya, Kenji Tateda, Ryuichi Katada, Keisuke Mizuo, Satoshi Watanabe, Hiroshi Matsumoto

Poster No. 0980
Prediction of the Appearance of Collapse in Osteonecrosis of the Femoral Head Using 18F-Fluoride Positron Emission Tomography
So Kubota, Yutaka Inaba, Naomi Kobayashi, Yohei Yukizawa, Hiroyuki Ike, Yurika Ata, Tomoyuki Saito

Poster No. 0981
Effects of Dexamethasone on GR and GILZ in Mesenchymal Stem Cells from Patients who have Femoral Head Osteonecrosis
Azeb Haile, Dongqing Wang, Aaron Johnson, Michael A Mont, Lynne C Jones

Poster No. 0982
Dexamethasone Treatment Alters Gene Expression of MSC-derived Adipocytes
James Johnston, Azeb Haile, Christopher Cheadle, Lynne C Jones

Poster No. 0983
Bone and Cartilage Metabolism Markers in Synovial Fluid of Secondary Osteoarthritis of the Hip
Ryosuke Yamaguchi, Takuaki Yamamoto, Goro Motomura, Yasuharu Nakashima, Masanobu Oishi, Satoshi Ikemura, Kenyu Iwasaki, Garida Zhao, Yukihide Iwamoto

Poster No. 0984
Inflammatory Cytokine Levels of the Joint Fluid in the Hip Diseases
Hiroyito Abe, Takashi Sakai, Wataru Ando, Takashi Nishii, Masaki Takeo, Nobuo Nakamura, Hideki Yoshikawa, Nobuhiko Sugano

Poster No. 0985
The Gene Encoding GPR98 is Associated with a Destructive, Atrophic Phenotype in Hip Osteoarthritis

Poster No. 0986
Cartilage Contact Mechanics in Hips with Retroverted Acetabula
Corinne R Henak, Eric D Carruth, Michael D Harris, Benjamin J Ellis, Andrew E Anderson, Christopher L Peters, Jeffrey A Weiss

Poster No. 0987
Imaging Overestimates Screw Tip to Subchondral Bone Distance in Slipped Capital Femoral Epiphysis Fixation
Michael Heffernan, Snyder Benjamin, Hanbing Zhou, Errol Mortimer

Poster No. 0987A
Concentrated Autologous Bone Marrow Cells Implantation in the Treatment of Avascular Necrosis of the Femoral Head: Association of Co-Morbidities and Cellular Function with Clinical Outcomes
Tarek Sibai, Brandon Steen, Jason Pittman, Vamshi Yelavarthi, Anthony De Giacomo, Louis C. Gerstenfeld, Thomas A. Einhorn

Poster No. 0988
Effects of Bisphosphonates on Proximal Periprosthetic Bone Loss after Total Hip Arthroplasty: A Systematic Review
Ashleen Knutsen, Sophia N Sangiorgio, Sean L Borkowski, Donald Longjohn, Edward Ebramzadeh

Poster No. 0989
Patient Characteristics Affect Anatomic Location of the Femoral Artery about the Hip
Vincent M Moretti, Michael Merz, Samuel J Chmell

Poster No. 0990
A New Reference Frame of Functional Outcome Scores of the Hip to Evaluate the Outcomes of a Hip Procedure
Kristoff Corten, Christophe Meyer, Katrien Cootjans, Steffen Fieuws, Johan Bellemans, Jean-Pierre Simon

Poster No. 0991
Difference of Pelvic Anteversion Between Osteoarthritis and Inflammatory Arthritis
Yuichi Mochida, Katsushi Ishii, Yuji Yamada, Naoya Taki, Naoto Mitsugi, Tomoyuki Saito

Poster No. 0992
A Medicare Analysis of Mortality, Disease and Healthcare Spending Related to Hip Osteoarthritis
Scott Lovald, Kevin Ong, Edmund Lau, Jordana Schmier, Kevin Bozic, Steven Kurtz
Poster No. 0993
Earlier Clinical Recovery is Associated with Higher Peak External Hip Adduction Moments One Year After Minimally Invasive Total Hip Arthroplasty
Kharma Foucher, Markus A Wimmer

Poster No. 0994
Hip Arthroplasty in Patients Younger than 30 Years Old: Trends in National Data
Jennah Durham, Janice He, Margaret Wright, David Patrick, Hiroko Matsumoto, Joshua Hyman, Jonathan Lee

Poster No. 0995
Prevalence of Non-Concentric Loading and Impingement in a Retrieval Analysis of 500 Metal-on-Poly Total Hip Arthroplasties
Nanna H Sillese, Leah Elson, Shannon L Rowell, Orhun K Muratoglu, Henrik Malchau

Poster No. 0996
Perceived Leg Length Discrepancy and Functional Outcome after Total Hip Arthroplasty
Takako Momose, Yutaka Inaba, Naomi Kobayashi, Taro Tezuka, Hiroyuki Ike, Yushi Miyamae, So Kubota, Yurika Ato, Tomoyuki Saito

Poster No. 0997
The Impact of Socioeconomic Status on Access to Care for Patients Undergoing Hip Arthroplasty
Michael Olsen, Michael Neufeld, Michael Sellan, Zachary Morison, Emil H Schemitsch

Poster No. 0998
Behavior of Muscle Strength and Bone Mineral Density of the Lower Extremity After Total Hip Replacement
Tobias Lindner, Christine Krüger, Cornelius Kasch, Susanne Finze, Wolfram Mittelmeier, Rainer Bader, Ralf Skripitz

Poster No. 0999
Comparison of Surgery Time and Suture Cost in Using Barbed Suture Versus the Traditional Suture in Hip Replacement Procedures: A Retrospective Cohort Study
Lobat Hashemi, Michael Morseon

Poster No. 1000
Clinical Evaluation of an Inertial Measurement Unit in Monitoring Pelvic Position during Total Hip Arthroplasty
Christopher J Barr, Audrey K Nebergall, Donna M Scarborough, Gavin Braithwaite, Young-Min Kwon, Harry E Rubash, Orhun K Muratoglu, Henrik Malchau

Poster No. 1001
Adult Hip Morphology. A Computed Tomography Study of CCD And Head Offset
Conor J Lowry, Graham R Vincent, Leona Morton, David Simpson, Simon Collins

Poster No. 1002
Kinematics and Joint Reaction Forces for Asymptomatic Total Hip Replacement Patients Differ from Normal Healthy Individuals
Junyan Li, Richard Wilkins, Zhongmin Jin, John Fisher, Martin Stone, Anthony Redmond, Todd Stewart

Poster No. 1003
Survivorship of Standard vs. Modified Posterior Surgical Approaches in Metal-on-Metal Hip Resurfacing Arthroplasty
Karren Takamura, Patrick Maher, Trishna Nath, Edwin P Su

Poster No. 1004
How Reconstruction Parameters and Surgical Approach Affect Hip Function after THA
Daniel Varin, Mario Lamontagne, Paul E Beaulé

Poster No. 1005
A Fluoroscopy-Based Technique for Incorporating Pre-Operative Pelvic Tilt in Orienting the Sacral Cup in THA
Shahram Amiri, Bassam A Masri, Carolyn Anglin, David R Wilson

Poster No. 1006
Clinical Study for the Use of G-Guide in Measurement of the Stem Antetorsion during Total Hip Arthroplasty
Yuki Fujihara, Tomokazu Fukui, Yu Takeda, Shigeo Fukunishi, Shoji Nishio, Shinichi Yoshiya, Shohei Okahisa, Juichi Miura

Poster No. 1007
Determination of Accuracy of the Hip Joint Center in Patients with THA Using CT Imaging Techniques
Tsung-Yuan Tsai, Dov Goldvasser, Donna M Scarborough, Henrik Malchau, Guoan Li, Young-Min Kwon

Poster No. 1008
The Relationship of Press-Fit Fixation Strength and Bone Damage during Implantation
Nicholas E Bishop, Jan Hoehn, Stephan Rothstock, Katrin Nagel, Michael M Morlock

Poster No. 1009
Navigated Versus Non-Navigated Acetabular Component Positioning
Jonathan Lee, Skylar H Johnson, William Macaulay, Jeffrey Geller

Poster No. 1010
Jumbo Cup Causes Hip Center Elevation in Revision THA
Nick N Dong, Christopher D Hefferman, Chima Nawankwo, Michale D Ries

Poster No. 1011
Accuracy of Intraoperative Measurement of the Stem Anteverision in Total Hip Arthroplasty
Masanobu Hirata, Yasuharu Nakashima, Takashi Itokawa, Masanobu Ohishi, Taishi Sato, Mio Akiyama, Daisuke Hara, Yukihide Iwamoto

Poster No. 1012
Effect of Optimizing Bone-Implant Contact on Hip Offset and Anteverision with Three Contemporary Uncemented Metaphyseal Engaging Implants
Alejandro J Marquez-Lara, Daniel Curtis, Ronak Patel, David Stulberg

Poster No. 1013
Comparison of Mechanical Stress and Change in Bone Mineral Density Between Two Types of Femoral Implant Using Finite Element Analysis
Yasuhide Hirata, Yutaka Inaba, Naomi Kobayashi, Hiroyuki Ike, Hiroshi Fujimaki, Taro Tezuka, Tomoyuki Saito
Poster No. 1014
A Comparison of Acetate and Digital Templating for Hip Resurfacing
Daniel Bracey, Thorsten Seyler, John Shields, Xiaoyan Leng, Riyaz Jinnah, Jason Lang

Poster No. 1015
Stability of Under-Reamed Press Fit Acetabular Components Subjected to Rotational Forces
Keith A Fehring, John R Owen, Anton Kurdin, Jennifer S Wayne, William A Jiranek

Poster No. 1016
The Influence of Dual Mobility Cup Design on Posterior Horizontal Dislocation Distance in Common Sizes of THR
Christopher Heffernan, James Macintyre, David Markel, Michael Mont

Poster No. 1017
Performance of a Dual-Mobility Hip Liner under Microseparation and Third-Body Wear
Darryl D D’Lima, Juan Hermida, Nikolai Steklov, Jonathan Netter, Peter Chen, Jim Nevelos

Poster No. 1018
High Mobility Group Box-1 (HMGB-1) in Aseptic and Septic Loose Total Hip Arthroplasty
Yasunobu Tamaki, Yuya Takakubo, Tomoyuki Hirayama, Kan Sasaki, Yasushi Naganuma, Stuart B Goodman, Yrjö T Kottinen, Michiaki Takagi

Poster No. 1019
Correlation between the Edge Loading and Metal Ion Levels in Metal-on-metal Total Hip Arthroplasty
Hongsheng Wang, Brent Lanting, William Griffin, Nigel Zheng

Poster No. 1020
Wear Pattern Comparison Between RSA and THA Retrievals Reveal In-Vivo Subluxation
Joseph G Elsissy, Michelle Burgett, Daniel Sufficool, Ian C Clarke, Thomas K Donaldson

PS1 ARTHROPLASTY: IMPLANT WEAR AND BEARING KINEMATICS

Poster No. 1021
Alternative Methods for Calculating the Location of Center of the Femoral Head with RSA When Radiopaque Cups are Implanted
Joanne H Wang, Dov Goldvasser, Charles Bragdon, Johan Karrholm, Henrik Malchau

Poster No. 1022
Oxidative Analysis of Surgically-Retrieved Marathon™ Acetabular Liners with Up to 10 Years In Vivo
Christopher Reyes, Shannon Rowell, Charles Engh, Robert Hopper, Orhun K Muratoglu

Poster No. 1023
Wear Testing of Diffusion Hardened Oxidized Zirconium Hard-on-Hard Bearings under Subluxation Conditions
Amit Parikh, Patrick Hill, Andreas Becker, Vivek Pawar

Poster No. 1024
Hip Simulator Wear Testing of Diffusion Hardened Oxidized Zirconium Hard-on-Hard Bearings with Shells Mounted at 60° of Inclination
Amit Parikh, Patrick Hill, Vivek Pawar

Poster No. 1025
Steady State Head Penetration Rates of Grafted-Vitamin E Hip Components
Diego A Orozco Villasenor, Kimberly Mimnaugh, Justin S Hertzler, Alicia Rufner

Poster No. 1026
Six-week Accelerated Aging Effect on the Wear Performance of Grafted-Vitamin E Hip Components
Diego A Orozco Villasenor, Kimberly Mimnaugh, Justin S Hertzler, Alicia Rufner

Poster No. 1027
Uncertainty of Head Orientation on the Trunnion Undermines Reliability of Case-Specific Retrieval Wear Simulations

Poster No. 1028
Long-term Simulator Wear Performance of an Advanced Bearing Technology for THA
Amit Parikh, Patrick Hill, Vivek Pawar, Jeff Sprague

Poster No. 1029
Wear Evaluation of Thin Acetabular Liners on 36mm Femoral Heads
LaQuawn Loving, Aaron Johnson, Lizeth Herrera, Ronald E Delanois, Michael A Mont

Poster No. 1030
Physical and Radiographic Measures of Polyethylene Acetabular Liner Wear Rates are Comparable
Krista Parran, Rebecca Moore, Christopher Bechtel, Michael S Reich, Jeremy Gebhart, Keisha French, Matthew Kraay, Clare Rimmac

Poster No. 1031
A Simple Surrogate Wear Test for Edge Loading in Ceramic Hip Prostheses
Anthony P Sanders, Rebecca M Brannon

Poster No. 1032
The Role of Patient Activities in Edge Wear of Hip Resurfacing Arthroplasties
Philip C Noble, Sabir K Ismaily, Lauren Karbach, Ashley Matthis, Jonathan Gold, Alister Hart

Poster No. 1033
Co-Cr-Mo alloy implant debris induces hypoxia-like toxicity in vitro detected by HIF-1α: a novel mechanism explaining metal-on-metal induced peri-implant reactivity
Lauryn Samelko, Marco Caicedo, Seung-Jae Lim, Craig Della-Valle, Joshua Jacobs, Nadim Hallab

Poster No. 1034
Fourier and Cluster Analysis for Shape and Texture Classification of Orthopaedic Wear Nanoparticles
Aaron Kavanaugh, Dongning Zhang, Janet Page, Fabrizio Billi
Poster No. 1035
Does laboratory testing corroborate clinical results?
An evaluation of oxidized zirconium to Cobalt Chromium Femoral Components
Aaron Essner, Lizeth Herrera, Jason Longaray, Mark Kester, Peter Bonutti

Poster No. 1036
Surface Characterization and Clinical Performance of Femoral Knee Components Made From Cobalt-Chromium Alloy and Oxidized Zirconium
Jan-M. Brandt, Leah Guenther, Sean T O’Brien, Alex Vecherya, Thomas Turgeon, Eric Bohm

Poster No. 1037
Reduced Wear Using Magnesia-Stabilized Zirconia Femoral Components after 9M Cycles in a Knee Simulator
Marcel E Roy, Leo A Whiteside, David S Tilden

Poster No. 1038
A Comparison of Wear Simulator Results with Dimensional Changes of Retrieved Tibial Inserts: An Extended Duration Study
Douglas W Van Citters, Matthew R Dressler, Rayna A Levine, Xiaotian Wu, Michael B Mayor, John H Currier

Poster No. 1039
In Vivo Determination of the Cam-Post Engagement in Fixed and Mobile Bearing TKA
Sumesh M Zingde, Adrija Sharma, Mathew R Anderle, Colin Howser, Mohamed R Mahfouz, Douglas A Dennis, Richard D Komistek

Poster No. 1040
Volumetric Wear of Revision and Postmortem Retrieved Miller-Galante II Polyethylene Tibial Inserts
Christopher B Knowlton, Robin Pourzal, Pauline McEwen, Christopher Nagelli, Markus A Wimmer

Poster No. 1041
Environmental Stress Cracking of Vitamin E Grafted UHMWPE
J. C Fryman, Lynn Kirkpatrick, John Knight, Alicia Rufner

Poster No. 1042
Application of Small Punch Test to Depth Dependent Mechanical Property Testing for Retrieved UHMWPE Bearings
Steven D Reinitz, Katherine J Franklin, Evan M Carlson, John P Collier, Douglas W Van Citters

Poster No. 1043
Evidence of Vitamin E Grafting to Polyethylene
David C Besemer, Ming Guo, Alicia Rufner, Dirk L Pletcher, Stephen Spiegelberg, Norman Stark, Till Diesing

Poster No. 1044
A Method to Mitigate the Loss in Tensile Properties of Irradiated Vitamin-E-Blended UHMWPE
Andrew George, Hung Ngo, Anuj Bellare

Poster No. 1045
A Comparison of Crosslink Suppression in Irradiated Polyethylene Containing Vitamin E and a Hindered Amine Light Stabilizer
Hung Ngo, Jeffrey Halperin, Julia Hufen, Rainer Walkenhorst, Anuj Bellare
PS1 POLYETHYLENE

Poster No. 1058
Oxidative Stability of Highly Irradiated Antioxidant-Stabilized UHMWPE
Venkat S Narayan, Richard King, David Warner

Poster No. 1059
Does Accelerated Aging Simulate in vivo Oxidation Mechanisms?
Evan M Carlson, Valerie Z Zhao, Barbara H Currier, Steven D Reinitz, Meagan E Tibbo, John P Collier

Poster No. 1060
Retention of Mechanical Properties in a Blended Vitamin E Polyethylene After Extreme Oxidative Challenge
Melinda S Peiserich, Alicia Rufner, Dirk Pletcher

Poster No. 1061
High Percent Grafted Vitamin E Determined by A New Sensitive UV-Visible Spectroscopy Method
Ming Guo, Norman Stark, David C Besemer, Dirk L Pletcher, Alicia Rufner

PS1 ARTHROPLASTY: OSTEOLOGY

Poster No. 1062
Does Remote Remodeling Contribute to Systemic Differences in Biomarkers Following Local Skeletal Insult?
Ryan D Ross, Shuo Liu, Amarjit S Virdi, Kotaro Sena, D. R. Wickman

Poster No. 1063
Bacteria Exacerbate Polyethylene Particle-induced Bone Loss at the Weight-Bearing Rat Tibia Bone/Implant Interface
Kerellos Nasr, Basma M Khoury, Nancy M Jackson, Weiping Ren, Jeffrey C Flynn, David Markel

Poster No. 1064
Implant Wear Induces Less Inflammation in CX3CR1 -/- Mice
Weiping Ren, Nancy Jackson, Tong Shi, Basma M Khoury, David C Markel

Poster No. 1065
7ND Mutant MCP-1 ProteinInterferes with Chemotaxis and Inflammatory Cytokine Release of Macrophages Exposed to Particles and LPS
Zhenyu Yao, Michael Keeney, Fan Yang, Kensuke Egashira, Stuart B Goodman

Poster No. 1066
Local Effect of IL-4 Delivery on Polyethylene Particle Induced Osteolysis in the Murine Calvarium
Allison Rao, Christophe Nich, Lakshmi S Dhulipala, Emmanuel Gibon, Roberto Valladares, Stefan Zwingenberger, R Lane Smith, Stuart B Goodman

Poster No. 1067
Osteoclasts (Versus Monocytes) Lose Their Ability to Mount a Strong Inflammatory Response to Implant Debris, In Vitro
Nadim J Hallab, Jessica Yadav, Phil Gliver, Marco Caicedo, Kyron McAllister, Lauryn Samelko

Poster No. 1068
Toll-Like Receptor Expression in Polyethylene Wear Particle-Induced Osteolysis in the Murine Calvarium
Roberto Valladares, Christophe Nich, Stefan Zwingenberger, Chenguang Li, Katherine Swank, Emmanuel Gibon, Zhenyu Yao, Stuart B Goodman

PS1 ARTHROPLASTY: CLINICAL OUTCOMES RESEARCH

Poster No. 1069
Patient Education Influence on Patient Reported Outcomes after Total Hip Replacement
Meridith E Greene, Ola Rolfson, Max Gordon, Henrik Malchau, Göran Garellick

Poster No. 1070
Do We Need Pedometer Data to Differentiate Long-Term Function Following Total Hip Replacement?
Ryan Takenaga, John Callaghan, Nicholas Bedard, Steve Liu, Alison Klaassen, Douglas R Pedersen

Poster No. 1071
Clinical Results of PMPC-Grafted Polyethylene Acetabular Liners
Toru Moro, Yoshio Takatori, Masayuki Kyomoto, Morihide Kamogawa, Hiromi Oda, Shuhei Morimoto, Takashige Umeyama, Hiroshi Kawaguchi, Kozo Nakamura

Poster No. 1072
Use of Clustering Analysis in Randomized Control Trials in Orthopaedic Surgery
Hanna Oltean, Joel Gagnier

Poster No. 1073
Osteoarthritis and Arthroplasty: Inflammation and Function
Simon P Frostick, Amanda Williams, Haiyi Wang, Richard Jackson, Jecko Thachil, John Davidson, Alasdair Santini, Viju Peter, Margaret Roebuck

Poster No. 1074
Correlation of Arthroplasty Disc Height and Patient Satisfaction Outcomes: A Retrospective Case Series
Jeremi M Leasure, Jason Kelly, Priya Prasad, Emily Nosova, Yuri Falkenstein, Dimitriy Kondrashov

Poster No. 1075
Electromyographic and Kinematic Analysis of Reverse Shoulder Arthroplasties during Functional Motions
David R Walker, Aimee Struk, Thomas Wright, Scott A Banks

Poster No. 1076
Functional Outcome and Complications After Total Shoulder Arthroplasty in the Obese Patient Population. A Prospective Study with Greater than 2 Years of Follow Up
Xinning Li, Phillip Williams, Andromahi Trivellas, Joseph Nguyen, Edward Craig, Russell F Warren, Lawrence Gulotta

Poster No. 1077
Incidence and Nature of Adverse Events in Patients Following Orthopaedic Surgery
Joel Gagnier, Hal Morgenstern, Brian Hallstrom
Poster No. 1078
Histological and Clinical Evaluation of Failed Copeland Shoulder Surface Replacement Implants
Sara Ajami, Melanie J Coathup, Rebecca Olley, Caesar A Wek, Bethany Bonnaud, Susan Alexander, Simon Lambert, Cormac Kelly, Gordon W Blunn

Poster No. 1079
Interface Micromechanics are Similar for Cemented TKR and THR Following In-Vivo Service
Matthew TerBush, Mark Miller, Kenneth Mann

Poster No. 1080
Fixation of Cemented Femoral Components of Total Knee Replacements is Greatest in the Distal Condylar Region Following In Vivo Service
Karen Howard, Mark Miller, Robert Sherman, Kenneth Mann

Poster No. 1081
Loss of Fixation in Cemented TKR: Role of Time in Service and Initial Interlock
Mark A Miller, Robert Sherman, Timothy Izant, Kenneth Mann

Poster No. 1082
Osteoconductivity of Appropriate Spatial Design and Thermal Treatment in Animal Experiments
Yasuhiro Nishida, Hiromasa Tanino, Mitsuomi Kimura, Hiroshi Ito

Poster No. 1083
Sequential Retrospective Radiographic Evaluation of Cortical Bone Adaptation to Load Bearing Percutaneous Osseointegrated Prostheses
Sujee Jeyapalina, James P Beck, Kent N Bachus, Brian M Holt, Roy D Bloebaum

Poster No. 1084
The Primary Effects of iPTH and Mechanical Loading on Periprosthetic Cancellous Bone are Limited to the Immediate Periprosthetic Surface
Matthew J Grosso, Hayden-William Courtland, Xu Yang, James Sutherland, Anna Fahlgren, Patrick F Ross, Marjolein van der Meulen, Mathias Bostrom

Poster No. 1085
Use of Computer Navigation for Quantifying the Knee Functional Envelope Before and After Total Knee Arthroplasty
Corey J Scholes, Sebastien Lustig, Joe Lynch, Bianca Albanese, David A Parker

Poster No. 1086
A Meta-Analysis of Total Knee Arthroplasty with Imageless Computer-Assisted Navigation
Brett A Rebal, Oladapo Babatunde, Jonathan Lee, Jeffrey Geller, Prakash Gorroochurn, William Macaulay

Poster No. 1087
Computational Design of Fixation Peg Placement Envelopes for a Cementless Tibia Tray System
Pat Courtis, Daren Deffenbaugh, Hasib Yousefzai, David FitzPatrick

Poster No. 1088
Robotic-arm Assistance for Medial Unicompartmental Knee Arthroplasty - A Pilot Study
Brett A Rebal, Jonathan Lee, David Patrick, Jeffrey Geller, William Macaulay

Poster No. 1089
Computer Assisted Surgery Using Motorized Mini-Robotic Jig in Knee Replacement....Are We There Yet?!
Kingsley Nwokeyi, Lipalo Mokete, Mohammed Mohideen

Poster No. 1090
Two Year Survivorship of Robotically Guided Unicompartmental Knee Arthroplasty
Thomas Coon, Martin Roche

Poster No. 1091
Identification of the Landmark Registration Safe Zones during Total Knee Arthroplasty Using an Imageless Navigation System
Derek F Amanatullah, Paul Di Cesare, Patrick Meere, Gavino Pereira

Poster No. 1092
An Elevated Joint Line after TKA Leads to Increased Mid-flexion Laxity
Michael B Cross, Gregory Klingenstein, Christopher Plaskos, Angela Li, Denis Nam, Stephen Lyman, Andrew Pearle, David Mayman

Poster No. 1093
Effect of Surgeon Assessment on Accuracy for Acetabular Cup Placement using CT-based Navigation System
Satoshi Nakasone, Ichiro Owan, Takayuki Yamauchi, Hirotaka Shinjo, Hidehiro Horizono, Takeshi Kamiya, Kazunobu Arakaki, Tomo Oyakawa, Fuminori Kanaya

Poster No. 1094
A Multicenter Evaluation of Acetabular Cup Positioning in Robotic-Assisted Total Hip Arthroplasty
Charles Bragdon, Leah Elson, Douglas Padgett, Robert Marchand, Jon Douchis, Richard Illgen, Henrik Malchau

Poster No. 1095
Development of a Computer- and Image-Assisted Guidance System for Radial Head Arthroplasty
Simon R Deluce, Hannah Shannon, Emily A Lalone, Louis M Ferreira, Graham J King, James A Johnson

Poster No. 1096
Glenoid Suture Anchor Hole Diameter and Location: A FEA Study
Thomas D Tarento, Desmond Bokor, Shahrulazua Ahmad, Richard Appleyard, Dane Dabirrahmani

Poster No. 1097
Load Transfer in the Reconstructed Glenoid after a Cemented Total Shoulder Replacement
Radhika J Patel, Yingxin Gao

Poster No. 1098
Effect of Ligature Pretension in Interspinous Process Surgery
Dae Kyung Choi, Yoon Hyuk Kim, Kyungsoo Kim
Poster No. 1099
Optimal Design Parameters of Spinal Artificial Disc with Respect to Abnormal Mechanical Stimulation in Heterotopic Ossification of the Vertebral Body
Ganbat Danaa, Yoon Hyuk Kim, Yong Jun Jin

Poster No. 1100
Finite Element Material Modeling of UHMWPE: Rigid Body Modeling with Elastic Foundation Theorem vs Deformable Body Modeling
Sean T O’Brien, Martin J Petrak, Eric Bohm, Jan-M. Brandt

Poster No. 1101
A Time and Contact Pressure Dependant Computational Wear Model for the Analysis of Polyethylene Wear in Total Knee Replacements
Sean T O’Brien, Martin Petrak, Eric Bohm, Jan-M. Brandt

PS1 SHOULDER AND ELBOW

Poster No. 1102
The Genetic Basis of Arthrofibrosis: Microarray and Bioinformatics Analysis of the Temporal Expression of 384 Genes During Contracture Genesis with an Early Role for Inflammatory Genes
Mark E Morrey, Matthew P Abdel, Jonathon D Barlow, Diane Grill, Kai-nan An, Scott P Steinmann, Bernard F Morrey, Joaquin Sanchez-Sotelo

Poster No. 1103
Anterior Versus Posterior Supraspinatus Tendon Properties
Tomoya Matsuhashi, Akira Goto, Rei Omi, Alexander W Hooke, Kristin Zhao, John W Sperling, Scott P Steinmann, Kai-Nan An

Poster No. 1104
In Vivo Evaluation of a Bi-Phasic Nanofiber Scaffold for Integrative Rotator Cuff Repair

Poster No. 1105
Biceps Detachment Does Not Worsen Shoulder Function in a Multi-Tendon Rotator Cuff Tear Model

Poster No. 1106
Supraspinatus and Infraspinatus Rotator Cuff Repair Prevents Mechanical Damage to the Intact Subscapularis Tendon in a Rat Model

Poster No. 1107
Effect of Tear Location on Propagation of Isolated Supraspinatus Tendon Tear During Increasing Levels of Cyclic Loading
Daisuke Araki, Robert M Miller, Yoshimasa Fujimaki, Volkmar Musahl, Richard E Debski

Poster No. 1108
Rotator Cuff Tear Propagation and Strain Distribution Due to Tears in the Anterior Supraspinatus
Robert M Miller, Yoshimasa Fujimaki, Daisuke Araki, Volkmar Musahl, Richard E Debski

Poster No. 1109
Implication of Nerve Growth Factor and Substance P in Rotator Cuff Pain
Sarah Franklin, Benjamin Dean, Andrew Carr

Poster No. 1110
Effect of Subacromial Corticosteroid Injection and Subacromial Decompression Surgery on the Collagenous Structure of Partially Torn Human Supraspinatus Tendons
Jennifer M Tilley, Richard J Murphy, Jan T Czernuszka, Andrew J Carr

Poster No. 1111
Effect of Tear Progression on the Collagenous Structure of the Supraspinatus Tendon
Jennifer M Tilley, Salma Chaudhury, Richard J Murphy, Jan T Czernuszka, Andrew J Carr

Poster No. 1112
Graft Materials Used in a Bridging Repair of Rotator Cuff Tear Alter Passive and Active Force Compared to Standard Repair: A Simulation Analysis
Anthony C Santiago, Robert C Weinschenk, Sandeep Mannava, Johannes F Plate, Katherine R Saul

Poster No. 1113
Exploring Two Distinct Mechanisms of Rotator Cuff Muscle Atrophy—Protein Degradation and Autophagy
Sunil K Joshi, Xuhui Liu, Afshin A Anoushiravani, Nai Chen Chang, Anisa Bashiri, Torie Tsuei, Ryan Kaveh, Hubert T Kim, Brian T Feeley

Poster No. 1114
Massive Rotator Cuff Tears Lead to s Reduction of Oxidative Potential and Change In Muscle Fiber Type
Afshin A Anoushiravani, Sunil K Joshi, Xuhui Liu, Torie Tsuei, Anisa Bashiri, Ryan Kaveh, Nai Chen Chang, Hubert T Kim, Brian T Feeley

Poster No. 1115
Ketotifen Inhibits Human Joint Capsule Cell Mediated Collagen Gel Contraction only in the Presence of Mast Cells
Kevin Hildebrand, Paul T Salo, Mei Zhang, Andrew R Buckley, Lindsey M Logan, A. D Befus, David A Hart

Poster No. 1116
The Correlation Between the Contractile Behaviour of Human and Rabbit Joint Capsule Cells: An In Vitro Collagen Gel Study
Kevin Hildebrand, Paul T Salo, Mei Zhang, Lindsey M Logan, Andrew R Buckley, A. D Befus, David A Hart

Poster No. 1117
Novel Histological Analysis of Enthesis Healing for Full Thickness Tear and Repair in Rats
Margaret Thomas, Michael Zuscik, John C Elfar

Poster No. 1118
The Biomechanical Properties of Outlet Tenodesis and Tenotomy for the Treatment of Biceps Tendon Pathology in an In-Vivo Rat Model
Amanda Esquivel, Martin Turner, Allison Andre, Stephen Lemos
Poster No. 1119
Normal Aging Decreases Tendon-to-Bone Healing in a Rat Model of Rotator Cuff Repair
Johannes F Plate, Philip J Brown, John A Clark, Jordan Walters, Thomas L Smith, Christopher J Tuohy, Joel D Stitzel, Sandeep Mannava

Poster No. 1120
Surgical Anatomy of Mechanoreceptors and Fascicles in the Shoulder Capsule and Labrum Using an Improved Gold Chloride Staining Technique
Jessica Witherspoon, Daniel Sisk, Terence Mcllf

Poster No. 1121
Asymptomatic Rotator Cuff Tear is not Associated with Inflammmation: An Assessment Using Bone Scintigraphy
Yoichi Koike, Hirotaka Sano, Atsushi Kita, Eiji Itoi

Poster No. 1122
Forearm Supination Strength Relationships Associated with Distal Biceps Tendon Rupture
Brandon Brown, Prasad Sawardeker, Martin DeGravelle, Mark Carl Miller, Christopher Schmidt

Poster No. 1123
The Effect of Simulated Scapular Winging on Glenohumeral Joint Translations
Andreas M Mueller, Vahid Entezari, Claudio Rosso, Brett McKenzie, Andrea Ceretti, Ugo Della Croce, Joseph DeAngelis, Arun Ramappa, Ar Nazarian

Poster No. 1124
Biomechanical Characterization of Uncortical Button Fixation: A Novel Technique for Proximal Biceps Tenodesis
Joseph P DeAngelis, Alvin Chen, Michael Wexler, Benjamin Hertz, Leandro Grimaldi-Bournissaint, Arun J Ramappa, Ar Nazarian

Poster No. 1125
Traumatic Rotator Cuff Tears in Patients Under the Age of 25
Matthew F Dilisio, Curtis R Noel, Jeffrey S Noble, Robert H Bell

Poster No. 1126
Arthroscopic Surgical Tools: A Source of Metal Nanoparticles and Possible Joint Damage
Pedowitz A Robert, Fabrizio Billi, Aaron Kavanaugh, Andrew Colbert, Sen Liu, Felix H Savoie, Zongbing You

Poster No. 1127
Distal Biceps Tendon Repair: A Biomechanical Comparison of an Interference Screw and New Hybrid Button/Screw Technique
William J Camisa, Afshin Arianjam, Jeremi M Leasure, William H Montgomery

Poster No. 1128
Prediction of Suture Anchor Failure using Three-Dimensional Finite Element Method
Hirotaka Sano, Taku Hatta, Hideaki Nagamoto, Kei Imagawa, Nobuyuki Yamamoto, Eiji Itoi

Poster No. 1129
Suture Anchor Fixation of Bony Bankart Fractures: A Comparison of Single Row versus Suture Bridge Techniques
Joshua W Giles, Gabor Puskas, Mark Welsh, James A Johnson, George S Athwal

Poster No. 1130
Effects of Wrist-Weight on In-Vivo Scapular Motion during Dynamic Arm Elevation
Takayuki Matsuhashi, Hiroaki Tsutsui, Naoya Nishinaka, Taishi Uehara, Yuji Takahashi, Scott A Banks

Poster No. 1131
The Role of the Long Head Biceps Tendon on Glenohumeral Range of Motion
Jeremi M Leasure, Patrick McGahan, Hinesh Patel, Ephraim Dickinson, William Montgomery

Poster No. 1132
The Histologic and Biomechancial Response of Two Commercially Available Small Glenoid Anchors for Use in Labral Repairs
Ferris M Pfeiffer, Matthew J Smith, James L Cook, Keiichi Kuroki

Poster No. 1133
The Influence of Displaced Bony Bankart Lesion Fragment on Shoulder Stability
Akira Goto, Alexander W Hooke, Tomoya Matsuhashi, Rei Omi, Kristin D Zhao, Kazuomi Sugamoto, Robert H Cofield, John W Sperling, Scott P Steinmann, Kai-Nan An

Poster No. 1134
Contribution of Acromioclavicular and Coracoclavicular Ligaments to Clavicular Strut Function — A Whole Cadaver Study —
Satoshi Oki, Noboru Matsumura, Wataru Iwamoto, Hiroyasu Ikegami, Yoshimori Kiriyama, Toshiyasu Nakamura, Yoshiaki Toyama, Takeo Nagura

Poster No. 1135
The Role of Superior Shoulder Capsule on Passive Stability of the Glenohumeral Joint
Yoko Ishihara, Teruhsia Mihata, Michelle H McGarry, Shinro Takai, Thay Q Lee

Poster No. 1136
Differences in Glenohumeral Joint Morphology Between Patients with Anterior Shoulder Instability and Control Subjects
Cathryn Peltz, Jeffrey Haladik, Scott E Hoffman, Monique Nienstedt, Vasilios Moutzouros, Michael Bey

Poster No. 1137
Evaluation of Suture Slippage with Knotless Suture Anchors in Rotator Cuff Repair
Bryan Vopat, David Paller, Anthony Avery, Sarath Koruprolu, Paul Fadale

Poster No. 1138
Effects of Combined Bony Defects on Anterior Shoulder Instability: Relative Contributions of Bony Bankart and Hill-Sachs Defects
Piyush Walia, Anthony Miniaci, Morgan H Jones, Stephen D Fening

Poster No. 1139
A new classification of Glenoid Version and Humerus Subluxation based on CT-scan
Alexandre Terrier, Julien Ston, Dominique Pioletti, Alain Farron
Poster No. 1140
Survey: Trends in the Prophylactic Treatment and Surgical Management of Heterotopic Ossification in the Elbow by U.S. Orthopaedic Surgeons
Jonathan Guevara, Roberto J Fajardo, Bernard F Morrey, Travis C Burns, Anil Dutta

Poster No. 1141
Influence of Radial Head Prosthetic Design (Dish Depth) on Radiocapitellar Joint Contact Mechanics
Dipit Sahu, David M Holmes, James S Fitzsimmons, Kai-Nan An, Shawn W O’Driscoll

Poster No. 1142
Genetic Expression Profiles Over Time of Fibrosis in a Human Elbow Contractures
Matthew P Abdel, Mark E Morrey, Jonathan D Barlow, Diane E Grill, Christopher E Kolbert, Kai N An, Scott P Steinmann, Bernard F Morrey, Joaquin Sanchez-Sotelo

Poster No. 1143
In Situ Quantification of the Medial Ulnar Collateral Ligament Cross Section Before and After Directional Loading
Mark Carl Miller, Muturi G Muriuki, Pat Schimoler, Andrea S Martin, Bradley C Campbell, Patrick J DeMeo

Poster No. 1144
Anthropometric Study of the Radiocapitellar Joint
Matthias Vanhees, Dave R Shukla, James S Fitzsimmons, Kai-Nan An, Shawn W O’Driscoll

Poster No. 1145
Effect of Muscle Loading and Joint Position on Load Transfer at the Radiocapitellar Joint
Jennifer Ng, Mark Welsh, Michael Gladwell, James Johnson, Graham King

Poster No. 1146
Evidence that the Medial Ulnar Collateral Ligament Should be Repaired with Minimal Tension
Mark Carl Miller, Muturi G Muriuki, Sam Akhavan, Michael Vaccariello, Patrick J DeMeo

Poster No. 1155
In Vivo Kinematics of the Ankle During Gait Following Reconstruction for Chronic Ankle Instability
Yoshimasa Fujimaki, Motoko Miyawaki, Kwesi St. Louis, Cullen C Grover, Eric Thorhauer, Victor R Prisk, Scott Tashman

Poster No. 1156
In Vivo Kinematics of the Talocrural and Subtalar Joints with Chronic Ankle Instability During Weightbearing Ankle Internal Rotation
Takumi Kobayashi, Masayuki Saka, Eiichi Suzuki, Naohito Yamazaki, Makoto Suzukawa, Atsushi Akaik, Kuniai Shimizu, Kazuyoshi Gamada

Poster No. 1157
Altered Lower Limb Kinematics in Subjects With Chronic Ankle Instability During Single Leg Landing and Lateral Shuffle Movement
Yuta Koshino, Masanori Yamanaka, Yuya Ezawa, Tomoya Ishida, Takumi Kobayashi, Naoki Takeda

Poster No. 1158
Three-Dimensional Kinematics of Hind Foot During walking
Mako Fukano, Toru Fukubayashi, Scott A Banks

Poster No. 1159
High-Speed Biplanar Videoradiography to Assess Subtalar Joint Function During Running
Susan E D’Andrea, Elizabeth I Drewniak-Watts, Pedro Rodrigues, Natalie Wilhelm

Poster No. 1160
Contributions of Ankle Joint in Leg to Energy Absorption during Landing - Influence of Difference in Height-
Yuki Saito, Eiichi Uchiyama, Takako Chikenji, Shuichi Sato
Poster No. 1161
Gravimetric Wear Testing of a Fixed-Bearing Bicondylar Total Ankle Replacement
Brian Kincaid, J. C Fryman, Duane Gillard, Fred Wentorf, Oludele Popoola, Jeffrey Bischoff

Poster No. 1162
Implant Placement Accuracy and Patient-Specific Surgical Guide Reproducibility Using Pre-Operative Navigation in Total-Ankle Arthroplasty
Gregory C Berlet, Murray J Penner, Steven L Haddad, W Hodges Davis, Robert B Anderson, Sarah L Lancianese, Paul M Stemniski, Richard Obert

Poster No. 1163
Understanding Changes in Hip and Knee Mechanics following Total Ankle Replacement
Robin M Queen, Samuel Adams, Mark E Easley, James K DeOrio, James A Nunley, Robert J Butler

Poster No. 1164
The Effect of Hindfoot Alignment on Frontal Plane Mechanics Following Total Ankle Replacement
Robin M Queen, Robert J Butler, Samuel B Adams, Mark E Easley, James K DeOrio, James A Nunley

Poster No. 1165
Biomechanical Evaluation of a Knotless Barbed Suture Technique in a Human Achilles Tendon Rupture Model
Brian N Kanz, Randal P Morris, Taylor Lewis, Vinod K Panchbhavi

PS1 INFECTION

Poster No. 1166
Murine Model of Impaired Osseointegration due to Implant Infection
Hyonmin Choe, Joscelyn Tatrol, David Corn, Steve Marshall, Lindsay A Bonsignore, Zhenghong Lee, Robert A Bonoma, Edward Greenfield

Poster No. 1167
MRI Visualization of Local Drug Delivery in Orthopaedic Wounds
Morgan B Giers, Alexander C McLaren, Ryan Odgers, Kenneth Schmidt, Michael Caplan, Ryan McLemore

Poster No. 1168
Different Sensitivity and Specificity of C-Reactive Protein, Real-Time Polymerase Chain Reaction, and Histopathology of Frozen And Permanent Sections in Diagnosing Periprosthetic Infection
Yushi Miyamae, Yutaka Inaba, Naomi Kobayashi, Hyonmin Choe, Takako Momose, Hiroyuki Ike, Tomoyuki Saito

Poster No. 1169
Tissue Cell Adherence and Biofilm Formation on Common Orthopaedic Biomaterials in a Co-Culture Environment
David McConda, Therwa Hamza, Brock A Lindsey

Poster No. 1170
Cathodic Voltage Controlled Stimulation of Titanium Modulates Acinetobacter Baumannii Biofilms

Poster No. 1171
Local vs Systemic vs Combined Antibiotic Treatment for Implant Infection
Suman Medda, Aaron J Casp, Daniel J Del Gaizo, Laurence E Dahners

Poster No. 1172
Antibiotics and Photo-Activated Porphyrin in Combination are Additive Against S. Aureus and E. Coli
Sana Dastgheyb, David Eckmann, Russell J Composto, Noreen J Hickok

Poster No. 1173
Effects of Implementing the Methicillin-Resistant Staphylococcus Aureus Bundle for Preventing Orthopedic Surgical Site Infections
Hideki Kawamura, Kazuaki Matsumoto, Akari Shigemi, Toyoyasu Koriyama, Michiyo Orita, Tomoko Nozima, Setsuro Komiya, Junichiro Nishi

Poster No. 1174
Voriconazole is Cytotoxic At Locally Derived Concentrations
Ryan McLemore, Kenneth Schmidt, Alexander C McLaren, Christine Pauken

PS1 TRAUMA

Poster No. 1175
A Novel Mouse Model of Heterotopic Ossification with Spinal Cord Injury
Heejae Kang, Alex Dang, Bernard Halloran, Robert Nissenson, Hubert T Kim, Xuhui Liu

Poster No. 1176
Evaluation of Articular Surface Geometry Deviation and Cartilage Damage in a Porcine Model of Intra-Articular Fracture
Eric Swanson, Jessica Goetz, Yuki Tochigi

Poster No. 1177
Over-Drilling Healthy Bone to Simulate Osteoporotic Screw Purchase may not be Valid
Jacob L Cartner, Megan Fessenden, Tim Petteys, Paul Tornetta

Poster No. 1178
Effect of VEGF on Skeletal Muscle Recovery in Compartment Syndrome-like Injury in Athymic Rat
Burhan Gharibeh, Nick Oyster, Minakshi Poddar, Johannes Schneppendahl, Michelle Witt, Jennifer Taylor, Johnny Huard

Poster No. 1179
Using a Pressure Telemetry Transmitter to Measure Intracompartmental Pressure in a Compartment Syndrome-Like Injury in Athymic Rats
Burhan Gharibeh, Nick Oyster, Johannes Schneppendahl, Minakshi Poddar, Michelle Witt, Johnny Huard

Poster No. 1180
Relationship between Intramuscular Tissue Oxygenation and Viability in a Compartment Syndrome Model
Heejae Kang, James Mok, Erik Hansen, Utku Kandemir, Mark Rollins, Xuhui Liu, Hubert T Kim
In Vivo Three-Dimensional (3D) Bioluminescence Tomography in Murine Osteosarcoma Models Allows Real-Time Monitoring of Tumor Volume, Chemotherapeutic Response and Metastasis
Chandhanarat Chandhanayingyong, Alexander D Klose, Yared Tekabe, Saqib Nizami, Hiroshi Minematsu, Francis Y Lee

Hsp90 Inhibitor Induced Autophagy and Apoptosis in Osteosarcoma Cells
Masaki Mori, Toshiaki Hitora, Osamu Nakamura, Yoshiki Yamagami, Hideki Nishimura, Ryosuke Horie, Tetsuji Yamamoto

The New Strategy for Treatment of Osteosarcoma by Sustained-Release Tearubicin conjugated Endothelial Progenitor Cells
Yohei Kawakami, Masaaki li, Ryosuke Kuroda, Tomoyuki Matsumoto, Takashi Saito, Yasuhiro Tabata, Takayuki Asahara, Michio Asaahi, Masahiro Kurosaka

Effectiveness of Sulforaphane as a Radiosensitizer for Murine Osteosarcoma Cells
Yasushi Sawai, Hiroko Murata, Motoyuki Horii, Kazutaka Koto, Takaaki Matsumi, Naoyuki Horie, Yoshiro Tsuji, Eishi Ashihara, Taira Maekawa, Shinji Fushiki, Toshikazu Kubo

Involvement of Intercellular Adhesion Molecule-1 in IL-6/IL-6R Pathway of Cell Motility in Human Osteosarcoma
Yi-Chin Fong, Chih-Hsin Tang

Pathological Fracture Rates and Other Characteristics of Patients Receiving External Beam Radiation for Bone Metastases at the University of California, Irvine
Joyce H. Keyak, Samantha K. Nguyen, Tadashi S. Kaneko, Muthana Al-Ghazi, Jeffrey V. Kuo, Nilam S. Ramsinghani, Varun Sehgal

TGF-α Enhances ICAM-1 Expression and Cell Migration via EGFR Dependent Signaling Pathway in Human Osteosarcoma Cells
Ju-fang Liu, sheng Mou Hou, Chih shin Tang, Chun Han Hou

Regulation of IGFBP5 Expression in Osteosarcoma
Joseph D Lamplot, Gaurav Luther, Rex Haydon, Tong-Chuan He, Hue H Luu

p53 Overexpression Increases Chemosensitivity in Multidrug Resistant Osteosarcoma Cell Lines
Shunan Ye, Edwin Choy, Henry Mankin, Francis Hornicek, Zhenfeng Duan

SOST Inhibits Prostate Cancer Invasion to the Bone
Bryan D Hudson, Nicholas Hum, Gabriela Loots
Poster No. 1201
MRI T1rho Relaxation Times at 3-Tesla and Functional Loading at the Hip in Femoroacetabular Impingement
Deepak Kumar, Alexander Dillon, Karupppasamy Subburaj, Thomas M Link, Xiaojuan Li, Sharmila Majumdar, Richard B Souza

Poster No. 1202
Multiconstrast MRI for the Noninvasive Assessment of Osteoarthritis Severity
Adam Griebel, Stephen Trippel, Nancy Emery, Corey Neu

Poster No. 1203
3D-DESS T2 Mapping Improves Resolution and Decreases Scan Time Versus 2D-T2 Mapping of Articular Cartilage
Hillary J Braun, Bragi Sveinsson, Jason L Dragoo, Brian A Hargreaves, Garry E Gold

Poster No. 1204
In Vivo Assessment of Knee Cartilage Matrix Alterations due to Load and Exercise: Regional Gadolinium Concentration Versus Bulk dGEMRIC Index
Zana Hawezi, Carl-Johan Tiderius, Eveliina Lammentausta, Jonas Svensson, Leif Dahlberg

Poster No. 1205
3D Image Registration is Critical to Ensure Accurate Detection of Longitudinal Changes in Bone Microstructure and Mineral Density Measurements in Rats by In Vivo Micro Computed Tomography (µCT)
Shiming Luo, Shenghui Lan, Abhishek Chandra, Beom Kang Huh, Allison Altman, Ling Qin, X. Sherry Liu

Poster No. 1206
In Vivo Contrast Enhanced Computed Tomography Quantitatively Monitors Early Degenerative Changes in a Rabbit OA Model
Rachel C Stewart, Prashant Bansal, Vahid Entezari, Martin Wiewiorski, Mark Grinstaff, Brian Snyder

Poster No. 1207
Tantalum Oxide Nanoparticles for Visualization of Articular Cartilage Using Computed Tomography
Jonathan D Freedman, Hrvoje Lusic, Brian Snyder, Mark Grinstaff

Poster No. 1208
Delayed CT Arthrography Provides a Novel In Vivo Technique for Diagnosis of Cartilage Lesions and Degeneration in Human Knee
Harri T Kokkonen, Juha-Sampo Suomalainen, Antti Joukainen, Joonas Sirola, Heikki Kröger, Jukka S Jurvelin, Jari Salo, Juha Töyräs

Poster No. 1209
Use of 18F-Fluoride Positron Emission Tomography as a Predictor for the Progression of Osteoarthritis of the Hip
Naomi Kobayashi, Yutaka Inaba, Yohei Yukizawa, Hiroyuki Ike, Sou Kubota, Yuika Ata, Tomoyuki Saito

Poster No. 1210
Contrast Enhanced Computed Tomography of Equine Joint Cartilage Demonstrates Consistent Imaging Relationships Across Joint Surfaces
Rachel C Stewart, Bradley Nelson, Laurie Goodrich, Brian Snyder, Mark Grinstaff

Poster No. 1211
Contrast Enhanced Micro-CT Imaging of Mouse Knee Cartilage: A Non-Invasive Method to Evaluate Mouse Models of Osteoarthritis
Martin Wiewiorski, Jonathan D Freedman, Ben Lakin, Rachel C Stewart, Susan Ritter, Antonios O Aliprantis, Mark Grinstaff, Brian Snyder

Poster No. 1212
Multimodality Arthroscopic Imaging of Articular Cartilage
Tuomas Viren, Jukka Liukkonen, Pia Puhakka, Antti Joukainen, Nikae te Moller, Harold Brommer, Jukka S Jurvelin, Juha Töyräs

Poster No. 1213
Light Backscattering in Optical Coherence Tomography Depends on Collagen and Chondrocyte Contents of Agarose Gel
Pia Puhakka, Janne Ylärinne, Mikko J Lammi, Simo Saarakkala, Heikki Kröger, Tuomas Virén, Juha Töyräs

Poster No. 1214
Collagen and Chondrocyte Contents Control Ultrasound Scattering in Agarose Scaffolds
Satu Inkinen, Jukka Liukkonen, Janne Ylärinne, Mikko Lammi, Tuomas Virén, Jukka Jurvelin, Juha Töyräs

Poster No. 1215
Porous Calcium Polyphosphate: A Biodegradable Bone Substitute - Mechanical & Bone Ingrowth Characterization
Robert Pilliar, Marc Grynpas, Rita Kandel, Yuxin Hu, Yaser Shanjani, Ehsan Toyserkani

Poster No. 1216
Surface Characterization of Nano-Features Induced by a Low Temperature Oxidation Method
Alice Cheng, William B. Goodwin, Rolando A. Gittens, Barbara D. Boyan, Zvi Schwartz, Kenneth H. Sandhage

Poster No. 1217
Free and Encapsulated ECM Scaffolds for Osteogenic Differentiation of Human Mesenchymal Stem Cells
Stefania Mazzitelli, Letizia Penolazzi, Roberta Piva, Federico Quinci, Claudio Nastruzzi

Poster No. 1218
Multifunctional Polysaccharide Gels Capable of Mineralization, Vascularization and Anti-bacterial Efficacy
Vaibhav Pandit, Jonathan M Zuidema, Kathryn Venuto, Guohao Dai, Ryan J Gilbert, Shiva Kotha

Poster No. 1219
Effects of Microporous Structure and Local rhBMP-2 Administration on Bioreosorption of Beta-Tricalcium Phosphate and New Bone Formation
Atsuhito Kakuta, Takaaki Tanaka, Masaaki Chazono, Seiichiro Kitasato, Takahiro Kikuchi, Keishi Marumo
Poster No. 1220
Porous/Dense Composite Hydroxyapatite for Anterior Cervical Fusion
Toshitaka Yoshii, Masato Yuasa, Shinichi Sotome, Tsuyoshi Yamada, Takashi Taniyama, Kenichi Shinomiya, Atsushi Okawa

Poster No. 1221
Sulfobetaine as a Cytocompatible Potent Mediator of HA-Mineralization
Pingsheng Liu, Jie Song

Poster No. 1222
Hydroxyapatite-Reinforced Collagen Scaffolds with Improved Architecture, Mechanical Properties and Osteogenicity
Matthew J Meagher, Holly E Weiss, Robert J Kane, Joshua A Gargac, Glen L Niebur, Diane R Wagner, Ryan K Roeder

Poster No. 1223
Calcium and Phosphate Loaded Vapor Deposited Silica Sol-Gel Particles for Use as a Bioactive Materials System
Katherine L Snyder, Hallie R Holmes, Rupak M Rajachar

Poster No. 1224
The Influence of Chemistry, Strut Porosity and Fn Concentration on the Attachment of Osteoblast-Like Cells on Stoichiometric and Silicate Substituted Hydroxyapatite Porous Granules
Viviana Castagna, Alice Sullivan, Karin A Hing

Poster No. 1225
Investigation of the Dissolution Behavior of Stoichiometric and Silicate Substituted Apatites with Varied Strut Porosity
Navinderpal K Chana, Simon Rawlinson, Karin A Hing

Poster No. 1226
Engineered Scaffold with Micro Capillary Channels for Tissue Engineering
Daniel S Oh, Anny Hsu, Francis Y Lee, Hesham Tawfeek, Jaeryong Ko, Seokhyun Kweon, Thomas Gardner, Danna Ganbat, Yoon Hyuk Kim

Poster No. 1227
In Vivo Stimulation of Bone Formation by Biodegradable Polymer Deposited Magnesium Bone Bullet
Kelvin Yeung, Karen Wong, Paul K Chu, Kenneth M Cheung, Keith D Luk

Poster No. 1228
Improving the Bioactive Properties of Polyether Ether Ketone (PEEK) with Antimicrobial Titanium Oxide Hybrid Coatings
John D Jarrell, Nhiem Tran, Christopher Born

Poster No. 1229
Molecular Structural Change and Improved Cytocompatibility of the UV-Irradiated PEEK Surface
Yukimasa Okada, Nobuhiro Abe, Aki Yoshida, Takayuki Furumatsu, Shinichi Miyazawa, Masataka Fujii, Reina Tanaka, Hiroyuki Takahashi, Hiroomi Kimura, Toshifumi Ozaki

Poster No. 1230
3D Porous β-TCP Scaffold Influences Osteogenic and Angiogenic Potentials of Monocultured and Co-Cultured hBMSCs and HUVECs
Yunqing Kang, Sungwoo Kim, Monica Fahrenholtz, Ali Khademhosseini, Yunzhi P Yang

Poster No. 1231
Injectable Gel Graft for Bone Defect Repair
Bo Han, Josephine Fang, Zhi’Yan, Charisse Tayag, Marcel Nimni, Mark Urata

Poster No. 1232
Dual-Initiated Silorane Formulations for Use as a Bone Cement Alternative
Kathleen E. Kilway, Douglas J Adams, Joshua Murphy, Eric Kolb, Bruce Ziran, Timothy Ganey

Poster No. 1233
Mechanical Competence of Antibiotic-Laden Bone Cement During Elution
Matthew Erwood, Douglas J Adams, Joshua Murphy, Eric Kolb, Bruce Ziran, Timothy Ganey

Poster No. 1234
Development of Silver-Containing Hydroxyapatite Coating – In Vitro Evaluation of the Coating –
Iwao Noda, Hiroshi Miyamoto, Shiuchi Eto, Masatsugu Tsukamoto, Takayuki Akiyama, Yutaka Yonekura, Shunsuke Kawano, Motoki Sonohata, Masaaki Mawatari

Poster No. 1235
Can We Trust Oxidation Measurement in Retrieved UHMWPE?
Kim-Phuong N. Le, Jason A. Longaray, Carlos Aponte, Lizeth Herrera, Lin Song, Shi-Shen Yau, Aaron Essner

Poster No. 1235A
Baseline Properties and Wear Resistance of Vitamin E Containing Ultra-High Molecular Weight Polyethylene Grades
Steven M Kurtz, R. Walkenhorst, Julia Hufen, Ryan L Siskey

PS2 CHONDROCYTE DIFFERENTIATION AND HYPERTROPHY

Poster No. 1236
The Involvement of Endoplasmic Reticulum Stress in FGFR3-Related Chondrodysplasias
Ryosuke Sato, Mitsuhiko Takahashi, Masato Miyake, Hiroshi Inoue, Seiichi Oyadomari, Natsuo Yasui

Poster No. 1237
PTH1R Suppresses Chondrocyte Migration via PKA Signaling
Sylvain Bougoin, Jean-Pierre Vilardaga, Juan Taboas

Poster No. 1238
Nell-1, a Key Functional Mediator of Runx2 in Chondrocyte Maturation, Partially Rescues Hypertrophic Zone in Runx2 Deficient Mice
Jie Jiang, X nilai Zhang, Ting Kang, Benjamin Wu, Chia Soo
PS2 CARTILAGE & SYNOVIUM: PROGENITORS AND CHONDROGENESIS

Poster No. 1239
Human Amniotic Mesenchymal Stem Cells in Agarose Respond to TGF-β1 and Dynamic Compression: New Advances in Cartilage Tissue Engineering
Robert M Stefani, David Gonzalez, Joan Stabila, Nancy Ren, James Padbury, Roy K Aaron

Poster No. 1240
Induction of Chondrogenesis and Expression of Superficial Zone Protein (SZP) in Synovial Explants with TGF-β1 and BMP-7
Takashi Iwakura, Atsuyuki Inui, Thomas Schmid, A. Hari Reddi

Poster No. 1241
Hyaluronic Acid Enhances In Vitro Induction Effects of Synthetic PAMPS and PDMAAm Hydrogels on Chondrogenic Differentiation of ATDC5 Cells
Katsuhisa Yoshikawa, Nobuto Kitamura, Takayuki Kurokawa, Yutaka Nohara, Jian P Gong, Kazunori Yasuda

Poster No. 1242
Differential Effects of Non-Thermal Plasma Treatment on Cellular Redox During Chondrogenic Differentiation
Natalie Shainsky, Ryan Shenck, Greg Fridman, Alexander Fridman, Gary Friedman, Marla Steinbeck, Theresa Freeman

Poster No. 1243
An Inverse Agonist for Retinoic Acid Receptors Boosts Mesenchymal Stem Cell Chondrogenesis and Functional Properties of Tissue Engineered Cartilage
Megan J Farrell, Joseph A Chiaro, Elizabeth A Henning, Maurizio Pacifici, Robert L Mauck

Poster No. 1244
Doxycycline Improves Mesenchymal Stem Cell Chondrogenesis and In Vivo Cartilage Repair
Hannah H Lee, Michael J O’Malley, Nicole A Friel, Constance R Chu

Poster No. 1245
Isolation of Cartilage Progenitor Cells by FACS Single Cell Sorting and Cloning
Yin Yu, Hongjun Zheng, Cheng Zhou, James A Martin

Poster No. 1246
Heterogeneous Nature of Osteoarthritic-Derived Chondroprogenitors: Implications for Cartilage Repair Therapies
Rebecca Williams, Christopher R Fellows, Iwan R Davies, Rhiannon E Jones, Duncan M Baird, John Fairclough, Charles W Archer, Ilyas M Khan

Poster No. 1247
Inhibition of HIF1α Promotes Chondrogenesis of Human Adipose Stem Cells
Sharon L Hyzy, Rene Olivares-Navarrete, Christine Wasilewski, Barbara D Boyan, Zvi Schwartz

Poster No. 1248
Effects of TGF-β Withdrawal and FGF Supplementation on ADSC Chondrogenesis
Chun hua Zheng, Marc E Levenston

Poster No. 1249
bFGF Inhibits TGFβ1-Induced Chondrogenic Differentiation by Inhibitor of Differentiation (Id) Proteins
Sun Ae Han, Sahnghoon Lee, Joon Kyu Lee, Heejung Park, Sun-young Wang, Hyun Jin Min, Sang Cheol Seong, Myung Chul Lee

PS2 CARTILAGE & SYNOVIUM: OSTEOARTHRITIS AND BIOMARKERS

Poster No. 1250
Pattern of Osteoarthritis Occurrence in the Baboon Distal Femur
Shayna Levine, Jennifer Harris, Thomas Macrini, Heather B Coan, Todd L Bredbenner, Dan Nicolella, Lorena M Havill

Poster No. 1251
Effects of Reproductive Status on Knee Osteoarthritis in Female Baboons
Thomas E Macrini, Shayna M Levine, Cristine D Saks, Todd L Bredbenner, Daniel P Nicolella, Lorena M Havill

Poster No. 1252
Articular Cartilage Degeneration and Synovitis Observed in the Ovariectomized Mice are Greatly Exacerbated by Forced Running
Kazumasa Miyatake, Kunikazu Tsuji, Jun Yamada, Yu Matsukura, Kahaer Abula, Yoshinori Arai, Ichiro Sekiya, Takeshi Muneta

Poster No. 1253
Chronic Alcohol Abuse Increases Susceptibility To Osteoarthritis
Ranjan Kc, Xin Li, Robin M Voigt, Ali Keshavarzian, Christopher B Forsyth, Di Chen, Dongyao Yan, Joon Suh, Hee-Jeong I Sampen

Poster No. 1254
Genome-Wide Scan Shows Genetic Risk Loci for Knee Osteoarthritis Varies with Anatomic Compartment Site: Implications for Understanding the Genetic Basis of Knee OA and the Importance of Phenotype Definition in Genetic Association Studies

Poster No. 1255
Impact of 22 Disease-Susceptibility Genes on Radiographic Joint Destruction in Japanese Rheumatoid Arthritis Patients
Shinji Yoshida, Katsunori Ikari, Koichiro Yano, Yoshiaki Toyama, Atsuo Taniguchi, Hisashi Yamanaka, Shigeki Momohara

Poster No. 1256
A Lipidomic Study about Phospholipids in Human Synovial Fluid
Marta Kosinska, Gerhard Liebisch, Gerd Schmitz, Guenter Lochnit, Jochen Wilhelm, Heiko Klein, Ulrich Kaesser, Gabriele Laszczkowski, Markus Rickert, Reinhard Dettmeyer, Juergen Steinmeyer

Poster No. 1257
Dynamic Gait Compensations in a Rat Model of Osteoarthritis
Heidi E Kloefkorn, Brittany H Jacobs, Ayomiposi Loye, Kyle D Allen
Poster No. 1258
Relationship Between Serum Hyaluronan Level and Generalised Osteoarthritis
Eiji Sasaki, Yasuyuki Ishibashi, Eiichi Tsuda, Yuji Yamamoto, Shugo Maeda, Ryo Inoue, Ippei Takahashi, Takashi Umeda, Shigeyuki Nakaji

Poster No. 1259
Is There a Chondroprotective Effect of Autologous Protease Inhibitor Concentrate (APIC) in an Osteoarthritis (OA) Rabbit Model? A Pilot Study
Vanessa G Cuellar, Jason M Cuellar, Shawn R Browning, Gaetano Scuderi, Raymond Golish, Lewis Hanna

Poster No. 1260
Mechanisms of Mitochondrial Function in Osteoarthritis: Effect of Increased Oxidative Phosphorylation on Chondrocyte Oxidative Homeostasis
Rachel Lane, Timothy M Griffin

Poster No. 1261
Downregulation of Matrix Metalloproteinase-1 in Chondrocytes with Anti-inflammatory drugs: NSAIDs and Steroids
Hong Sik Cho, Andrew Walker, J eb Williams, Karen A Hasty

Poster No. 1262
The Effects of Hyaluronic Acid using the Combination Treatment of Ultrasound Sonophoresis and Microbubbles Cavitation in a Rabbit Osteoarthritis Model
Akio Eguchi, Tomoyuki Nakasa, Nobuo Adachi, Masataka Deie, Katsu ro Tachibana, Toshiyuki Kikuchi, Mitsuo Ochi

Poster No. 1263
Drug screening for Inhibiton of Wnt/β-Catenin Signaling in Osteoarthritis
Akira Takamatsu, Bisei Ohkawara, Tadahiro Sakai, Naoki Ishiguro, Kinji Ohno

Poster No. 1264
The Effect of Low-Magnitude High-Frequency Vibration on Protecting Cartilage Degradation on Anterior Cruciate Ligament Transection-Induced Osteoarthritis Rat Model
Jianghui Qin, Simon K Chow, Kwok-Sui Leung, Wing-hoi Cheung

Poster No. 1265
Physiological Concentrations of Glucosamine Sulfate and Glucosamine HCL can Downregulate Interleukin-1, Kinins and MMPs in Human Osteoarthritic Chondrocytes
William Wu, Fred Nelson, Magdalena Pasierb

Poster No. 1266
The Effect of Long Term Oral Administration of Glucosamine Hydrochloride and Chondroitin Sulfate on Spontaneous Osteoarthritis in a Guinea Pig Model
Takanobu Sumino, Junnosuke Ryu, Masayuki Seki

Poster No. 1267
Increased Macrophage Infiltration and Osteoclast Activity Characterize Subchondral Bone Sclerosis in Osteoarthritis
Jeroen Geurts, Amit Patel, Jonas Fischer, Michael T Hirschmann, Magdalena Müller-Gerbl, Victor Valderrabano, Thomas Hügle

Poster No. 1268
Raman Spectroscopy Shows that Human Subchondral Bone in Osteoarthritis is Hypermineralised
Bari an Mohidin, Panagiotis D Gikas, J emma G Kerns, Helen L Birch, Jonathan Miles, Timothy Briggs, Allen E Goodship

Poster No. 1269
Subchondral Bone and Joint Laxity Changes in a Mouse Model of Post-Traumatic Osteoarthritis
Kevin A L ockwood, Bryce T Chu, Matthew J Anderson, Alexander C Kelemen, Dominik R Haudenschild, Blaine A Christiansen

Poster No. 1270
Alarmins S100A8/A9 Cause Osteophyte Formation in Experimental Osteoarthritis with High Synovial Involvement
Rik Schelbergen, Arjen Blom, Wouter de Munter, Thomas Vogl, Johanne s Roth, Wim van den Berg, Peter van Lent

Poster No. 1271
Low Density Lipoprotein Receptor Deficiency Results in Osteophyte Formation during Experimental Osteoarthritis which is Increased Under Enhanced Low Density Lipoprotein Serum Levels
Wouter de Munter, Birgitte Walgreen, Monique M Helsen, Annet W Sloëtjes, Wim B van den Berg, Peter L van Lent

Poster No. 1272
Exosomes Derived from Osteoarthritis Synovial Fibroblasts Induce Osteoarthritic Changes in Articular Cartilage
Tomohiro Kato, Shigeru Miyaki, Yoshihiro Nakamura, Tsu yoshi Takada, Tomoyuki Nakasa, Yoshio Kato, Martin K Lotz, Mitsuo Ochi

Poster No. 1273
Gene Expression Analysis of Both Human and Murine OA Synovium Reveals Genes Downstream of TGF-β as Targets for Prevention of OA-Related Fibrosis
Dennis Remst, Esmeralda N Blaney Davidson, Arjen Blom, El ly L Vitters, Ruud A Bank, Wim B van den Berg, Peter M van der Kraan

Poster No. 1274
Immunocytochemistry and Culture of Synovial Tissue from the Gleno-Humeral Joint with and without Osteoarthritis
Yuichi Nagase, Tim Helliswell, Piya Parashar, Margaret Roebuck, Simon P Frostick

PS2 CARTILAGE & SYNOVIA: MATRIX PROTEINS, COLLAGEN AND PROTEOGLYCANS

Poster No. 1275
Effects of Concentration on Synergistic Hyaluronan-PRG4 Cartilage Boundary Lubrication
Taryn Ludwig, Miles M Hunter, Tannin Schmidt

Poster No. 1276
Cartilage Boundary Lubricating Ability of Full-Length Human Recombinant PRG4 — Alone and in Combination with Hyaluronan
Sam Dorosz, Saleem Abubacker, Nemanja Masala, Gregory Jay, Tannin A Schmidt
Poster No. 1277
Cartilaginous Matrix Formation is Potentiated in Chondrogenic Co-Cultures of Expanded Chondrocytes and Bone Marrow Mesenchymal Stromal Cells
Adetola Adesida, Anika Chowdhury, Ashlee Dobbe, Aillette Mulet-Sierra, Nadir M Jomha

Poster No. 1278
Distribution of Pigment Epithelium-Derived Factor in Cartilage: Immunohistochemical Study
Habiyaremye Dieudonne, Na Song, Joyce Tombran-Tink, Feng Li, Christopher Niyibizi

PS2 CARTILAGE & SYNOVIUM: MATRIX DEGRADATION

Poster No. 1279
Lipophilic Statins Inhibit CD44 Fragmentation in Chondrocyte Cells
Kenya Terabe, Toshihisa Kojima, Nobunori Takahashi, Naoki Ishiguro

Poster No. 1280
Site-Dependent Changes in Collagen Orientation and Elastic Moduli in Lapine Articular Cartilage at 4 Weeks After Anterior Cruciate Ligament Transection
Janne T Mäkelä, Zahra S Rezaeian, Santtu Mikkonen, Ryan Madden, Sang K Han, Jukka S Jurvelin, Walter Herzog, Rami Korhonen

Poster No. 1281
Catabolic Events in Bovine Cartilage Following A Single Blunt Impact
Lei Ding, John F Bierman, Abigail D Lehman, Barbara J Laughlin, Danping Guo, Gene A Homandberg, Joseph A Buckwalter, James A Martin

Poster No. 1282
Comparison of Chondrolytic Effect by Various Damage Associated Molecular Patterns on Bovine and Human Articular Chondrocytes
Lei Ding, Barbara J Laughlin, Joseph A Buckwalter, James A Martin

PS2 CARTILAGE & SYNOVIUM: CYTOKINES, GROWTH FACTORS AND INFLAMMATION

Poster No. 1283
In Vitro Model for Evaluating the Effects of Interleukin-1 Beta and Alendronate on Type II Chondrocytes
Matthew G Cable, Jeffrey C Flynn, Nancy M Jackson, David Markel

Poster No. 1284
Alendronate Chondroprotective Effects In Vitro: Effect of Alendronate on Glysosaminoglycan Production and Cell Metabolism under Low Osmotic as seen in Osteoarthritis
Shigeru Kobayashi, Tsuyoshi Miyazaki, Seiichiro Shimada, Riya Kosaka, Adam Meir

Poster No. 1285
Function of the Chondrocyte PI-3 Kinase-Akt Signaling Pathway is Stimulus Dependent
Meredith Greene, Richard F Loeser

Poster No. 1286
IGF-II is Required for Proper Long Bone Development and Resistance to Inflammatory-Induced Cartilage Damage
Tomoya Uchimura, Li Zeng

PS2 CARTILAGE & SYNOVIUM: TISSUE ENGINEERING AND REPAIR

Poster No. 1287
Acute BMP2 Response Following Induction of Ischemic Osteonecrosis in Immature Femoral Head
Nobuhiro Kamiya, Harry Kim

Poster No. 1288
Apoptotic Osteocytes Promote Chondrocyte Apoptosis and Prevent Chondrogenesis via Soluble Factors
Hashem Al-Dujaili, Christian Fischer, Saja Al-Dujaili, Lidan You

Poster No. 1289
Administration of Salubrinal Attenuates mRNA Expression and Activity of MMP13 in Human Chondrocytes
Kazunori Hamamura, Momoko Hamamura, Chien-Chi Lin, Hiroki Yokota

Poster No. 1290
Influence of Surface Modification with a Cell Penetrating Peptide on Chondrocyte Uptake of Liposomes and Micelles
Khaled A Elsaid, Lisa Ferreira, Trang Truong, Gerard D’Souza

Poster No. 1291
Resurfacing Articular Cartilage to Regain Functional Properties
Stephanie Grenier, Madhu Bhargava, Ignacio J Garcia, Peter Torzilli

Poster No. 1292
Chondroitinase ABC-Treatment Enhances Tension Compression Nonlinearity in Tissue-Engineered Articular Cartilage

Poster No. 1293
Frequent Chondroitinase Treatment in Engineered Cartilage with Native Level of Cell Seeding Density Does Not Enhance Collagen Deposition and is Detrimental to Chondrocytes
Robert Nims, Alexander D Cigan, Michael Albro, Grace O’Connell, Daniel B Park, Clark T Hung, Gerard A Atshan

Poster No. 1294
ROCK Inhibitor Prevents the Dedifferentiation of Human Articular Chondrocytes
Emi Matsumoto, Takayuki Furumatsu, Tomoko Kanazawa, Toshiyuki Kunisada, Toshifumi Ozaki

Poster No. 1295
The Mitogen Activated Protein Kinase p38 Drives Dedifferentiation of Articular Chondrocytes in Monolayer Culture
Derek H Rosenzweig, Sing J Ou, Thomas M Quinn

Poster No. 1296
Analysis of the Humoral Factors Produced by Layered Chondrocyte Sheets
Poster No. 1297
Controlled Release of TGF-β3 from Cartilage Extra Cellular Matrix Derived Scaffolds Induces Robust Chondrogenesis of Diseased Human Stem Cells
Henrique V Almeida, Yurong Liu, Gráinne Cunniffe, Conor T Buckley, Kevin Mulhall, Amos Matsiko, Fergal J O’Brien, Daniel J Kelly

Poster No. 1298
Combined Effect of Mechanical Load and BMP-2 Overexpression on the Chondrogenesis of HumanBone Marrow Derived Stem Cells
Alexander Neumann, Mauro R Alini, Charles W Archer, Martin Stoddart

Poster No. 1299
Cartilage Regenerative Capacity of Amnion-Derived ECM-Coated PLGA Scaffold
Makiko Nogami, Shoji Seki, Yoshito Matsui, Hiraku Motomura, Chika Koike, Motonori Okabe, Toshiko Yoshida, Toshio Nikaido, Tomaatsu Kimura

Poster No. 1300
Mesenchymal Stem Cell-Based Cartilage is Unstable in Very Long Term In-Vitro Culture
Megan J Farrell, Matthew B Fisher, Nicole Soegaard, Kimberly M Farrell, Robert L Mauck

Poster No. 1301
Synergistic Action of FGF-2 and TGF-β1 Enhances Bioprinted Human Neocartilage Formation
Xiaofeng Cui, Kurt Breitenkamp, Martin Lotz, Darryl D’Lima

Poster No. 1302
Hyaluronic Acid Hydrogels for Articular Cartilage Defect Repair in a Large Animal Model
Nicole S Belkin, Matthew B Fisher, Elizabeth A Henning, Minwook Kim, Liming Bian, Jason A Burdick, David R Steinberg, Robert L Mauck

Poster No. 1303
In Vivo Effects of Intra-Articular Hyaluronic Acid Administration on Hyaline Cartilage Regeneration Induced by PAMPS-PDMAAm Double-Network Hydrogel
Takaaki Fukui, Nobuto Kitamura, Takayuki Kurokawa, Eiji Kondo, Masashi Yokota, Jian P Gong, Kazunori Yasuda

Poster No. 1304
Photochemical Crosslinking Stabilizes Protein Hydrogels for Articular Cartilage Regeneration
Mark A Omobono, Seokyoung Jang, Xing Zhao, Mark A Randolph, Robert W Redmond, Thomas J Gill

Poster No. 1305
Identification of a Glucose Concentration Threshold Critical for Tissue Growth in Engineered Cartilage
Alexander D Cigan, Robert J Nims, Michael B Albro, Mary M Quien, Gordana Vunjak-Novakovic, Clark T Hung, Gerard A Ateshian

Poster No. 1306
Non-Destructive Near-Infrared Spectroscopic Monitoring of Engineered Cartilage Growth
Cushla M McGoverin, Uday P Palukuru, Michael J Shockley, Padraig B Glenn, Richard G Spencer, Nancy Pleshko

Poster No. 1307
Articular Cartilage Repair Using a Photo-Crosslinkable Gelatin with Bone Marrow Derived Stromal Cells in Rabbits
Tetsuro Mazaki, Yasuyuki Shiozaki, Akihiro Matsukawa, Yasuhiro Yoshida, Mariko Nakamura, Takashi Kitajima, Yoshihiro Ito, Toshihumi Ozaki

Poster No. 1308
Parathyroid Hormone [1-34] Improves Subchondral Bone Reconstitution and Articular Cartilage Repair in Osteochondral Defects In Vivo
Patrick Orth, Magali Cucchiarini, Michael D Menger, Dieter M Kohn, Henning Madry

Poster No. 1309
An Experimental Study on Repairing Large Osteochondral Defect by Costal Cartilage: Technique of “One-Rib for One-Knee”
Dajiang Du, Norihiko Sugita, Yu Moriguchi, Zhen Liu, Yasukazu Yonetani, Ken Nakata, Akira Myoui, Hedeik Yoshikawa

Poster No. 1310
Restoration of Synovial Fluid Lubrication with Hyaluronan Following Arthroscopic Cartilage Defect Repair
Murray J Grissom, Michele M Temple-Wong, Matthew S Adams, Matthew Tom, Barbara L Schumacher, Lisa A Fortier, Laurie R Goodrich, Constance R Chu, Robert L Sah

Poster No. 1311
A Single Stage Therapy for Articular Cartilage Repair Using Selected Freshly Isolated Infrapatellar Fat Pad Derived Cells in a Growth Factor Delivery Hydrogel
Mark Ahearne, Yurong Liu, Daniel Kelly

Poster No. 1312
The SB100x Sleeping Beauty Transposase Improves Transposon Integration and Transgene Expression in Articular Chondrocyte Primary Culture
Alan J Nixon, Michael Scimeca

Poster No. 1313
Viral Transduction of CD44-DN Modulates Cartilage Hyaluronan
Emily B Askew, Daisuke Hida, Yohei Ono, Cheryl B Knudson, Warren Knudson

Poster No. 1314
IGF-I Overexpression via rAAV for Human Mesenchymal Stem Cells Chondrogenic Differentiation
Jagadeesh K Venkatesan, Janina Frisch, Gertrud Schmitt, Dieter Kohn, Henning Madry, Magali Cucchiarini

Poster No. 1315
Neutralizing Antibody Dynamics in scAAV Dosed Equines
Jennifer N Phillips, R Jude Samulski, Daniel D Hemphill, C Wayne McIlwraith, Laurie R Goodrich
PS2 CARTILAGE & CHONDROGENESIS: MECHANOBIOLOGY

Poster No. 1316
Fourier Transform Infrared Spectroscopic Parameter Specificity for Collagen and Proteoglycans May Reach the Level of Biochemical Reference Techniques
Lassi Rieppo, Simo Saarakkala, Jukka S Jurvelin, Jarno Rieppo

Poster No. 1317
A “Sensate” Surface Replacement Scaffold can Measure Load Changes In Vivo during Cartilage Formation
Javier Rojas, Gregory J Heden, Nicklaus H Diggins, Jacalyn L Oullette, John T Ruth, John A Szivek

Poster No. 1318
A Mouse Model for Articular Cartilage Injury in a Mouse Model by Cyclical Compressive Load
Tarik Onur, Cole Sitron, Ruobin Wu, Rebecca W Pak, Wenhao Chang, Alexis Dang

Poster No. 1319
Mechanical Loading Increases Chondrocyte Viability after Impact Injury in Porcine Model
Lauren Vernon, Stephanie Morel, Andre Abadin, Lee D Kaplan, Chun-Yuh Huang

Poster No. 1320
The Pericellular Environment Regulates Cytoskeletal Development in Mesenchymal Stem Cells during Chondrogenesis and Determines their Response to Hydrostatic Pressure
Andrew J Steward, Diane R Wagner, Daniel J Kelly

Poster No. 1321
Skeletal Unloading Promotes the Appearance of Secondary Ossification Center in the Rat Femoral Heads
Tomoki Kawano, Yasuo Yoshihara, Yuichiro Shiromoto, Takemi Oguma, Masato Tomiya, Sadayuki Hiroi, Koichi Nemoto

Poster No. 1322
Ex Vivo Spontaneous Calcium Signaling of Chondrocytes in Juvenile and Mature Cartilage
Yilu Zhou, Enoch Cheung, X. Lucas Lu

Poster No. 1323
The Effect of Osmotic Challenge on Levels of Chromatin Condensation and Histone Expressions in Chondrocytes
Jerome Irianto, Rui P Martins, Rosamond A Nuamah, Charles A Mein, David A Lee

Poster No. 1324
Normal vs. Abnormal Repetitive Loading of Cartilage Explants
Anneliese D Heiner, Todd McKinley, Prem S Ramakrishnan, John F Bierman, James A Martin

Poster No. 1325
The Effect of Loading Magnitude on Calcium Signaling in Articular Cartilage Chondrocytes
Ryan Madden, Walter Herzog

Poster No. 1326
Development of an Osteochondral Impact Injury Model with Subsequent Dynamic Compressive Loading
Nicole P Waters, Aaron M Stoker, Ferris Pfeiffer, James L Cook

Poster No. 1327
Cell Death due to Biomechanical Wear Damage Leads to a Population of Surviving but Spatially Thinned Out Chondrocytes
Tino Felka, Carol Pacione, Roman Mehling, Ulrich Stoeckle, Wilhelm Aicher, Susan Chubinskaya, Alan J Grodzinsky, Markus A Wimmer, Bernd Rolauffs

Poster No. 1328
Factors Affecting the Stability of Osteochondral Grafts: Effect of Graft Length, Harvesting Technique and Depth of Defect
Kathryn Lowery, Serena L Russell, David L Shaw, Zhongmin Jin, Eileen Ingham, John Fisher

PS2 CARTILAGE MECHANICS

Poster No. 1329
Friction and Wear in Osteochondral Graft Transfer
Serena L Russell, Eileen Ingham, John Fisher

Poster No. 1330
Characteristic μMRI T1 Changes in GadoliniumImmersed Articular Cartilage under Mechanical Strain
Nian Wang, Yang Xia, Farid Badar

Poster No. 1331
Comparing CT to Surface Digitization-Based Measurements of Cartilage Thickness
Celine Yeung, Ryan Willing, Hannah Shannon, Emily Lalone, Marjorie Johnson, Graham King, George S Athwal

Poster No. 1332
Effect of Permeability of the Superficial Layer on the Frictional Property in Articular Cartilage
Kyuichiro Imade, Ryosuke Nansai, Tomoya Susa, Hiromichi Fujie

Poster No. 1333
Topographical Mapping of Human Femoral Elastic Moduli Under Physiological Loading
Jessica M Deneweth, Shannon E Pomeroy, Ellen M Arruda, Scott G McLean

Poster No. 1334
Viscoelastic Properties of Articular Cartilage in Tension under Various Strains and Strain-Rates
Sahand Ahsanizadeh, LePing Li

Poster No. 1335
Mechanical Properties of Baboon Cartilage Demonstrate a Similar Decline with Age as in Human Cartilage
Todd L Bredbenner, Donald Moravits, Shayna M Levine, Jennifer Harris, Lorena M Havill, Daniel P Nicolella

PS2 MENISCUS

Poster No. 1336
Rho small GTPases Regulate Stretch-Dependent Expression of SOX9 and COL2A1 in Inner Meniscus Cells
Tomoko Kanazawa, Takayuki Furumatsu, Emi Matsumoto, Toshifumi Ozaki

Poster No. 1337
Nanoﬁber Length Scale Differentially Impacts Meniscus and Mesenchymal Stem Cell Morphology and Nuclear Deformation
Amy M Silverstein, Su-Jin Heo, Robert L Mauck
Transplantation of Aggregates of Synovial Mesenchymal Stem Cells in a Rat Massive Meniscal Defect Model: Efficient Cell Number Per Each Aggregate in Condition using the Same Number of the Cells
Hiroki Katagiri, Ichiro Sekiya, Takeshi Muneta, Kunikazu Tsuji, Hideyuki Koga, Masafumi Horie

Major Mismatched Transplantation of Synovial Mesenchymal Stem Cells Transiently Delays Meniscal Regeneration in a Rat Massive Meniscal Defect Model
Makiko Okuno, Ichiro Sekiya, Hiroki Katagiri, Nobutake Ozeki, Masafumi Horie, Hideyuki Koga, Kunikazu Tsuji, Shinichi Yoshiya, Takeshi Muneta

Contrast-Enhanced CT can Quantify Glycosaminoglycan Content in the Human Knee Meniscus
Daniel Oh, Ben Lakin, Rachel C Stewart, Brian Snyder, Mark Grinstaff

Mesenchymal Stem Cells in Synovial Fluid Increase after Meniscus Injury
Yu Matsukura, Ichiro Sekiya, Kunikazu Tsuji, Takeshi Muneta

Direct Comparison of the Effects of Fibronectin Fragment Stimulation on Chondrocytes and Meniscal Cells
David L Long, Austin Stone, Richard F Loeser

Immune Modulatory Function of Human Meniscal Fibrochondrocytes
Satomi Abe, Hitoshi Nochi, Takuya Ruike, Hiroshi Ito

Shawn P Grogan, Stuart F Duffy, Xian Chen, Chantal Pauli, Shreyasi Das, Martin K Lotz, Darryl D’Lima

Endothelial Cells Enhance Migration of Meniscus Cells
Xiaoqing Yuan, George M Eng, Derya E Arkonac, Pei-hsiu Grace Chao, Clark T Hung, Gordana Vunjak-Novakovic

Lubricin Distribution in the Bovine Meniscus
Stephen Andrews, Michael J Samsom, Tannin A Schmidt, Nigel G Shrive, Janet L Ronsky, Jerome B Rattner

Meniscal Tissue Engineering using Electrospun Matrix Systems
Jihye Baek, Sungho Jin, Xian Chen, Darryl D’Lima, Shawn P Grogan

Temporal Effect of In Vivo Tendon Fatigue Loading on the Apoptotic Response Explained in the Context of Number of Fatigue Loading Cycles and Initial Damage Parameters
Nelly Andarawis-Puri, Anaya S Philip, Damien Laudier, Jedd B Sereysky, Mitchell B Schaffler, Evan L Flatow

See-Saw Rocking: A Validated Model for Applying Fluid Shear Stress to Cell Monolayers
Russell P Tucker, Andrew Jones, Sarah Franklin, Duanduan Chen, Philippa Hulley, Yiannis Ventikos, Per Henningsson, Richard Bomphrey, Mark Thompson

Nicotine Reduced MMP-9 Expression in the Primary Porcine Tenocytes Exposed to Cyclic Stretch
Taku Hatta, Hirotaka Sano, Naoya Sano, Koshi N Kishimoto, Masaaki Sato, Eiji Ito

Effect of Triamcinolone Acetonide to Tendon Derived Cells: Dose and Time Depending Effect
Yoshifumi Harada, Takeshi Kokubu, Yutaka Mifune, Tomoyuki Muto, Hanako Nishimoto, Ryosuke Sakata, Issei Nagura, Masahiro Kurosaka

Histological Assessment of Cruciate Ligament after Biological Therapy in Patients with Rheumatoid Arthritis
Yoshihiro Kusayama, Ken Kumagai, Yutaka Inaba, Mari Fujisaki, Kengo Harigane, Sou Kubota, Kousuke Matsuo, Syuntaro Muramatsu, Akiko Nagaoka, Youhei Yukizawa, Tomoyuki Saito

ACL Graft Load During Knee Motion Impairs Early Tendon-to-Bone Healing in a Rat Model: A Biomechanical and Micro-CT Analysis
Richard Ma, Clifford Voigt, Michael Schar, Joseph Nguyen, Xiang-Hua Deng, Scott A Rodeo

In Vitro Functional Response of Human Tendon Cells (TCs) to Different Low Frequency Pulsed Electromagnetic Treatment
Deborah Stanco, Laura de Girolamo, Marco Viganò, Emanuela Galliera, Colombini Alessandra, Setti Stefania, Valerio Sansone

Nuclear Localization and Chromatin Association of Tenomodulin in Human and Equine Tenocytes
Jie Qi, Ashley Banes, Jakub Dmochowski, Wesley Norman, Jeeho Kim, Donald Bynum, Megan Patterson, Alexander Creighton, Albert J Banes

Whole Body Vibration Stimulates Collagen Expression in the Rat Patellar Tendon In Vivo
Benjamin V Keller, William Thompson, Laurence E Dahners, Paul S Weinhold

Functionality and Stability of Platelet-Rich Plasma Preparations
Marc Long, Solange Vischer, Genta Plasari
Poster No. 1359
Induction of Neotendon Formation and Scleraxis Expression in a Supraphysiological Model of Tendon Growth
Jonathan Gumucio, Anthony Phan, Michael Flood, Christopher L Mendias

Poster No. 1360
Treadmill Running Exercise Initiated Immediately after Fatigue Loading Results in Adaptive Response in Rat Patellar Fatigue Damaged Tendons as Evidenced from Immunohistochemistry
Michael Boniello, Arun Fricker, Damien Laudier, Nelly Andarawis-Puri, Evan L Flatow

Poster No. 1361
Rac1 Activity Maintains the Human Tenocyte Phenotype
Rowena McBeath, A. Lee Osterman, Andrzej Fertala

Poster No. 1362
MT3-MMP Expression in Developing Embryonic Tendon
Cassandra B Saitow, Nathan R Schiele, Jaqueline E Judith, Catherine K Kuo

Poster No. 1363
PAPP-A Affects Tendon Development and Material Properties
Tai-Hua Yang, Cheryl A Conover, Matthias Vanhees, Andrew R Thoreson, Chunfeng Zhao, Kai-Nan An, Peter C Amadio

Poster No. 1364
Periostin Deficient Mouse Tendons Exhibit Altered Collagen Patterns
Connie S Chamberlain, Kevin I Rolnick, Ellen M Leiferman, Scott Liegel, Geoffrey S Baer, Ray Vanderby

Poster No. 1365
Homeostatic Inflammation in the Flexor Tenosynovium of Menopausal Women with Carpal Tunnel Syndrome
Yasunobu Tamaki, Yoshiro Kiyoshige, Daisuke Ishigaki, Michiaki Takagi

PS2 TENDON AND LIGAMENT: MECHANICS

Poster No. 1366
Repeatedly Overloading Tendons Causes Increasingly Severe Damage to Both Collagen Fibrils And Molecules
Samuel P Veres, Julia M Harrison, J. Michael Lee

Poster No. 1367
Contribution of Elastin to the Material Behavior of Medial Collateral Ligament
Heath Henninger, Clayton Underwood, Jeffrey Weiss

Poster No. 1368
Biomechanical Properties of Achilles Tendons in Ins2Akita Mice
Jordan T Boivin, Esam Salem, Egleide Y Elenes, Shawn A Hunter, Khalid M Elased, Greg P Boivin

Poster No. 1369
An Automated Method for Evaluating Type I Collagen Fiber Orientation and Damage Severity in Tendon
Stephen J Ros, Nelly Andarawis-Puri, Evan L Flatow

Poster No. 1370
Sliding Motion and Shear Stress in Human Achilles Tendon
Yu-Long Sun, Chunfeng Zhao, Tai-Hua Yang, Gregory Jay, Thomas Schmid, Peter C Amadio, Kai-Nan An

Poster No. 1371
Primary Gene Response to Mechanical Loading in Healing Rat Achilles Tendons
Pernilla Eliasson, Therese Andersson, Malin Hammerman, Per Aspenberg

Poster No. 1372
Overloading Tendons Causes Active Unwinding of the Collagen Helix
Samuel P Veres, Julia M Harrison, J. Michael Lee

Poster No. 1373
Physiological Achilles Tendon Length and its Relation to Tibia Length
Claudio Rosso, Caroline Polzer, Philipp Schuetz, Lukas Weisskopf, Ueli Studler, Victor Valderrabano

Poster No. 1374
Description of the Time- and Strain-Dependent Poisson's Ratio of Ligament and Tendon Under Finite Deformation
A. M Swedberg, S. P Reese, S. A Maas, B. J Ellis, J. A Weiss

Poster No. 1375
A Novel Model to Assess the Contributions of Flexor Tendons in Finger Joint Motion
Tai-Hua Yang, Szu-Ching Lu, Wei-Jr Lin, Kristin Zhao, Chunfeng Zhao, Li-Chieh Kuo, I-Ming Jou, Kai-Nan An, Fong-Chin Su

Poster No. 1376
Soft Tissue Allografts Terminally Sterilized with Electron Beam are Biomechanically Equivalent to Aseptic, Non-Sterilized Tendons
Shawn A Hunter, Egleide Elenes, Gregory Boivin

Poster No. 1377
The Kinematics of the Pivot Shift Test Demonstrated through Computer-Controlled Knee Testing

Poster No. 1378
Effects of Hydration on Nanoscale Morphology and Mechanics of Individual Type I Collagen Fibrils in the Brtl Mouse Model of Osteogenesis Imperfecta
Joseph M Wallace, Arika Kemp, Chad Harding, Wayne Cabral, Joan Marini

Poster No. 1379
Biomechanical Comparison of Tibial Inlay and Tibial Tunnel Techniques for Reconstruction of the Posterior Cruciate Ligament
Jae-Young Moon, Jongkeun Seon, Hyung-Keun Kim, Ji Hyeon Yim, Hyang-Yeon Park, Eun-Kyoo Song

Poster No. 1380
In Vivo Ligament and Meniscus Loading during Normal Gait in the Ovine Stifle Joint: A Huge Inter-Subject Variability
Mohammad Atarod, Josh Rosvold, Cyril B Frank, Nigel G Shrive

Poster No. 1381
A Small Animal Model to Investigate the Biologic Effects of ACL Graft Strain
Richard Ma, Xiaodong Ju, Xiang-Hua Deng, Scott A Rodeo
Poster No. 1382
In-vivo Elongation of the Anterior Cruciate Ligament (ACL) and Posterior Cruciate Ligament (PCL) during a Dynamic Step-up Activity
Shinsuke Kikuta, Jing-Sheng Li, Ali Hosseini, Nolan Ryan, Thomas J Gill, Guoan Li

Poster No. 1383
Resident's Ridge Formation Due To ACL Force-Induced Bone Remodeling
Hiromichi Fujie, Satoshi Yamakawa, Ken Nakata, Konsei Shino

Poster No. 1384
Periostin Effects on Healthy and Healing Achilles Tendons
Jaclyn Kondratko, Connie S Chamberlain, Kevin I Rolnick, Sarah Duennwald-Kuehl, Geoffrey S Baer, Roderic Lakes, Ryan Vanderby

Poster No. 1385
Displacement of the Medial Patellofemoral Ligament in Relation to Varying Attachment Positions at the Femoral Condyle
Sven Herrmann, Robert Lenz, Christoph Woernle, Peter Kreuz, Rainer Bader, Thomas Tischer

PS2 TENDON AND LIGAMENT: REPAIR AND TISSUE ENGINEERING

Poster No. 1386
Analysis of the Biomechanics of Tendinopathy in a New Murine Achilles Explant System which Maintains Cell Viability, Gene Expression, and Material Properties
Katie Trella, Jun Li, Rebecca Bell, Daniel J Gorski, Elizabeth Shewman, Katalin Mikecz, John Sandy, Anna Plaas, Vincent M Wang

Poster No. 1387
Potential Murine Model of Tendon Tissue Regeneration?
Andrea L Lalley, Namdar Kazemi, Nathaniel A Dyment, Keith Kenter, David L Butler, Jason T Shearn

Poster No. 1388
Deficiency of Macrophage Migration Inhibitory Factor Gene Delays Healing of the Achilles Tendon: A Biomechanical and Biological Study
Eiji Kondo, Shin Onodera, Hiroyuki Fujiki, Kazunori Yasuda

Poster No. 1389
Design and Evaluation of Human ACL Cells on a Novel Tissue Engineered Braided Ligament Construct
Mia D Woods, Ashim Gupta, Joylene W Thomas, Kevin Sharif, Saadiq F El-Amin

Poster No. 1390
Biomechanical Study of Flexor Tendon with Multiple Slits for Potential Recellularization
Yasuhiro Ozasa, Andrew R Thoreson, Kai-Nan An, Peter C Amadio, Chunfeng Zhao

Poster No. 1391
Inhibition of Fibrosis in Musculoskeletal Tissues
Andrzej Fertala, Andrzej Steplewski, Jolanta Fertala, James Kostas, Joseph Abboud, William Arnold, Pedro Beredjiklian, Gerald R Williams

Poster No. 1392
Platelet-Rich Plasma and Triamcinolone Acetonide Exerts Anti-inflammatory and Anti-degenerative Effects on Rotator Cuff Derived Cells
Tomoyuki Muto, Takeshi Kokubu, Yutaka Mifune, Hanako Nishimoto, Yoshifumi Harada, Issei Nagura, Ryosuke Sakata, Atsuyuki Inui, Masahiro Kurosaka

Poster No. 1393
CTGF Induces Functional Ligament Regeneration by Stimulating Endogenous CD146+ Stem/Progenitor Cells
Chang Lee, Takahiro Suzuki, Chandhanarat Chandhanayingyong, Anny Hsu, Andrew Fan, Francis Y Lee, Jeremy J Mao

Poster No. 1394
The Effect of Vitamin D Deficiency on Rotator Cuff Healing in a Rat Model
Michael Angeline, Richard Ma, Cecilia Pascual-Garrido, Clifford Voigt, Xiang Hua Deng, Russell F Warren, Scott A Rodeo

Poster No. 1395
The Development and Characterization of a Xenograft-Derived Scaffold for Ligament Reconstruction
Thorsten M Seyler, Patrick W Whitlock, Justin M Saul, Gary G Poehling, Thomas L Smith, Mark E Van Dyke

PS2 MUSCLE

Poster No. 1396
Over Expression of Pepck-C in Skeletal Muscle Enhances Muscle Endurance and Prevents High-Fat Diet Induced Obesity in Mouse Model
Daibang Nie, Sheri S Wang, Ying Tang, Dong Wei, William T Witt, Allan Z Zhao, Yifan Dai, Freddi H Fu, Johnny Huard, Bing Wang

Poster No. 1397
RhoA Signaling Regulates Heterotopic Ossification and Fatty Infiltration in Dystrophic Skeletal Muscle
Xiaodong Mu, Arvydas Usas, Ying Tang, Aiping Lu, Jihee Sohn, Bing Wang, Kurt Weiss, Johnny Huard

Poster No. 1397A
RhoA Inactivation Represses BMP-Induced Heterotopic Ossification (HO) in Skeletal Muscle and Potential for HO Treatment
Xiaodong Mu, Kurt Weiss, Johnny Huard

Poster No. 1398
Skeletal Muscle Atrophy Induced by a Spiral Wire Immobilization Procedure was Improved by Electroacupuncture in Mice
Akiko Onda, Yoichiro Kusakari, Susumu Minamisawa, Toru Fukubayashi

Poster No. 1399
Dynamic Fluid Flow Stimulation on Muscle Fiber Regrowth
Minyi Hu, Robbin Yeh, Morgan Teeratananon, Yi-Xian Qin

Poster No. 1400
The Effect of Immediate and Delayed Platelet-Rich Plasma (PRP) Treatment on Muscle Contusion Healing in the Rat
Demetris Delos, Matthew J Leineweber, Yingxin Gao, Salma Chaudhury, Saif Alzoobaee, Scott A Rodeo
Poster No. 1401
Improved Muscle Histology in Old Dystrophic Mice Exposed to Young Dystrophic Peripheral Circulation: A Parabiotic Paring Study
Aiping Lu, Hongshuai Li, Ying Tang, Xiaodong Mu, Minakshi Poddar, Bing Wang, Johnny Huard

Poster No. 1402
The Effect of Transcutaneous Carbon Dioxide Application on the Slow Muscle In Vivo
Yoshitada Sakai, Masahiko Miwa, Keisuke Oe, Takeshi Ueha, Akhiro Koh, Sang Yang Lee, Takahiro Niikura, Masahiro Kurosaka

Poster No. 1403
Effect of Free Radical Scavenger in Ischemia-Reperfusion Injury Muscle Crush Wound
Kazuhiro Hori, Masaya Tsujii, Takahiro Iino, Takeshi Uemura, Akimaru Nishimura, Koji Akeda, Masahiro Hasegawa, Akhiro Sudo

Poster No. 1404
Global Methylation Profiles associated with a Genetic Variant in PLIN4
Mai S Abdel-Ghani, Courtney Sprouse, Nathanael Leo, Victoria I Rentas, Jason S Lipof, Hanwool R Choi, Hugo Clifford, Kirsten N Norrell, Fadia Haddad, Shlomit Radom-Aizik, Gregory R Adams, Eric Hoffman, Laura L Tosi, Joseph M Devaney

Poster No. 1405
Discovery of Fibrotic Skeletal Muscle Perimysium Ultrastructure
Allison R Gillies, Ana E Rodriguez-Soto, Samuel R Ward, Richard L Lieber

Poster No. 1406
Stretched Sarcomeres Contribute to Equinus Contractures in Cerebral Palsy
Margie Mathewson, Samuel Ward, Henry Chambers, Richard L Lieber

Poster No. 1407
Clinical Issues with the Traditional View of Innervation and Action of the Adductor Magnus
Megumi Takizawa, Daisuke Suzuki, Yuta Suzuki, Hajime Ito, Mineko Fujimiyori, Eichi Uchiyama

Poster No. 1408
Unique Distribution of the A6 Chain of Collagen VI in Skeletal Muscle
Jamie Fitzgerald, Cathleen Moscibrocki, Paul Holden

Poster No. 1409
Extracellular Matrix Scaffolds for Functional Restoration of Volumetric Muscle Loss Injuries
Amit Aurora, Jonathan Hill, Janet Roe, Benjamin Corona, Thomas Walters

Poster No. 1410
Voluntary Running Enhances Functional Recovery after Ischemia Reperfusion Injury in Rats
Thomas Walters, Benjamin T Corona

Poster No. 1411
Familial Kyphoscoliosis: An Upstream IRX1 Sequence Variant Disrupts the Wild-Type Expression Pattern in Zebrafish
Nancy H Miller, Cristina M Justice, Kevin Bishop, Blake Carrington, Pedro Cruz, Kandice Swindle, Raman Sood, Alexander F Wilson

Poster No. 1412
Infrared Imaging of Non-Classical Forms of Osteogenesis Imperfecta
Adele L Boskey, Lyudmila Spevak, ERin Carter, Edward DiCarlo, Michael Sohaskey, Joan Marini, Cathleen L Raggio

Poster No. 1413
Continuous Local Infusion of Insulin-Like Growth Factor-I Receptor Antagonist into the Epiphysis of the Rabbit Tibia
Tetsuya Enishi, Mitsuhiko Takahashi, Kiminori Yukata, Natsuo Yasui

Poster No. 1414
Conditional Knockout of BMP2 in Osteogenic but not Vascular Cells Inhibits Post-Natal Non-Endochondral Bone Formation

Poster No. 1415
Drug Repositioning for Inhibiting the FGFR3 Signaling in the Treatment of Short Stage in Achondroplasia
Masaki Matsuhita, Hiroshi Kitoh, Naoki Ishiguro, Ohno Kinji

Poster No. 1416
The Effect of Global Mutation in Mitogen Inducible Gene 6 (MIG6) on Bone Homeostasis in Mice
Danese M Joiner, Kennen D Less, Bart O Williams
Poster No. 1421
Concurrent Optimization of Cyclosporin A and Mechanical Loading Identifies Multiple Optima to Rescue Senescent Bone Adaptation

Poster No. 1422
Subchondral Bone Curvature Regionally Flattens with Increase of Osteoarthritis Severity in the Distal Femur
Benedikt Fasel, Julien Favre, Katerina Blazek, Jennifer C Erhart-Hledik, Thomas P Andriacchi

Poster No. 1423
Raman Spectroscopy Reveals Evidence for Early Bone Changes in Osteoarthritis
Jemma G Kerns, Panagiotis D Gikas, Kevin Buckley, Helen Birch, Ian D McCarthy, Jonathan Miles, Tim Briggs, Anthony W Parker, Pavel Matousek, Allen E Goodship

Poster No. 1424
Distinctive Subchondral Bone Plate Structures in Osteoarthritis
Neil Chang, Esther Cory, Andrea L Pallante, Elaine F Chan, Martin K Lotz, William D Bugbee, Robert L Sah

Poster No. 1425
Is Pore Size of Subchondral Plate an Indicator for Onset of Osteoarthritis?
Chunyi Wen, Yan Chen, Weijia Lu, Chunhui Yang, Kwong Yuen Chiu

PS2 BONE: MATRIX PROTEINS

Poster No. 1426
Mineral Properties of a Novel Mouse Model of Osteogenesis Imperfecta
Marco Masci, Adele L Boskey, Joan C Marini

Poster No. 1427
COL1A1 Gene Mutation Alters the Molecular Structure of Tropocollagen and the Nanoelasticity of Collagen Fibrils: A Joint Experimental and Computational Study
Orestis Andriotis, Shu-Wei Chang, Maximilien Vanleene, Peter H Howarth, Donna E Davies, Sandra J Shefelbine, Markus J Buehler, Philipp J Thurner

PS2 BONE: GENETICS, GENOMICS AND PROTEOMICS

Poster No. 1428
EphrinB2 Over-Expression Increases the Osteogenic Differentiation of Human Mesenchymal Stem Cells & Promotes Enhanced Mineralisation in a Gene-Activated Matrix for Bone Repair
Erica G Tierney, Kevin McSorley, Conn L Hastings, Fergal J O'Brien, Garry P Duffy

Poster No. 1429
A Gene-Activated Matrix Incorporating Angiogenic and Osteogenic Genes Enhances Bone Tissue Regeneration In Vivo
Erica G Tierney, Caroline M Curtin, Sally-Ann Cryan, Garry P Duffy, Fergal J O'Brien

Poster No. 1430
Influence of APOL1 Haplotype on Forearm Fracture Risk and Vitamin D Status in African American Children
Nathanael Leo, Mai Abdel-Ghani, Victoria I Rentas, Hanwool R Choi, Jason S Lipof, Hugo Clifford, Kirsten N Norrell, Courtney Sprouse, Heather Gordish-Dressman, Leticia Ryan, Eric P Hoffman, Joseph Devaney, Laura L Tosi

Poster No. 1431
A Variant in the ADCYS Gene is Associated with Whole Muscle Volume and Subcutaneous Fat Volume Phenotypes
Hanwool R Choi, Laura L Tosi, Joseph Devaney, Mai Abdel-Ghani, Heather Gordish-Dressman, Eric Hoffman, Courtney Sprouse, Nathaniel Leo, Victoria Rentas, Hugo Clifford, Jason Lipof, Kirsten Norell

PS2 BONE: CELL BIOLOGY--OSTEOBLASTS

Poster No. 1432
Cistanche Deserticola Extract Increases Bone Formation in Osteoblasts
Chen-Ming Su, Chih-Hsien Tang

Poster No. 1433
Asparagine-Linked Glycosylation 2 Homolog, Identified as a Downstream Target of Schnurri-3, Cell-Autonomously Regulates Differentiation of Osteoblasts and Chondrocytes
Katsuyuki Imamura, Shingo Maeda, Ichiro Kawamura, Masahiro Yokouchi, Yasuhiro Ishidou, Setsuro Komiya

PS2 BONE: MECHANOBIOLOGY

Poster No. 1434
Material Properties Losses from Diffuse Microdamage in Living Bone Recover without Bone Remodeling
Zeynep Seref-Ferlengez, Claudy J Philemon, Oran Kennedy, Mitchell B Schaffler

Poster No. 1435
Osteocyte Apoptosis is Required for Initiation of Intracortical Bone Remodeling Following Acute Focal Microdamage in Mouse Long Bones
Oran Kennedy, Anaya Philip, Jelena Basta-Pljakic, Mitchell B Schaffler

Poster No. 1436
Axial Ulnar Loading in the C57BL/6 Mouse: Contribution of Inter-Animal Geometric Variation to Midshaft Periosteal Strain
David W Wagner, Alesha B Castillo, Stephanie Chan, Gary S Beaufre

Poster No. 1437
In Vivo Mechanical Loading Differentially Regulates Genes Implicated in Osteogenesis
Natalie H Kelly, John C Schimenti, F Patrick Ross, Marjolein van der Meulen

Poster No. 1438
Computational Modelling of Cortical Bone Mechanoadaptation on the Mouse Tibia
Andre F Pereira, Andrew Pitsillides, Sandra J Shefelbine
The Influence of Permeability in Poroelastic Models of Cortical Bone Adaptation
Andre F Pereira, Sandra J Shefelbine

Differential Expression of Osteoactive Myokines and Muscle-Enriched MicroRNAs Following Transient Muscle Paralysis
Leah M Downey, Ted S Gross, Ronald Y Kwon

Extra-Corporeal Shockwave Induced-Periosteal Bone Formation
Wei Huang, Thomas Cheriyan, Negin Katebi, Myron Spector, Bjorn Olsen

Paradoxical Sost Gene Expression Response to Mechanical Loading in Metaphyseal Bone
Brandon R Macias, Fredrik Agholme, Per Aspenson

Activation of β-Catenin Signaling Enhances the Osteogenic Gene Response to Mechanical Loading in Mesenchymal Stem Cells
Astrid Liedert, Claudia Nemitz, Franz Jakob, Anita Ignatius

The RUN2 - Sox9 “See-Saw”: A Balance for MSC Osteogenesis
Claudia Loebel, Ewa Czekanska, Mauro R Alini, Martin Stoddart

Human Mesenchymal Stem Cells Derived from Subchondral Bone in Arthritic Patients: A Novel Source of Stem Cells for Regenerative Medicine
Chitrangada Acharya, Mark A Lee, Michael Lehmie, Dominik R Haudenschild

Electromagnetic Field Stimulation on Osteogenesis of Bone Marrow- and Adipose Tissue-Derived Mesenchymal Stem Cells
Alessia Ongaro, Agnese Pellati, Angelo Caruso, Cinzia Fortini, Stefania Setti, Ruggero Cadossi, Monica De Mattei

Therapeutic Ultrasound Enhances Osteogenesis in Simulated Microgravity Environment
Sardar M Uddin, Yi-Xian Qin

In Vivo Mesenchymal Stem Cell Proliferation in Response to Dynamic Fluid Flow Stimulation - A Longitudinal Study
Minyi Hu, Michelle Lien, Morgan Teeratanganon, Kunal Agarwal, Yi-Xian Qin

Different Subpopulations of BMSCs by TNAP Expression
Kyungmi Lee, Yun Hee Kim, Dong Suk Yoon, Woo Jin Choi, Sungwhan Kim, Hyun Ok Kim, Kwang Hwan Park, Jae Myun Lee, Jin Woo Lee

Differential Expression of Osteoactive Myokines and Muscle-Enriched MicroRNAs Following Transient Muscle Paralysis
Leah M Downey, Ted S Gross, Ronald Y Kwon

Extra-Corporeal Shockwave Induced-Periosteal Bone Formation
Wei Huang, Thomas Cheriyan, Negin Katebi, Myron Spector, Bjorn Olsen

Paradoxical Sost Gene Expression Response to Mechanical Loading in Metaphyseal Bone
Brandon R Macias, Fredrik Agholme, Per Aspenson

Activation of β-Catenin Signaling Enhances the Osteogenic Gene Response to Mechanical Loading in Mesenchymal Stem Cells
Astrid Liedert, Claudia Nemitz, Franz Jakob, Anita Ignatius

The RUN2 - Sox9 “See-Saw”: A Balance for MSC Osteogenesis
Claudia Loebel, Ewa Czekanska, Mauro R Alini, Martin Stoddart

Human Mesenchymal Stem Cells Derived from Subchondral Bone in Arthritic Patients: A Novel Source of Stem Cells for Regenerative Medicine
Chitrangada Acharya, Mark A Lee, Michael Lehmie, Dominik R Haudenschild

Electromagnetic Field Stimulation on Osteogenesis of Bone Marrow- and Adipose Tissue-Derived Mesenchymal Stem Cells
Alessia Ongaro, Agnese Pellati, Angelo Caruso, Cinzia Fortini, Stefania Setti, Ruggero Cadossi, Monica De Mattei

Therapeutic Ultrasound Enhances Osteogenesis in Simulated Microgravity Environment
Sardar M Uddin, Yi-Xian Qin
Poster No. 1461
**Characterization of an Allogeneic Viable Cell Bone Matrix**
Michael Ponticiello, Carl Javier, Bo Han, Hallie Murray

Poster No. 1462
**Ischemia vs Hypoxia: Effect on Human Mesenchymal Stem Cells (hMSC) Secretome**
Paquet Joseph, Mickael Deschepper, Catherine Boisson-Vidal, Herve Petite

Poster No. 1463
**An In Vitro Fibroproliferative Model to Investigate Cellular Precursors of Heterotopic Ossification**
Emily Shin, Youngmi Ji, Gregory Christopherson, David H Shin, Marc Lopez, Wesley M Jackson, Leon J Nesti

**PS2 BONE: OSTEOSPOROSIS, METABOLIC BONE DISEASES AND BIOMARKERS**

Poster No. 1464
**Strontium Inhibits Osteoclast Formation via Acting on Both CaSR and RANK**
Wei Song, David Markel, Jackson M Nancy, Weiping Ren

Poster No. 1465
**(Asp-Ser-Ser)6 Facilitates Bone Anabolic siRNA Specifically Targeting Osteogenic Cells in Aged Osteoporotic Rats**
Baosheng Guo, Boating Zhang, Jun Wang, Chao Liang, Heng Wu, Zhijun Yang, Albert H. L. Chow, Zhibo Hou, Yadong Huang, Fuchu He, Ling Qin, Lingqiang Zhang, Zhaoxian Bian, Aiping Lu, Ge Zhang

Poster No. 1466
**Improving Low Bone Mass with Whole-Body Vibration (WBV) for Osteopenic Girls with Adolescent Idiopathic Scoliosis: A Randomized, Controlled Trial**
Tsz Ping Lam, Bobby Kin Wah Ng, Wing-hoi Cheung, Kwong Man Lee, Ling Qin, Jack Chun Yiu Cheng

Poster No. 1467
**ERCC1 Deficiency Decreases Bone Formation and Enhances Bone Resorption in an NF-κB-Dependent Mechanism**
Hongjiao Ouyang, Qian Chen, Andria Robinson, Cheryl Clauson, Kai Liu, Paul D Robbins, Laura J Niedernhofer

Poster No. 1468
**Implications of Diet and Estrogenic Cessation in Rat Osteoporotic Induction by DEXA, Molecular and Immunohistochemical Analysis**
Parameswari Govindarajan, Gudrun Schlewitz, Nathalie Schliefke, David Weisweiler, Katrin S Lips, Sabine Wenisch, Reinhard Schnettler, Christian Heiss

Poster No. 1469
**Idiopathic Juvenile Osteoporosis: Characterization of Bone Samples by Fourier-Transform Infrared Imaging**
Ignacio J Garcia, Francis Giorieux, Frank Rauch, Adele L Boskey

Poster No. 1470
**Effects of Estrogen Deficiency on Elastic Modulus and Viscosity of Bone at Different Anatomical Sites**
Do-Gyoon Kim, Sarandeep S Huja, Anand Navalgund, Andrew D’Atri, BoonChing Tee, Sarah Reeder, HyeRi Lee

Poster No. 1471
**Effects of Prolonged Estrogen Deficiency and Zoledronate on Bone Tissue Mineral Distribution in an Ovine Model of Osteoporosis**
Meadhbh A Brennan, John P Gleeson, Fergal J O’Brien, Laoise M McNamara

Poster No. 1472
**Ovariectomy Causes Anatomic Orientation-Dependent Changes in the Heterogeneity of Cancellous Bone in Rat Vertebræ**
Yener N Yeni, Daniel Oravec, Srikant Nekkanty, Clifford M Les

Poster No. 1473
**Vertebral Deformity in Patients with End Stage Renal Disease**
Eual A Phillips, Chamith S Rajapakse, Wenli Sun, Yusuf Bhagat, Felix W Wehrli, Mary B Leonard

Poster No. 1474
**Retention of Fluorescent BP Reflects Low Response to Bone Turnover Stimulus in the Mouse Mandible Compared to Femur and Tibia**
Adrienne F Alimasa, Joseph E Perosky, Emilee L Borgmeier, Laurie K McCauley, Kenneth Kozloff

Poster No. 1475
**The Natural Course of Spontaneous Osteonecrosis of the Knee (SPONK). A Knee Survival Analysis of 40 Untreated Patients Diagnosed in 1983-1990**
Jan Juréus, Otto Robertsson, Mats Geijer, Anders Lindstrand, Magnus Tägil

Poster No. 1476
**A MicroCT Analysis of Trabecular Bone Structure in a Mouse Model of Glucocorticoid-Induced Osteonecrosis**
Dongqing Wang, Azeb Haile, Lynne Jones

Poster No. 1477
**Intra-Vertebral Heterogeneity in Bone Density is Associated with Prevalent Vertebral Fractures in Postmenopausal Women**
Amira I Hussein, Sharon Roth, Serkalem Demisse, Alexander G Bruno, Brett Allaire, Mary L Bouxsein, Elise F Morgan

Poster No. 1478
**Dramatic Loss in Trabecular Plates and Compromised Bone Stiffness in Postmenopausal Women with Primary Hyperparathyroidism**
Bin Zhou, Barbara Silva, Ji Wang, Don J McMahon, Chiyuan A Zhang, Julia Udesky, Stephanie Boutroy, Shane Elizabeth, John P Bilezikian, X. Edward Guo

Poster No. 1479
**Age-Dependent Responses in 3D Architectural Developmental Patterns of the Rat Tibia to Daily Parathyroid Hormone Administration**
Beom Kang Huh, Shiming Luo, Allison Altman, Abhishek Chandra, Shenghui Lan, Ling Qin, X. Sherry Liu

Poster No. 1480
**Trabecular Bone Microarchitecture is Deteriorated in Patients with Type 2 Diabetes Mellitus**
Kenichiro Matsuzaki, Toshihide Kawai, Takeshi Miyamoto, Shu Takeda, Hironori Kaneko, Akio Yokoi, Keisuke Horiiuchi, Hiroshi Ito, Masako Ito, Kazuhiro Chiba, Morio Matsumoto, Yoshiaki Toyama
Poster No. 1481
Dexamethasone Amplifies the Lipotoxic Effect of Adipocytes on Osteoblasts
Dongqing Wang, Azeb Haile, Lynne Jones

Poster No. 1482
Altered Bone Turnover and Impaired Bone Biomechanics in the HIV-1 Transgenic Rat
Jason Wang, Robert Guldberg

Poster No. 1483
Biomechanical Properties of an Acellular Bone Allograft Produced using a Novel Sterilization Process
Christopher A Smith, Paul Rooney, Timothy Board, Stephen M Richardson, Judith A Hoyland

Poster No. 1484
Development of a Half-Ring Diametral Test to Detect Stress Concentrations in Cortical Bone
David Kaimrajh, Jessica Bettfuehr, Edward Milne, Sarat Ganga, Loren Latta

Poster No. 1485
Structural Impact of Complex Metastatic Disease and Treatment in the Femur
Lawrence L Buchan, Benedict A Rogers, Edwin Wong, Lisa Wise-Milestone, Margarete K Akens, Cari M Whyne

Poster No. 1486
Intensity and Geometry of Thin Cortical Bone in Clinical CT Images can be Restored Using an Image-based PSF Estimation Technique and 3-Dimensional Iterative Deconvolution
Amirreza Pakdel, Jeffrey Fialkov, Cari M Whyne

Poster No. 1487
Microindentation Study of Developing Swine Cortical Bone
Iwona Jasiuk, Ramin Rasoulian, Ahmad Raeisi Najafi

Poster No. 1488
Nanoindentation and Ash Content Study of Developing Swine Cortical Bone
Iwona Jasiuk, Michael Chittenden, Ahmad Raeisi Najafi

Poster No. 1489
A Multiscale Approach to Describe Changes in Bone Volume Fraction due to Bone Remodeling at the Cell Level
Michele Colloca, Romane Blanchard, Patrik Christen, Christian Hellmich, Keita Ito, Bert van Rietbergen

Poster No. 1490
The Relationship Between External Bone Size and Internal BMU-Based Remodeling
Haviva M Goldman, Naomi A Hampson, David Lin, Jared Guth, Karl J Jepsen

Poster No. 1491
Strain Distributions in Cancellous Bone are Insensitive to Small Off-Axis Loads in the Rodent Tail Loading Model
Matthew G Goff, Katarina L Chang, Erin N Litts, Christopher J Hernandez

Poster No. 1492
Raman Spectroscopy Shows Abnormal Mineralization and Cross-Linking in Irradiated Bone
Bo Gong, Timothy A Damron, Kenneth A Mann, Megan E Oest, Michael D Morris

Poster No. 1493
Mechanical Analysis of Mineral Phase in Bone by Raman Spectroscopy and Effects of Aging and Its Anisotropy
Masahiro Todoh, Shigeru Tadano

Poster No. 1494
Effect of Finite Element Boundary Conditions on Femur Mechanical Response
Timothy Rossman, Sean McEligot, Dan Dragomir-Daescu

Poster No. 1495
Parametric Assessment of Finite Element Modeling Parameters Used In Fracture Risk Assessment of Rat Tibia with Simulated Lytic Defects
John A Rennick, Ara Nazarian, Vahid Entezari, Hamid Nayeb-Hashemi, Ashkan Vaziri, Brian Snyder

Poster No. 1496
Relationship Between the Structural and Material Properties in Bone: A Study of the Long Bones of Two Different Genetic Strains of Chicken
Ian McCarthy, Helen Birch, Allen E Goodship

Poster No. 1497
Intrinsic Properties of Bone Tissue in Biopsies from Postmenopausal Women
Mohammed P Akhter, Séverine Vennin, Joseph A Turner, John Danforth, Joan M Lappe, Patrice Watson, Robert R Recker

Poster No. 1498
Difference in Nociceptive Phenotype Between Subchondral Bone and Joint Afferents in Rat Knee Joints
Koji Aso, Masahiko Ikeuchi, Masashi Izumi, Natuki Sugimura, Toshikazu Tani

Poster No. 1499
The Effects of Post-Irradiation Aging and Wet Storage on Cortical Bone Allograft Strength
Christopher J Hernandez, Kevin Yam, Bo Li, Ting Li, Katherine M Ehler

Poster No. 1500
Associations Between Spatial Distributions of Bone Density within the Vertebral Centrum and both Vertebral Strength and Disc Quality
Amira I Hussein, Timothy M Jackman, Elise F Morgan

Poster No. 1501
Whitening Front Tracking: A High-Speed Videography Method for Assessing Fracture Toughness of Small Bone Samples
Thomas Jenkins, Orestis L Katsamenis, Philipp J Thurner, Nicholas C Harvey, Sofia Michopoulou, Ian Sinclair

Poster No. 1502
Feasibility of 7-Tesla-Based 3D Micro-MRI of Trabecular Bone in the Distal Radius
Yusuf Bhagat, Gabor Mizsei, Thomas J Connick, Alexander C Wright, Jeremy F Magland, Maite Aznarez-Sanado, Felix W Wehrli
Reference Point Indentation Reflects In Vitro Alterations of Bone Matrix in Murine Bone
Lamya Karim, Sean Serell, Leeann Louis, Mary L Bouxsein

Relationships Between Reference Point Indentation (Micro-Indentation) Measurements and MicroCT Measurements of Cortical Bone in Mice and Rats
David Padilla, Schmitz E James, Calley L Virginia, Krista Kilpadi, Victor L Sylvia, David D Dean, Roberto Fajardo

High-Field Micro-MRI-Based Techniques Characterize Structural and Mechanical Effects of Anabolic and Antiresorptive Treatment in Osteoporosis
Yusuf Bhagat, Maite Aznarez-Sanado, Ning Zhang, Jeremy Magland, Theresa Scattergood, Peter J Snyder, Felix W Wehrli

Is Microindentation Indicative of Fracture Toughness in Mouse Bone?
Alessandra Carriero, Jan Bruse, Sandra Shefelbine

Loss and Recovery Characteristics of the Cancellous Bone Compartment of the Proximal Tibia Metaphysis after Multiple Hindlimb Unloading Exposures in the Adult Male Rat Model
Yasaman Shirazi-Fard, Ashley R Peoples, Andrea Trinward, Stefan Judex, Susan A Bloomfield, Harry A Hogan

Micro-MRI Based Biomechanics Derived Strength and Stiffness of the Tibia and Fibula in Patients with End-Stage Renal Disease Exposed to Brief Daily Low Magnitude Mechanical Signals
Chamith S Rajapakse, Felix Wehrli, Mahdieh Zadeh, Wenli Sun, Clinton T Rubin, Mary B Leonard

Fatigue Microcracks that Initiate Fracture In Vitro are Located Near Elevated Intracortical Porosity but not Elevated Mineralization
Travis Turnbull, Ryan K Roeder

Influence of Mineralized Collagen Fibril Network Properties on Elastic Properties of Bone
Ani Ural, Atish Gupta

MicroRNAs are Essential for Endochondral Ossification during Bone Healing
Yan-Yiu Yu, Theodore Miclau, Ralph Marcucio

Integrating Computational Mechanobiological Methods and Genetically Modified Mouse Models to Elucidate the Role of Environmental Factors in Regulating Stem Cell Fate during Fracture Repair
Darren Burke, Michael Dishowitz, Mariya Sweetwyne, Emily Miedel, Kurt Hankenson, Daniel Kelly

Blowing Smoke: A Meta-Analysis of the Effects of Smoking on Fracture Healing and Post-Operative Infection
Mara L Schenker, John Scolaro, Sarah Yannascoli, Keith D Baldwin, Samir Mehta, Jaimo Ahn

Efficacy of a Sclerostin Antibody Compared to a Low Dose of PTH on Metaphyseal Fracture Healing
Fredrik Agholme, Brandon R Macias, Matt Hamang, Jonathan Lucchesi, Mary D Adrian, Stuart Kuhstoss, Anita Harvey, Masahiko Sato, Per Aspenberg

Pulsed Electromagnetic Field Treatments Enhance Fracture Healing in an Osteoporotic Animal Model
Caroline Androjna, Brian Fort, Maciej Zborowski, Ronald J. Midura

Therapeutic Effect of Local Application of Parathyroid Hormone for Unhealing Fracture
Etsuko Okumachi, Sang Yang Lee, Takahiro Niikura, Takaaki Koga, Yoshihiro Dogaki, Takahiro Waki, Ryosuke Kuroda, Yasuhiko Tabata, Masahiro Kurosaka

Metaphyseal Fracture Healing in a Sheep Model of Low Turnover Osteoporosis
Anita Ignatius, Ronny B Bindl, Lutz Claes, Katharina Gruchenberg, Sandra Reitmaier, Enrico Calcia, Peter Radermacher, Ralf Oheim, Pia Pogoda, Michael Amling

Lipopolysaccharide-Induced Systemic Inflammation Affects Bone Healing in a Murine Tibia Fracture Model
Gao Fei, Jesse A Slade Shantz, Yan-Yiu Yu, Theodore Miclau, Ralph Marcucio

Fracture Discrimination Using Low-Frequency Ultrasound - Comparison with DXA-Based BMD
Mikko Määttä, Petro Moilanen, Jussi Timonen, Pasi Pulkkinen, Raija Korpelainen, Timo Jämsä

Therapeutic Effect of Local Application of Parathyroid Hormone for Unhealing Fracture
Etsuko Okumachi, Sang Yang Lee, Takahiro Niikura, Takaaki Koga, Yoshihiro Dogaki, Takahiro Waki, Ryosuke Kuroda, Yasuhiko Tabata, Masahiro Kurosaka

Fracture Discrimination Using Low-Frequency Ultrasound - Comparison with DXA-Based BMD
Mikko Määttä, Petro Moilanen, Jussi Timonen, Pasi Pulkkinen, Raija Korpelainen, Timo Jämsä

Lipopolysaccharide-Induced Systemic Inflammation Affects Bone Healing in a Murine Tibia Fracture Model
Gao Fei, Jesse A Slade Shantz, Yan-Yiu Yu, Theodore Miclau, Ralph Marcucio

Fracture Discrimination Using Low-Frequency Ultrasound - Comparison with DXA-Based BMD
Mikko Määttä, Petro Moilanen, Jussi Timonen, Pasi Pulkkinen, Raija Korpelainen, Timo Jämsä

Therapeutic Effect of Local Application of Parathyroid Hormone for Unhealing Fracture
Etsuko Okumachi, Sang Yang Lee, Takahiro Niikura, Takaaki Koga, Yoshihiro Dogaki, Takahiro Waki, Ryosuke Kuroda, Yasuhiko Tabata, Masahiro Kurosaka

Metaphyseal Fracture Healing in a Sheep Model of Low Turnover Osteoporosis
Anita Ignatius, Ronny B Bindl, Lutz Claes, Katharina Gruchenberg, Sandra Reitmaier, Enrico Calcia, Peter Radermacher, Ralf Oheim, Pia Pogoda, Michael Amling

Lipopolysaccharide-Induced Systemic Inflammation Affects Bone Healing in a Murine Tibia Fracture Model
Gao Fei, Jesse A Slade Shantz, Yan-Yiu Yu, Theodore Miclau, Ralph Marcucio

Fracture Discrimination Using Low-Frequency Ultrasound - Comparison with DXA-Based BMD
Mikko Määttä, Petro Moilanen, Jussi Timonen, Pasi Pulkkinen, Raija Korpelainen, Timo Jämsä
Poster No. 1524  
Computational Framework for Subject-Specific Evaluations of Hip Fracture and Repair  
Azhari Ali, Raymond H Kim, Mark Taylor, Paul Rullkoetter, Peter J Laz

Poster No. 1525  
The Effect of Distal Interlock Fixation in Both Fresh and Healed Stable Intertrochanteric Fractures  
Dave Paller, Patrick Kane, Bryan Vopat, Sarah Koruprolu, Christopher Born

Poster No. 1526  
Reduction of Fracture Risks and Fall Incidences in Community Elderly by Low-Magnitude, High-Frequency Vibration Treatment – A Prospective Cluster-Randomized Clinical Trial  
Kwok Sui Leung, Chi Yu Li, Yee Kit Tse, Tak Kee Choy, Ping Chung Leung, Vivian Wing-Yin Hung, Som Yu Chan, Wing-hoi Cheung

PS2 FRACTURE FIXATION

Poster No. 1527  
A New External Fixator that was Developed from an Architectural Point of View  
Tetsuya Arai, Hitoshi Hirata, Michiro Yamamoto, Shigeru Kurimoto, Katsuyuki Iwatsuki

Poster No. 1528  
Torsional Stability of a Chevron Interface for Interalary Allograft Fixation  
Donald Hackbarth, Jeremy Zebroski, Sean Tracy, Mei Wang

Poster No. 1529  
Development of a Novel Three-Dimensional Reconstruction Anatomical Plate for Midshaft Clavicle Fractures: Anatomical Evaluations and Clinical Experiences  
Yohei Kawakami, Takafrumi Hiranaka, Tokio Matsuzaki, Yuichi Hida, Harunobu Uemoto, Minoru Doita, Mistuo Tsuji, Kurosawa Masahiro

Poster No. 1530  
Stability of Mid-Shaft Clavicle Fractures after Plate Fixation versus Intramedullary Repair and after Hardware Removal  
Sean D Smith, Coen A Wijdicks, Kyle Jansson, Robert E Boykin, Frank Martetschlaeger, Peter-Paul de Meijer, Peter J Millett, Tom Hackett

Poster No. 1531  
Biomechanical Evaluation of Three Variable Angle Locked Periprosthetic Femur Plate Constructs  
Travis Burgers, Martin F Hoffmann, Debra L Sietsema, Andrew Vander Moren, James Mason, Bart Williams, Clifford B Jones

Poster No. 1532  
Maintaining Distal Femur Plate-Screw Stability - 7 Years of Studies  
Jacob L Cartner, Paul Tornetta, Yanming Zheng, Ramona Soileau, Andy Whitten, Zane M Hartsell, Bob Jones, William Ricci

Poster No. 1533  
Comparative Analysis on Structural Rigidity of Semi-Bicortical Fixation for Surgical Management of Diaphyseal Femoral Fractures  
A-Ram Kang, Jae-Sig Ang, Kwon-Yong Lee, Sung-Jae Lee

Poster No. 1534  
Can the “Turn-of-the-Nut” Method Provide Improvement in Cortical Screw Insertion?  
Savyasachi C Thakkar, Evan Langdale, Simon C Mears, Stephen Belkoff

Poster No. 1535  
How Repeatable is Two-Finger Tightness When used to Tighten Bone Screws?  
Ian G Wilkofsky, Michael L McGrattan, Daniel P DeBottis, Frederick W Werner, Kevin J Setter

Poster No. 1536  
Locked Versus Unlocked Long Cephalomedullary Intramedullary Nails in Stable Intertrochanteric Fractures  
Patrick Kane, Bryan Vopat, Dave Paller, Sarah Koruprolu, Chris Born

Poster No. 1537  
Intramedullary Nailing for Distal Tibial Fractures  
Christianne G Kruppa, Martin F Hoffmann, Michelle B Mulder, Debra L Sietsema, Clifford B Jones

PS2 BONE: TISSUE ENGINEERING, REPAIR AND BIOMATERIALS

Poster No. 1538  
Development and Characterization of a Novel Weight-Bearing Biodegradable Bone Void Filler  
Angel E Mercado-Pagan, Yunqing Kang, Elmer Ker, Sangwon Park, Yunzhi P Yang

Poster No. 1539  
Development of a Caprine Chronic Tibial Defect Model  
Grace E Pluhar, Anne Nicholson, George Muschler, Viviane Luangphakdy, Joan E Bechtold, Cynthia Boehm, Cathy Carlson, Hui Pan, Kentaro Shinohara, Joseph Wenke

Poster No. 1540  
Collagen Binding Domain BMP4 (CBD-BMP4) Enhances Bone Formation in Rabbit Bone Defect Model  
Aki Yoshida, Yasuyuki Shiozaki, Tetsuro Mazaki, Kentaro Yamane, Akihiro Matsukawa, Yasuhiro Yoshida, Mariko Nakamura, Takashi Kitajima, Toshifumi Ozaki

Poster No. 1541  
Biomechanical Concepts Translated into a Bone Tissue Engineering Application  
Dominique Pioletti, Aliresa Rosohan ghias, Brigitte Jolles, Alexandre Terrier

Poster No. 1542  
Porous Decellularized Hypertrophic Tissue Engineered Cartilage as a Scaffold For Bone Tissue Regeneration  
Graine M Cuninffe, Mary Murphy, Fergal J O’Brien, Daniel J Kelly

Poster No. 1543  
Porous Polyurethane Scaffold for Facilitating Healing in Critical Sized Bone Defect  
Yuk Fai Lui
Poster No. 1544
Oxidized Alginate Hydrogels for Bmp-2 Delivery in Long Bone Defects
Lauren B Priddy, Ovijit Chaudhuri, Hazel Y Stevens, Nick J Willett, Robert E Guldberg

Poster No. 1545
Effect of Calcium Phosphates Association, with and without BMP-2, to Tyrosine-Derived Polycarbonate Scaffolds: In Vivo Study in Radius of Rabbits
Sonja E Lobo, Ophir Ortiz, Jinku Kim, Sean McBride, Jeffrey Hollinger, Joachim Kohn

Poster No. 1546
Effects of Cell Seeding of Osteochondral Scaffolds on Defect Regeneration in the Mini-Pig
Michael Jagodzinski, Daniel Guenther, Chaoxu Liu, Arne Burssens, Reza Abedian, Arnim Andreea, Christian Krettek, Elmar Willbold, Frank Witte

Poster No. 1547
Tissue-Engineered Osteochondral Construct Generated by Optimized Differentiation Medium and Compressive Loading for Sheep Model
John G Barber, Yan Lu, Mark D Markel, Wan-Ju Li

Poster No. 1548
A Preliminary Report on the MRL Mouse as a Model for Osseous Regeneration
Brian Grawe, Aditya Chaubey, Jason A Inzana, Hani A Awad, Keith Kenter, David Butler

Poster No. 1549
Inverted Osteon: A Novel Bone Superstructure Emerging from Tumor Chaos
Edward L Mertz, Emmanuelil Saloustros, Sisi Liu, Constantine A Stratakis, Sergey Leikin

Poster No. 1550
Clinical Modeling for Mandibular Body Reconstruction: Initial Results from a Pig Mandible Model
Pamela Brown Baer, David T Silliman, Teja Guda, Robert Hale

Poster No. 1551
Effectiveness of PCL-HA Scaffold on the Osteoconduction of Critical Size Canine Tibial Segmental Defects
Hanying Bai, Chandhanarat Chandhanayingyong, Chang Lee, Francis Y. Lee

Poster No. 1552
Mesenchymal Stem Cell Persistence via Degradable Hydrogel Periosteum Mimetics Promotes Allograft Revitalization
Michael Hoffman, Chao Xie, Xinping Zhang, Hani A Awad, Wakenda Tyler, Regis O’Keefe, Danielle Benoit

Poster No. 1553
The Effect of Different Basal Cell Culture Media during Mesenchymal Stem Cell Induction on Their Osteogenic Differentiation Potential in a Standard Osteogenic Monolayer Cell Culture Assayed with 99m-Tc-MDP Labeling for Quantification of Hydroxyapatit Deposition
Tobias Grossner, Wiltrud Richter, Tobias Gotterbarm

Poster No. 1554
The Roles of Stem Cell Source and Platelet Lysate in Cell Viability and Construct Vascularization
Ashley B Allen, Hazel Y Stevens, Robert E Guldberg

Poster No. 1555
Sphingosine 1-Phospahte Receptor Specific Small Molecules Enhance Mandibular Defect Healing by Recruiting Progenitor Cells and Increasing Vascularization
Anusuya Das, Brian Hugely, Claire Segar, Edward Botchwey

Poster No. 1556
Engineering Viable Bone Grafts from Human Induced Pluripotent Stem Cells in Perfusion Bioreactors
Giuseppe Maria de Peppo, Ivan Marcos Campos, Sarinder Bhumiratana, Dana Alsalm, Gordana Vanjak Novakovic, Darja Marolt

Poster No. 1557
Evaluation of Single Walled Carbon Nanotube Composites for Bone Tissue Engineering
Ashim Gupta, Mia D Woods, Joylene W Thomas, Yawei Yuan, Ryan Niemeier, Isaac Schafer, Craig Cady, Peter Filip, Saadiq F El-Amin

Poster No. 1558
Fluid Flow Optimization Through a Structured Tissue Engineering Scaffold
Michael Liebschner, Aditya Srvatsan, Bruce Ehni

Poster No. 1559
Sintered Dicalcium Pyrophosphate (SDCP) Enhance Early Bone Healing without Interfere Bone Remodeling: A Rat Femur Fracture Model
Yi-Jie Kuo, Jui-Sheng Sun, Yang-Hwei Tsuang

Poster No. 1560
Plasma Surface Modification of Porous Hydroxyapatite Artificial Bones
Yu Moriguchi, Dae-Sung Lee, Satoshi Hamaguchi, Hideki Yoshikawa, Akira Myoui

Poster No. 1561
The Synergistic Effects of Dexamethasone and BMP-2 on Osteogenesis In Vitro and In Vivo
Masato Yuasa, Tsyoshi Yamada, Tomokazu Masaoka, Toshitaka Yoshii, Kenichi Shinomiya, Atsushi Okawa, Shinichi Sotome

Poster No. 1562
Co-Delivery of rhBMP-2 and Zoledronic Acid Via HydroxyColl - A Composite Collagen-Hydroxyapatite Scaffold
Ciara M Murphy, Nicole Yu, Kathy Mikulec, Lauren Peacock, Alastair Aiken, Aaron Schindeler, Fergal J O’Brien, David G Little

Poster No. 1563
Porous Bioceramic was Fabricated Using Thermo-Responsive Hydrogel Combined with Controlled-Release of Rhbmp-2 Carriers for Non-Union Bone Defect
Yin Chih Fu, Shih-Ciang Chien, Chung-Hwan Chen, Je-Ken Chang, Mei-Ling Ho, Chih-Kuang Wang
Poster No. 1564
Effect of Locally Administered Collagen Binding Domain BMP4 on Bone Formation in Mice
Kentaro Yamane, Yasuyuki Shiozaki, Tetsuro Mazaki, Aki Yoshida, Akhiro Matsukawa, Yasuhiro Yoshida, Mariko Nakamura, Takashi Kitamura, Yoshihiro Itô, Toshifumi Ozaki

Poster No. 1565
Injectable Biocomposite Grafts Demonstrate Effective BMP-2 Delivery for Bone Healing
Anne Talley, Teja Guda, Pamela Brown Baer, David Silliman, Scott A. Guelcher

Poster No. 1566
Enhancing Bone Repair Using Phosphonate Containing Polymers as Alternatives to BMPs
Lesley-Anne Turner, Anita K Bassi, David Watts, Judith A Hoyland, Peter M Budd, Sandra Downes

PS2 SPINE: SCOLIOSIS

Poster No. 1567
Biomechanics of Pedicle Screw Fixation Under Simulated Scoliosis Deformation Surgical Loads
Silvia P Canlon, Selina M Merkling, David W Polly, Sharon C Yson, Jonathan N Sembrano, David J Nuckley

Poster No. 1568
Computational Modeling of Thoracic Volume to Predict Pulmonary Function in Chest Wall and Spinal Deformity
Benjamin E Rosenstein, David W Polly, Charles G Ledonio, A. Noelle Larson, David J Nuckley

Poster No. 1569
Towards a Better Understanding of Direct Vertebral Rotation for AIS Surgery: Development of a Multisegmental Biomechanical Model and Factors Affecting Correction
Siddharth A Badve, Nathaniel R Ordway, Yushek Pun, Stephen A Albanese, William F Lavelle

Poster No. 1570
Generation of a Patient Specific Model of the Normal Sagittal Alignment of the Spine
Krishna Cidambi, Josh Doan, Diana A Glaser, Peter O Newton

Poster No. 1571
Shape Analysis of Normative Pediatric Ribcage Through Generalized Procrustes Analysis to Characterize Age-Related Trends
Silpa Reddy, Lucy Robinson, Robert M Campbell, Sriram Balasubramanian

Poster No. 1572
Spinal Hemiepiphyseodesis by Titanium Clip-Screw Construct Alters Biomechanical Properties
Matthew T Coombs, David Glos, Madhav Chopra, Jay Kim, Eric J Wall, Donita I Bylski-Austrow

PS2 NERVE AND SPINAL CORD INJURY

Poster No. 1573
Effect of Amiloride to Endplasmic Reticulum Stress Response in Injured Spinal Cord
Masahiro Kuroiwa, Masahiko Watanabe, Kaori Suyama, Daisuke Matsuymaya, Joji Mochida

Poster No. 1574
Tetramethylpyrazine Attenuates Apoptosis Through Modulating MicroRNA-21 After Contusion Spinal Cord Injury in Rats
Hongbin Lu, Jianzhong Hu, Jianghu Huang, Lei Zeng

Poster No. 1575
Ultrastructure of Syringomyelia Induced by Kaolin-Induced Adhesive Arachnoiditis in Rabbit
Shigeru Kobayashi

Poster No. 1576
Neurological Recovery is Impaired by Concurrent but not by Asymptomatic Pre-Existing Spinal Cord Compression After Traumatic Spinal Cord Injury
Kensuke Kubota, Toshio Doi, Kazu Kobayakawa, Yoshihiro Matsumoto, Katsumi Harimaya, Yukihide Iwamoto, Seiji Okada

Poster No. 1577
Dual Inhibition of BMP and TGF-β Signaling Pathways in Human Adipose Derived Stem Cells Promotes Neuronal Differentiation
Vedavathi Madhu, Abhijit Dighe, Quanjun Cui, Nicole Deal

Poster No. 1578
Muscle-Derived Stem/Progenitor Cells Promote Neovascularization via Secreted Factors
Mitra Lavasani, Seth Thompson, Chenjie Yang, Bahar Ahani, Andria Robinson, Aiping Lu, Laura Niedernhofer, Paul Robbins, Johnny Huard

Poster No. 1579
Correlation of Pain Response and In Vivo Imaging of NF-κB Activity in a Model of Radiculopathy
Sameer B Shah, Ting-Hsien Chuang, John P Fisher, Robin E Wilson

Poster No. 1580
A Novel Modular Internal Fixator Device for Peripheral Nerve Regeneration
Peter Simon, Alejandro A Espinoza Orías, Howard S An, Gunnar B Andersson, Nozomu Inoue
Alteration of Ligament Stiffness Can Change the Spine Muscle Coordination in Flexed Positions  
Kap-Soo Han, Kyungsoo Kim, Yoon Hyuk Kim  
Poster No. 1585  
Facet Joint Response to Elevated Frequency Loading  
Emily Noonan, Hannah Sidoti, Arthur Ritter, Thomas Errico, Antonio Valdevit  
Poster No. 1586  
Lumbar Support can Decrease Lumbar Extension and Rotation in the Final Phase of a Golf Swing: 3-Dimensional Analysis in Amateur Golfers  
Kei Miyamoto, Koji Hashimoto, Takashi Yanagawa, Ryo Hattori, Takaaki Aoki, Katsuji Shimizu  
Poster No. 1587  
Establishing the Baseline Loading Parameters to Mimic In-Vivo Cervical Spine Kinematics In-Vitro  
Kevin M Bell, Yiguo Yan, James D Kang  
Poster No. 1588  
Comparison of Cranial Intersegmental Ligaments Preservation on Cervical Spine Stability Post Expansion Open-Door Laminoplasty (EOLP) and Cervical Laminectomy and Fusion (CLF)  
Wan-Ju Lin, Yen-Kai Huang, Chun-Ming Tu, Ya-Wen Kuo, Wen-Kai Chou, Dar-Ming Lai, Jaw-Lin Wang  
Poster No. 1589  
Enhanced Load Sharing in Anterior Cervical Interbody Fusion with a Novel InterPlate® Implant System: A Finite Element Study  
Vivek Palepu, Ali Kiapour, Manoj Kodigudla, Vijay K Goel, James Moran  
Poster No. 1590  
Decompressive Facetectomies and Lumbar Instability: When do we Need to Instrument? A Computational Study  
Diva V Ambati, Ronald A Lehman, Anton E Dmitriev, Edward K Wright  
Poster No. 1591  
Subject-Specific Spinal Imaging Data Help Explain Variation in Lumbar Range of Motion  
Cory J Laws, Dezba Coughlin, Ana Lotz, Ken Walker, Roy Riascos-Castaneda, Alan Hargens, Jeffrey C Lotz  
Poster No. 1592  
Vertebral Strain Energy Correlates with Increased Presence of Schmorl’s Nodes in Multi-level Lumbar Disc Degeneration  
Gregory A Von Forell, Todd G Nelson, Dino Samartzis, Anton E Bowden  
Poster No. 1593  
Facet Joint Strain Response to Elevated Frequency Loading is Non-Linear and Potentially a Predisposition for Low-Back Pain  
Hannah Sidoti, Emily Noonan, Arthur Ritter, Thomas Errico, Antonio Valdevit  
Poster No. 1594  
Sacrospinalis Process Visibility, Morphology and Strength  
Louie Fielding, Patrick Newman, Nicholas D Wharton, Jenni M Buckley, Liu Cheng, Anand Parikh, Todd F Alamin  
Poster No. 1595  
Kinematics of Disc Degeneration - Computer Analysis of Center of Rotation  
Yunas Alapan, Semih Sezer, Rahmi Guclu, Tuncay Kaner, Serkan Inceoglu  
Poster No. 1596  
Effect of Severity of Rod Contour on Posterior Rod Failure in Setting of Lumbar Pedicle Subtraction Osteotomy (PSO): A Biomechanical Study  
William J Camisa, Jessica A Tang, Jeremi M Leasure, Jenni M Buckley, Dimitriy Kondrashov, Christopher P Ames  
Poster No. 1597  
Motion Characteristics of the Lumbar Spine Processes with Degenerative Disc Disease and Lumbar Degenerative Spondylolisthesis  
Qi Yao, Shaobai Wang, Jae-Hyuk Shin, Guoan Li, Kirkham Wood  
Poster No. 1598  
Compensatory Scoliosis Due to Coupled Bending Motion in the Dynamic Lumbar Twisting Motion - 3D Analysis using Dual Fluoroscopic Image System  
Jae-Hyuk Shin, Shaobai Wang, Qi Yao, Jing-Sheng Li, Thomas D Cha, Kirkham B Wood, Guoan Li  
Poster No. 1599  
Facet Distraction Spacers Can be an Alternative in Addressing the Cervical Spondylosis Disorder: A Comparative Finite Element Study  
Vivek Palepu, Manoj Kodigudla, Vijay K Goel, Atul Goel  
Poster No. 1600  
Facet Screws Plus Interspinous Spacer and Posterior Pedicle Screw-Rod Fixations Provide Similar Stabilities to Spinal Constructs  
Vijay K Goel, Manoj Kodigudla, Aakash Agarwal, Harpreet Singh, Dhanvin S Desai, Vivek Palepu, Leonora Felon, David Kirschman  
Poster No. 1601  
A Novel Optical Measurement System for Dynamic Spinal Curvature Analysis  
Marcel Betsch, Walter Rapp  
Poster No. 1602  
Biomechanical Study of Pedicle Screw Fixation Between IntraCortex Pedicle Screw and Oversized Pedicle Screw  
Kosaku Higashino, Yuichiro Goda, Daisuke Suzuki, Takuma Kobayashi, Tetsuya Matsuura, Mineko Fujimiya, Natsuo Yasui  
Poster No. 1603  
In Vivo Quantification of Lumbar Facet Joint Angles and Strains During Flexion  
Amy A Claeson, Tina M Nagel, Victor H Barocas, David J Nuckley  
Poster No. 1604  
Biomechanical Instability in Sagittal Motion After Lumbar Total Disc Replacement May Cause the Inferior Adjacent Disc Problem - A Finite Element Study  
Poster No. 1605
Biomechanical Investigation of Llamas and Alpacas as Potential Animal Models for the Human Spine
Dean K Stolworthy, Anton E Bowden

Poster No. 1606
Biomechanical Analysis of a Novel Single Level 360° Lumbar Spine Arthroplasty System: An In Vitro Cadaveric Study
Aniruddh Nayak, Michael C Doarn, Roger B Gaskins, Chris R James, Andres F Cabezas, Antonio E Castellvi, Brandon G Santoni

Poster No. 1607
Validation and Optimization of a Bioreactor for Loading of Human Intervertebral Discs
Rahul Gawri, Rana Al Thukair, Janet Moir, Peter Roughley, Jean Ouellet, Thomas Steffen, Lisbet Haglund

Poster No. 1608
Spatial Geometric and MR Signal Intensity Changes with Advancing Stages of Nucleus Pulposus Degeneration
Shu-Hua Yang, Chien-Chou Pan, Issie Senoo, Alejandro A Espinosa Orías, Gunnar B Andersson, Howard S An, Nozomu Inoue

Poster No. 1609
The Minimum of Damping Properties of the Nucleus Pulposus is Between 0.1 and 1 Hz
Arne Vogel, Dominique Pioletti

Poster No. 1610
Correlating Intervertebral Disc Axial Mechanics with Biological Responses to Creep Loading
Robert A Hartman, Brent W Bowman, James D Kang, Gwendolyn A Sowa

Poster No. 1611
Is Bilateral Facet Screw with Interspinous Fixation a Better Alternative to Stand-Alone Interspinous Fixation? A Biomechanical Finite Element Study
Anand K Agarwal, Vijay K Goel, Aakash Agarwal

Poster No. 1612
Implementation and Validation of Probabilistic Models of the Anterior Longitudinal Ligament and Posterior Longitudinal Ligament of the Cervical Spine
William Francis, Travis Eliasion, Ben Thacker, Glenn Paskoff, Barry Shender, Daniel Nicoleta

Poster No. 1613
Virtual Test of Three Physical Examinations for Diagnosis of the Sacroiliac Joint Pain
Zhidong Yao, Won Man Park, Yoon Hyuk Kim, Kyungsoo Kim

Poster No. 1614
Spinal Ligaments Exhibit Transverse Ligament Pre-Strain and Negative Longitudinal Ligament Pre-Strain
Daniel J Robertson, Anton E Bowden

Poster No. 1615
Subject-Specific Differences in Strain Levels in the Lumbar Spine Following Interbody Fusion
Lillian Chatham, Vikas Patel, Dana Carpenter

Poster No. 1616
Laminae Expansion of Open-Door Laminoplasty decreases Cervical Stability - A Finite Element Analysis
Che-Hao Tsui, Ya-Wen Kuo, Chia-Chieh Chang, Dar-Ming Lai, Jaw-Lin Wang

Poster No. 1617
An Endplate Approach Improves the Mechanical Response of Nucleotomized Intervertebral Discs
Zhen Li, Marianna Peroglio, Patrick Lezuo, Girish Pattappa, Mauro R Alini, Sibylle Grad

Poster No. 1618
Can the Sustained Delivery System Using Heparin-Conjugated Fibrin Lower the Required Dose of BMP-2 in Posterolateral Lumbar Fusion?
Siyeon Park, Jongs-Min Lee, Jung-Min Ahn, Jun-Ho Joe, Ki-Hyoung Koo, Gun-II Im

Poster No. 1619
Rheological Properties and Glycosaminoglycan (GAG) of Degenerated Intervertebral Disc can be Improved by Natural Crosslinking Reagent and Platelet-Rich Plasma Therapy: An In-Situ Porcine Model
Chih-Wei Chen, Yu-Chun Hsu, Ya-Wen Kuo, Che-Hao Tsui, Pen-hsiu Grace Chao, Shih-Youeng Chuang, Jaw-Lin Wang

Poster No. 1620
Can Intravenously Infused MSC-Like Blood Stem Cells Aid in the Repair of Injured Intervertebral Discs?
Vivian Tam, Ian Rogers, Danny Chan, Victor Y Leung, Kenneth Cheung

Poster No. 1620A
Cross-Talk Between Shh and Wnt Signaling Pathways is Required for Maintenance of Postnatal Mouse Intervertebral Disc
Chitra L Dahia, Eric Mahoney, Debora Sinner, Christopher Wylie

Poster No. 1621
Ovariectomy Combined with Low Calcium Diet Causes Osteoporosis but Does Not Impact Spine Fusion Rate in a Rat Posterolateral Arthrodesis Model
Sohaib Z Hashmi, Jason Ghodasra, Michael Nickoli, Christian Park, Amruta Ashtekar, Joseph Nicholas, Mark LaBelle, Akshay Jain, John Nelson, Erin L Hsu, Wellington K Hsu

Poster No. 1622
Long-term ATP Treatment Stimulates Proteoglycan Accumulation by Intervertebral Disc Cells
Silvia D Gonzales, Chong Wang, Amaris Genemaras, Chun-Yuh Huang

Poster No. 1623
Tissue Engineering a De Novo Annulus Fibrosus - Combining Adipose-Tissue Derived Mesenchymal Stem Cells with Electrospun Silk Mats and Chondrogenic Induction Culture
Puay Yong Neo, James CH Goh, Siew-Lok Toh
Poster No. 1624
Distinction between Cells of the Nucleus Pulposus and Annulus Fibrosus Using Amine-Rich Surfaces for Tissue Engineering of Intervertebral Discs
Sonia Rampersad, Laura M Epure, Amelie St-Georges-Robillard, Michael R Wertheimer, John Antoniou, Fackson Mwale

Poster No. 1625
Effects of Linoleic Acid and TGF-β on Engineered Nucleus Pulposus Tissue Development
Robert Maidhof, Nadeen Chahine

Poster No. 1626
Molecular profiling of Spontaneous Repair in Surgically Damaged Ovine Lumbar Intervertebral Discs
Juergen A Mollenhauer, Flurina C Clement Frey, Lena S Müller, Claudia Osswald, Elena Boger, Karin Benz, Brigitte von Rechenberg, Christoph Gaissmaier

Poster No. 1627
Collagen and Fibronectin Improve Cytomorphology on a Fibrin-Genipin Gel While Maintaining its Effectiveness as an Annulus Fibrosus Sealant
Clare C Guterl, Khyati Dave, Ilana Stock, Devina Purmessur, Andrew C Hecht, Steven B Nicoll, James C Iatridis

Poster No. 1628
Link N can Affect Differentiation-Related Gene Expression in Human Bone Marrow-Derived Mesenchymal Stem Cells
Fackson Mwale, Hong Tian Wang, Abdulrahman M Alaseem, Lisbet Haglund, Peter J Roughley, John Antoniou

Poster No. 1629
Collagen and Fibronectin Improve Cytomorphology on a Fibrin-Genipin Gel While Maintaining its Effectiveness as an Annulus Fibrosus Sealant
Clare C Guterl, Khyati Dave, Ilana Stock, Devina Purmessur, Andrew C Hecht, Steven B Nicoll, James C Iatridis

PS2 SPINE AND DISC BIOLOGY

Poster No. 1631
Histological Characterization of the Cartilaginous Endplate in the Human Spine
Ryan P Farmer, Rachel C Paietta, Virginia L Ferguson, Vikas Patel, Evalina Burger-Van Der Walt

Poster No. 1632
Expression of Bmp13 in the Developing Human Spine
Ashish D Diwan, Ai Qun Wei, Lisa Williams, Divya Bhargav, Sarennaya Pathmanandavel, Twishe Gulati, Zhi Ming Fang

Poster No. 1633
Fas Ligand on Human Nucleus Pulposus Cells Plays an Important Role in the Production of Pro-inflammatory Cytokines
Junya Yamamoto, Koichiro Maeno, Toru Takada, Kenichiro Kakutani, Takashi Yurube, Zhongying Zhang, Hiroaki Hirata, Takuto Kurakawa, Shingo Miyazaki, Daisuke Sakai, Joji Mochida, Minoru Doita, Masahiro Kurosaka, Kotaro Nishida

Poster No. 1634
Tissue Transglutaminase is Involved in Mechanical Force-Induced Osteogenic Differentiation of Human Ligamentum Flavum Cells
Yuan-Hung Chao, Shih-Yung Huang, Yang-Hwei Tsuang, Jui-Sheng Sun

Poster No. 1635
Proteomic Analysis of Ligamentum Flavum from Lumbar Spinal Canal Stenosis
Yuichiro Goda, Nori Sato, Takako Taniguchi, Yoichiro Takata, Hirofumi Kosaka, Toshinori Sakai, Kosaku Higashino, Koichi Saiyoro, Shinsuke Katoh, Hisaaki Taniguchi, Natsuo Yasui

Poster No. 1636
Diabetes Causes Degenerative Changes in the Rat Intervertebral Disc
Lionel N Metz, Alberto F Lovell, James Graham, Aaron J Fields, David Rodriguez, Ellen Liebenberg, Peter J Havel, Jeffrey C Lotz

Poster No. 1637
In Vivo Administration of an Inflammatory Stimulant Can Trigger Loss of Biomechanical & Biochemical Properties of Intervertebral Disc
Robert Maidhof, Neena Rajan, Nate Stetson, Mitchel Levine, Nadeen Chahine

Poster No. 1638
Endplate Roughness in Human Lumbar Spines: Variations with Age, Level and Region
Won C Bae, Jade He, Iris Shieh, Tomonori Yamaguchi, Nozomu Inoue, Koichi Masuda

Poster No. 1639
Expression of Nucleus Pulposus Markers in Notochordal Cells of the Human Foetal Intervertebral Disc Suggests a Common Ontogeny for Adult Nucleus Pulposus Cells
Ricardo Rodrigues-Pinto, Andrew Berry, Karen Piper-Hanley, Neil Hanley, Stephen M Richardson, Judith A Hoyland

Poster No. 1640
Lactoferricin Mediates Anti-Inflammatory and Anti-Catabolic Effects Via Inhibition of IL-1 and LPS Activity in Intervertebral Disc
Hee-Jeong Im, Jae-Sung Kim, Michael B Ellman, Dongyao Yan, Ranjan Kc, Xin Li, Joon Suh, Howard S An, Di Chen, Guozhi Xiao, Gabriella Cs-zabo, David W Hoskin, D. D Buechter, Andre van Wijnen

Poster No. 1641
Effects of Low Oxygen Tension on the Biomechanical Properties, Composition and mRNA Expression of Engineered Nucleus Pulposus
Deborah J Gorth, Joseph A Chiari, George R Dodge, Nader M Hebela, Dawn M Elliott, Robert L Mauck, Lachlan J Smith

Poster No. 1642
The Repression of Intervertebral Disc Degeneration in Bach 1 Deficient Mice
Ryo Ohta, Nobuhiro Tanaka, Kazuyoshi Nakamnishi, Naosuke Kamei, Takeda Hiramatsu, Satoshi Ujigo, Mitsuhiro Ochi

Poster No. 1643
The Effect of Fetuin on Mineralization of Intervertebral Disc Cells
Padma Madiraju, Max Buschmann, Rahul Gawri, John Antoniou, Fackson Mwale
Poster No. 1644
Comparison of Anti-Inflammatory Treatments on Degenerated Human Nucleus Pulposus Cells
Ben Walter, Devina Purmessur, Andrew C Hecht, Sheeraz A Qureshi, Sam K Cho, James C Iatridis

Poster No. 1645
Effect of Alendronate on Proteoglycan Production and Cell Metabolism in Bovine Disc Cells in Alginate Culture: Dose-Response Study
Shigeru Kobayashi, Tsuyoshi Miyazaki, Riya Kosaka, Adam Meir

Poster No. 1646
Pathology of Discal Cyst Communicating with the Intervertebral Disc in the Lumbar Spine
Riya Kosaka, Shigeru Kobayashi, Adam Meir

Poster No. 1647
C-fos Regulation by the MAPK and PKC Pathways in Nucleus Pulposus Cells
Katsuya Yokoyama, Akihiko Hiyama, Fumiyuki Arai, Tadashi Nukaga, Daisuke Sakai, Joji Mochida

Poster No. 1648
Extracellular Matrix Degradation Correlates with the Loss of Notochordal Cells in a Rat Tail Temporary Static Compression Model
Hiroaki Hirata, Takashi Yurube, Kenichiro Kukutani, Koichiro Maeno, Toru Takada, Junya Yamamoto, Takuto Kurakawa, Shingo Miyazaki, Minoru Doita, Masahiro Kurosaka, Kotaro Nishida

PS2 SPINE THERAPEUTICS: IN VIVO PRECLINICAL
Poster No. 1649
Intervertebral Disc Repair Using Neonatal Human Dermal Fibroblasts in the Rabbit Model
Yeija Zhang, Ana Chee, Peng Shi, Thomas Cha, Ting-Hsien Kao, Shu-Hua Yang, Howard S An

Poster No. 1650
Evaluation of an Allogeneic Viable Cell Bone Matrix in an Athymic Rat Posterolateral Spine Fusion Model
Michael Ponticiello, Carl Javier, Bo Han, Hallie Murray

Poster No. 1651
Reliability of the Control Autogenous Iliac Crest Bone Graft in the Rabbit Spinal Fusion Model: A Meta-Analysis
Rajesh Rangarajan, Alexander M Riordan, Joshua W Balts, Paul A Anderson

Poster No. 1652
Novel Growth-Factor Loaded Controlled-Release Scaffolds Induce Dose-Dependent L4-L5 Spinal Fusion
Harvinder Bedi, Randy Goomer, Linda “LEA” Kanim, Christopher Collins, Rick Delamarter, Hyun Bae

PS2 SPINE THERAPEUTICS: CLINICAL
Poster No. 1653
End Plate Heat Injury After Percutaneous Laser Disc Decompression (PLDD) in the Lumbar Spine: MR Imaging and Pathological Correlation
Riya Kosaka, Shigeru Kobayashi, Adam Meir, Takumi Yonezawa

Poster No. 1654
The National Burden of Revision Spinal Fusion: A Focus on Patient Characteristics and Complications
Sean S Rajaei, Linda E A Kanim, Hyun Bae

Poster No. 1655
Comparison of Segmental Cross-sectional Area and Patient Validated Functional Outcome Scores
Nathaniel R Ordway, Basilia Nwankwo, Richard Tallarico, William F Lavelle

PS2 KNEE: KINEMATICS AND GAIT
Poster No. 1656
Evaluation of Femoral Tunnel Exit Points in Anatomical Double Bundle ACL Reconstruction
Masahiro Nozaki, Masaaki Kobayashi, Hideyuki Goto, Yasuhiro Nishimori, Atsunori Murase, Masahito Yoshida, Tetsuya Takenaga, Yuko Nagaya, Hiroto Mitsui, Hirotaka Iguchi, Takanobu Otsuba

Poster No. 1657
Anteroposterior and Rotational Stability of ACL Deficient Knees During Walking: Speed and Turning Direction
Ji Hyeon Yim, Jongkeun Seon, Young-Kwan Kim, Sung Taek Jung, Seon Yoon Nah, Eun-Kyoo Song

Poster No. 1658
Virtual Environmental Navigation to Quantify Functional Disability in ACL-Deficient Knees
Robert M Shalvoy, Hugo Bruggeman, Susan E D’Andrea, William Warren, Roy K Aaron

Poster No. 1659
Alterations in Tibiofemoral Joint Contact During Hop Landing Following ACL Reconstruction
Eric Thorhauer, Ermias Abebe, Joshua Gyory, Marcus Hofbauer, Scott Tashman

Poster No. 1660
Differences in Ground Reaction Forces During Downhill Running after Anterior Cruciate Ligament Injury: Reconstruction Versus Conservative Treatment
Verena M Schreiber, Eric Thorhauer, Scott Tashman

Poster No. 1661
Effect of Time on Muscle Activation Patterns after ACL Reconstruction
Chelsea Marsh, Scott Tashman

Poster No. 1662
Flexion-Extension Gap in Cruciate-Retaining Versus Posterior-Stabilized Total Knee Arthroplasty: A Cadaveric Study
Joshua Matthews, Alexander Chong, David McQueen, Justin O’Guinn, Paul Woolley

Poster No. 1663
3D In Vivo Patellofemoral Kinematics for TKA and Non-Implanted Knees
Sumesh M Zingde, Filip Leszko, Adrijna Sharma, Mohamed Mahfouz, Trevor Grieco, Douglas A Dennis, Mathew R Anderle, Richard D Komistek
Poster No. 1664
Post-Cam Mechanism and Impingement of the Anterior Tibial Post During Stair-Climbing in Posterior-Stabilized Total Knee Arthroplasty
Satoshi Hamai, Ken Okazaki, Takeshi Shimoto, Hidehiko Higaki, Riku Sakimura, Hideki Mizu-uchi, Yasutaka Tashiro, Yukihide Iwamoto

Poster No. 1665
Validation of a Musculoskeletal Model with Prosthetic Knee Through Six Experimental Gait Trials
Mohammad Kia, Trent M Guess, Antonis Stylianou

Poster No. 1666
Comparison Between Computed Tomography-Based Amputee Geometry and Standard Geometry Measures of Socket Fit
Justo J Torres, Chris Papadopoulos, Christos Mitrogiannis, Dimitrios Kikidis, Vasiliki Baradaki, George Papaioannou

Poster No. 1667
Seasonal Variations of Stump Volume in Transtibial Amputees
George Papaioannou, Justo J Torres, Christos Mitrogiannis, Dimitrios Kikidis, Vasiliki Baradaki

Poster No. 1668
Consideration of Hip Moments Along Knee and Ankle Moments During Gait Affects Mainly the Force Partitioning Between Muscles and not the Knee Response
M. Adouni, A. Shirazi-Adl

Poster No. 1669
Reduction in Knee Adduction Moment via Non-Invasive Biomechanical Intervention. A Longitudinal Gait Analysis Study
Amir Haim, Nimrod Rozen, Alon Wolf

Poster No. 1670
Effect of Kinematic Description on the Femoral Anterior Paradoxical Motion During Lunge: A Pilot Study
Amir M Mane, Fred Wentorf

Poster No. 1671
Estimating Knee Adduction Moment from Joint Kinematics Using Musculoskeletal Simulation with Conditional Reaction Elements
Yihwan Jung, Moonki Jung, Kunwoo Lee, Seunghum Koo

Poster No. 1672
A Novel Sensor to Provide Quantitative Assessment of Knee Joint Motion
Vivek Gulati, Alison Mcgregor, Jeroen Bergmann

PS2 KNEE MECHANICS

Poster No. 1673
Biomechanical Analysis of Injured Minimalist Runners
Matthew J Salzer, Sean Driscoll, Donna Scarborough, Stephen Huffaker, Richard De Asla, Eric Berkson, Eric Bluman

Poster No. 1674
A Computer Assessment of the Effect of Hindfoot Alignment on Mechanical Axis Deviation
Naven Dugal, Gabrielle Paci, Leandro Grimaldi-Bournissaint, Abhinav Narain, Ara Nazarian

Poster No. 1675
Asymmetrical Lower Limb Loading in Patients with Early Knee Osteoarthritis During the Sit-To-Stand Task
Vivek Gulati, Lynsey Duffell, Dominic Southgate, Alison Mcgregor

Poster No. 1676
Effects of Pubertal Maturation on Lower Leg Kinematics During Jump-Landing in Adolescents: A 5-Year Prospective Study
Shizuka Sasaki, Yasuyuki Ishibashi, Eiichi Tsuda, Yuji Yamamoto, Shugo Maeda, Yuka Kimura, Yuki Fujita, Takashi Umeda, Shigeyuki Nakaji

Poster No. 1677
Contact Pressure Estimation in a Muscle Driven Model of an Instrumented Prosthetic Knee during Gait
Antonis Stylianou, Trent M Guess, Mohammad Kia

Poster No. 1678
Importance of Patient-Specific Collagen Architecture on Knee Joint Stresses and Strains During Walking
Lasse P Räsänen, Mika Mononen, Jukka S Juvelin, Rami Korhonen

Poster No. 1679
Relative Antagonist Activity during Walking for TKR Patients and Asymptomatic Controls
Hannah J Lundberg, Markus A Wimmer

Poster No. 1680
Prediction of Knee Loading During a Dual-Limb Squat in a Muscle-Driven Musculoskeletal Model with Anatomic Knee Joints
Katherine H Bloemker, Mohammad Kia, Antonis Stylianou, Trent M Guess

Poster No. 1681
Muscle Function and Instability During High Demand Activity Before and After Total Knee Arthroplasty
Philip C Noble, Jonathan Gold, Kyle Borque, Stephen Incavo, Rupalkumar M Patel, Sabir K Ismaily

Poster No. 1682
Elastic Contact to Characterize the Patellofemoral Pressure Distribution
John J Elias, Archana Saranathan

Poster No. 1683
In Vivo Function of the Medial and Lateral Collateral Ligaments (MCL and LCL) in High Flexion of the Knee
Wei Qi, Ali Hosseini, Tsung-Yuan Tsai, Harry E Rubash, Guoan Li

Poster No. 1684
Stability of the Posteromedial Tibial Plateau Fracture Fragment
Danny F Martinez, Igor Immerman, Vanessa G Cuellar, Kenneth Egol, Peter S Walker

Poster No. 1685
Muscle Imbalance of the Knee Extensors Does Not Affect Patellar Tracking in the ACL Deficient Knee
Christian Egloff, Andrew Sawatzky, Tim Leonard, Tak Fung, Walter Herzog
Poster No. 1686  
The Effect of Patellar Tendon Length on Patellar Yaw During Robotic Tibial Rotation  
Shaun Stinton, Thomas Cunningham, Nathan DeJarnette, Thomas Branch

Poster No. 1687  
Medial Collateral Ligament Biomechanical Response Under Functional Loading Conditions  
Ata M Kiapour, Carmen E Quatman, Vijay K Goel, Samuel C Wordeman, Jason W Levine, Timothy E Hewett, Constantine K Demetrioupolos

Poster No. 1688  
A New Measure of Tibiofemoral Surface Interactions that Correlates with Early Cartilage Damage in Injured Sheep  
Jillian E Beveridge, Nigel G Shrive, Cyril B Frank

Poster No. 1689  
Restoring Rotational Stability by Anterior Cruciate Ligament Reconstruction Proven by Quantitative Measurement of the Pivot Shift Test  
Kanto Nagai, Ryosuke Kuroda, Yuichiro Nishizawa, Yuichi Hoshino, Takehiko Matsushita, Seiji Kubo, Tomoyuki Matsumoto, Kouki Nagamune, Masahiro Kurosaka

Poster No. 1690  
In Vivo Elongation of the Anterior and Posterior Cruciate Ligaments in High Flexion of the Knee  
Wei Qi, Ali Hosseini, Tsung-Yuan Tsai, Harry E Rubash, Guoan Li

Poster No. 1691  
A Combined Computational and Experimental Approach to Measure the Ligament Resting Length  
Mohammad Kia, Katherine H Bloemker, Trent M Guess, Akin Cil

Poster No. 1692  
Effect of Patellar Resection Thickness on Bone Strain  
Clare K Fitzpatrick, Raymond H Kim, Azhar A Ali, Lowell Smoger, Amanda Randolph, Paul Rullkoetter

PS2 Knee: Surgical Repair and Rehabilitation

Poster No. 1693  
Joint Space Loss after Arthroscopic Partial Meniscectomy: Data from the Osteoarthritis Initiative  
Alexander Rothy, Steven Cherney, Stephen Fening, Jeffrey Duryea, Carl Winalski, Morgan H Jones, Anthony Miniacci

Poster No. 1694  
The Effects of Sport Activities on Knee Joint Contact Stresses After Partial Meniscectomy: A Preliminary Finite Element Study  
Diagarajen Carpanen, Robert Walker, Franziska Reisse, Kevin Cheah, Matthew F Koff, Howard Hillstrom, Rajshree Mootanah

Poster No. 1695  
Meniscus Allograft Transplantation Allows Athletes to Return to Sporting Activities  
Kevin R Stone, Scott Surrette, Jonathan Pelsis, Amanda W Stavely, Ann W Walgenbach

Poster No. 1696  
In Vitro Toxicity of Local Anesthetics and Corticosteroids on Synoviocytes  
Cole Linville, Aaron M Stoker, Seth Sherman, Matt Smith, James L Cook

Poster No. 1697  
The Effect of Arthroscopic Synovectomy on Inflammatory Mediator Profile in Knee Synovial Fluid  
Hillary J Braun, Amy S Wasterlain, Gaetano J Scuderi, Jason L Dragoo

Poster No. 1698  
Radiostereometric Analysis of the Immediate Anatomical Changes Between the Proximal and Distal Tibia Following Medial Opening Wedge High Tibial Osteotomy  
Matthew Teeter, Kristyn Leitch, Xunhua Yuan, Trevor Birmingham, Robert Giffin

Poster No. 1699  
Mechanical Performance of a Novel Tibial Tubercle Osteotomy Technique  
Jeremi M Leasure, Jason Kelly, William Montgomery

Poster No. 1700  
The Role of the Medial Patellofemoral and Medial Patellotibial Ligaments and Reconstructions in Patellar Stability at Various Flexion Angles  
Amanda Esquivel, James Halloran, Allison Andre, Stephen Lemos

Poster No. 1701  
Effect of a Novel Knee Exercise Program for Correcting Rotational Malalignment of the Osteoarthritic Knee: A Pilot Study  
Kenji Hoshi, Tsukasa Kanda, Akira Nagao, Kazuyoshi Gamada

Poster No. 1702  
Radiographic Characteristics of Patients With OCD Lesions  
Mark Tompkins, John Wechter, Robby Sikka

Poster No. 1703  
Articular Cartilage Paste Grafting Salvage of Osteochondritis Dissecans of the Knee: Evaluation by Clinical Outcome Measures and Magnetic Resonance Imaging  
Kevin R Stone, Jonathan Pelsis, Shobi Zaidi, Ann W Walgenbach, John V Crues, Thomas J Turek

PS2 Arthroplasty Knee

Poster No. 1704  
Factors That Lead to Poor Outcomes Following Unicompartmental Knee Arthroplasty: Redefining the “Classic” Indications for Surgery  
Scott Thompson, Barthelemy Liabaud, Kate Nellans, William Macaulay, Jeffrey Geller

Poster No. 1705  
Unicondylar Knee Arthroplasty Does Not Preserve Alignment of the Instantaneous Axis of Passive Flexion  
Scott M Tucker, Thomas Heyse, Yogesh Rajak, Daniel Choi, Geoffrey Westrich, Carl Imhauser
**Poster No. 1706**
Intra-Operative Joint Gap Kinematics in Unicompartmental Knee Arthroplasty
Tomoyuki Matsumoto, Hirotsugu Muratsu, Seiji Kubo, Katsumasa Tei, Nao Shibanuma, Takehiko Matsushita, Tokio Matsuzaki, Shinya Oka, Yuichiro Nishizawa, Kanto Nagai, Atsuo Uefuj, Ryosuke Kuroda, Masahiro Kuwasaka

**Poster No. 1707**
Quantitative Assessment of Knee Balance with Unicondylar Knee Arthroplasty
Christopher Razavi, Scott M Tucker, Yogesh Rajak, Thomas Heyse, Geoffrey Westrich, Carl Imhauser

**Poster No. 1708**
Is Fixation Performance of MIS Mini-keel Tibial Prosthesis Comparable to Standard Stemmed Prosthesis - A Randomised Clinical Study with RSA
Desmond Y.R. Chong, Seng Jin Yeo, Nils Oscar Nivbrant, Bo Nivbrant, Ngai Nung Lo

**Poster No. 1709**
A Musculoskeletal Numerical Knee Model to Assess Patellar Resurfacing in Total Knee Arthroplasty
Adeliya V Latypova, Francesc Levero Florencio, Dominique Pioletti, Brigitte Jolles, Alexandre Terrier

**Poster No. 1710**
Articular Surface Design Changes Affect Contact Patterns in Total Knee Arthroplasty
Susannah Gilbert, Adam Rana, Marcella Elpers, Joseph Lipman, Timothy Wright, Geoffrey Westrich

**Poster No. 1711**
Influence of Ethnicity on Coverage of the Tibia in Total Knee Arthroplasty
Yifei Dai, Ashok Rajgopal, Samih Tarabichi, Kim Bertin, Jeffrey E Bischoff

**Poster No. 1712**
Does Gender-Specific Implant Match the Anatomy of Femur in Female Patients in Total Knee Arthroplasty?
Yuki Takeda, Yasuo Niki, Akihiro Hakozaki, Kazuhiko Udagawa, Hiroyuki Enomoto, Yoshiaki Toyama, Yasunori Suda

**Poster No. 1713**
Coordinate Measuring Machine-Based Methodology for Wear and Creep Assessment of Polyethylene Tibial Knee Inserts
Wei Jiang, Zhongmin Jin, Claire Brockett, Ruth Wilcox, John Fisher

**Poster No. 1714**
Grafted Vitamin E HXPE May Increase the Durability of Posterior Stabilized TKR
James D Wernle, Kimberly Mimnaugh, Alicia Rufner, John Knight

**Poster No. 1715**
Oxidative and Wear Properties of Sequentially Annealed Highly Crosslinked Polyethylene Used in Total Knee Arthroplasty
Steven M Kurtz, Daniel MacDonald, Sevi Kocagoz, Mariya Tofhafarosh, Javad Parvizi, Michael Mont, Arthur Malkani

**Poster No. 1716**
Metal Sensitivity in Patients Before and After Total Knee Arthroplasty (TKA): Comparison Between Ceramic Surfaced Oxidized Zirconium and Cobalt-Chromium Implants
Atsushi Kitagawa, Nobuhiro Tsumura, Tetsuhiro Iguchi

**Poster No. 1717**
Effect of Backside Wear and Bearing Material on Wear Performance of Rotating Platform Mobile Bearings
Abdelatif Abdelgaied, Claire Brockett, Feng Liu, Louise Jennings, John Fisher, Zhongmin Jin

**Poster No. 1718**
Center of Pressure Analysis Reveals Mechanisms of Articular Load Transfer in the Native and Unicondylar Replaced Knee
Scott M Tucker, Yogesh Rajak, Thomas Heyse, Geoffrey Westrich, Carl Imhauser

**Poster No. 1719**
Joint Line Elevation in TKA Leads to Increased MCL Tension
Joseph G Wyss, Chad Clary, Mark Heldreth

**Poster No. 1720**
Influence of Physiological Loading Parameters on the Constrained Condylar Knee Articular Surface Spine
Mehul A Dharia, James D Wernle, Steven M Humphrey

**Poster No. 1721**
Calculating the Position of the Joint Line of the Knee in Relationship to Anatomic Landmarks
Derek F Amanatullah, Mike Alaia, Kenneth Montini, Matthew Lopez, Paul DiCesare, Gavin Pereira

**Poster No. 1722**
Changes of Medio-Lateral Soft-Tissue Laxity in Association with Varus Knee Deformity
Shigetoshi Okamoto, Ken Okazaki, Hiroaki Mitsuyasu, Shuichi Matsuda, Yukihide Iwamoto

**Poster No. 1723**
Posterior Femoral Condylar Offset After Total Knee Replacement in the Risk of Knee Flexion Contracture
Tomohiro Onodera, Tokifumi Majima, Osamu Nishiihe, Yasuhiko Kasahara, Daisuke Takahashi

**Poster No. 1724**
Limb Malalignment Causes Overloading on the Tibial Post in Constrained Condylar Knee Replacement
Xiaonan Wang, Don Bartel, Timothy Wright

**Poster No. 1725**
The Effect of the Quadriceps Tendon on the Knee Flexion-Extension Gap for Posterior-Stabilized Total Knee Arthroplasty: A Cadaveric Study
Justin O’Guinn, Alexander Chong, David McQueen, Joshua Matthews, Paul Wooley

**Poster No. 1726**
The 3-Dimensional Visualization of the Bony Defect by the Mirroring Method for the Patients Undergoing Total Knee Arthroplasty
Hiroshi Shimosawa, Hiroyuki Enomoto, Yasuo Niki, Yoshiaki Toyama, Yasunori Suda
Poster No. 1727
Comparison of Radiography and Three-Dimensional Computed Tomography Measurement of the Angle between the Mechanical Axis and Anatomical Axis of the Femur
Yasuo Higuma, Makoto Kondo, Kazuhide Tomari, Takahiro Noguchi

Poster No. 1728
Morphological Assessment of the Fit of Contemporary Femoral Component Designs to Anatomic Variation of the Distal Femur using Digital Analysis
Charles L Penninger, Giles R Scuderi, Aaron G Rosenberg, Jeffrey Bischoff

Poster No. 1729
Geometry of the Surgical Epicondylar Axis of the Distal Femur in the Coronal and the Axial Plane
Hideo Kobayashi, Yasushi Akamatsu, Ken Kumagai, Yoshihiro Kusayama, Ryo Ishigatsubo, Shuntaro Muramatsu, Tomoyuki Saito

Poster No. 1730
Sloped Tibial Insert Reduces Negative Effect of PCL Over-tightness in Cruciate Retaining Total Knee Arthroplasty
Bo Gao, Laurent Angibaud

Poster No. 1731
Differences in Geometric Features of Distal Femur of Eastern and Western Populations
Wei Wang, Bin Yue, Guoan Li

Poster No. 1732
Does TKR Lead to an Increase in Lateral Retinacular Strain with Flexion?
Philip C Noble, Rikin Patel, Derek Bernstein, Sabir K Ismaily

Poster No. 1733
Digital Image Correlation Analysis of Tibial Loading in Rotating Platform Total Knee Arthroplasty
Scott Small, Renee Rogge, Robert A Malinzak, Derek Archer, Jordan Oja, Michael E Berend

Poster No. 1734
Joint Loading in Knees with Mobile-bearing and Fixed-bearing Implant During Level Walking
Xiaoqin Li, Zhihong Liu, Jianmin Feng, Lianfu Deng, Nigel Zheng

Poster No. 1735
Comparison of Kinematics Between Knees with Mobile-Bearing and Fixed-Bearing Implant During Walking
Nigel Zheng, Zhihong Liu, Xiaoqin Li, Jianmin Feng, Lianfu Deng, Qingming Yang

Poster No. 1736
3-D In Vivo Femoro-Tibial Kinematics of Tri-Condylar Implant During Kneeling Activities
Shinichiro Nakamura, Richard D Komistek, Masahiko Kobayashi, Hiromu Ito, Kenji Nakamura, Adria Sharma, Sumesh M Zingde, Takashi Nakamura

Poster No. 1737
Developing Simulation Cycles for Population-Based Evaluation of TKR Mechanics
Clare K Fitzpatrick, Fallon Fitzwater, Patrick Davenport, Lorin Maletsky, Paul Rullkoetter

Poster No. 1738
Is Very Deep Knee Flexion Exceeding 145 Degrees a Safe Position After Total Knee Arthroplasty?
Yasuo Niki, Yuki Takeda, Kazuhiko Udagawa, Masanori Nakayama, Hiroyuki Enomoto, Yoshiaki Toyama, Yasunori Suda

PS2 HIP: FAI AND MORPHOLOGY

Poster No. 1739
Elevated Biomarkers of Cartilage Catabolism and Inflammation in Patients with Femoroacetabular Impingement
Asheesh Bedi, Evan B Lynch, Elizabeth R Sibilsky Enselman, Max E Davis, Bryan T Kelly, Phillip T Henning, Christopher L Mendias

Poster No. 1740
Anterior Acetabular Rim Morphology in an Asymptomatic Population

Poster No. 1741
Direct Measurement of the Sealing Function of the Acetabular Labrum
Philip C Noble, Hugh Jones, Maureen Dwyer, Richard Field, Joseph McCarthy

Poster No. 1742
The Sealing Function of the Acetabular Labrum Varies with Hip Joint Position
Philip C Noble, Maureen Dwyer, Hugh Jones, Richard Field, Joseph McCarthy

Poster No. 1743
Evaluation of Acetabular Contact Mechanics and Labral Seal After Labrum Reconstruction
Patrick Birmingham, Mark Bowers, Linda McGrady, Matthew Carpenter, Mei Wang

Poster No. 1744
Statistical Shape Modeling of Cam Femoroacetabular Impingement
Michael D Harris, Manasi Datar, Elizabeth R Jurrus, Ross T Whitaker, Christopher L Peters, Andrew E Anderson

Poster No. 1745
Finite Element Analysis to Examine Hip Joint Stresses Before and After Corrective FAI Surgery
Geoffrey Ng, Mario Lamontagne, Michel R Labrosse, Paul E Beaule

Poster No. 1746
Pelvic Flexion Angle Influences the Distribution of Subchondral Bone Cysts in The Acetabulum
Hiroshi Fujimaki, Yutaka Inaba, Naomi Kobayashi, Yohei Yukizawa, Hiroyuki Ike, Taro Tezuka, Yasuhide Hirata, Haruka Suzuki, Tomoyuki Saito

Poster No. 1747
Can the Alpha Angle Predict Cartilage Degradation in CAM Type FAI?
Arturo Cardenas-Blanco, Kawan S Rakhra, Mark E Schweitzer, Paul E Beaule
Poster No. 1748
The Effect of the Reorientation Angle of the Acetabulum on Reduction of Hip Range of Motion After Reorientation Osteotomy of the Acetabulum
Hidetoshi Hamada, Masaki Takao, Takashi Sakai, Takashi Nishii, Nobuhiako Sugano

Poster No. 1749
Hip Flexion Angle Abnormality Associated with Hip Osteoarthritis Risk
Jonathan H Rylander, Katerina Blazek, Katherine Boyer, Marc Safran, Thomas P Andriacchi

Poster No. 1750
Computed Tomography Analysis of Herniation Pits in the General Population in Japan: Association with Morphological Indicators of Femoroacetabular Impingement
Tomohiro Goto, Kiminori Yukata, Hiroshi Egawa, Natsuo Yasui

Poster No. 1751
Biomechanics of Pelvis and Hip in Patients with Aspherical Femoral Head during Maximal Depth Squat
Mario Lamontagne, Kevin Dwyer, Paul E Beaulé

Poster No. 1752
Accuracy of 3D Ultrasound Based Registration for Computer-Assisted Femoro-acetabular Impingement Surgery
Ilker Hacihaliloglu, Michael K Gilbart, David A Wilson, Michael Hunt, Purang Abolmaesumi, Randy E Ellis

Poster No. 1753
Quantitative T1rho/T2 Imaging of Hip Cartilage at 3 Tesla in Patients with Osteoarthritis and Femoroacetabular Impingement
Cory Wyatt, Deepak Kumar, Karupppasamy Subburaj, Trisha Lian, Divya Narayanan, Xiaojuan Li, Thomas Vail, Thomas Link, Richard Souza, Sharmila Majumdar
Poster No. 1770  
Correlation Between Pelvic Inclination Angle and Polyethylene Wear After Total Hip Arthroplasty  
Taro Tezuka, Yutaka Inaba, Naomi Kobayashi, Hyonmin Choe, Yohei Yukizawa, Hiroshi Fujimaki, Hiroyuki Ike, Yasuhide Hirata, So Kubota, Yuriha Ata, Tomoyuki Saito

Poster No. 1771  
Effect of Cement Mantle Thickness on the Cement-Bone Interface in Triple Tapered Polished Stem  
Hirotugu Ohashi, Satoshi Iida, Izumi Minato, Yuji Tanabe, Naoki Funayama, Shin Kai

Poster No. 1772  
Prevalence of Pseudotumors Following Large-diameter Metal-On-Metal Total Hip Arthroplasty. Metal Ion Study and Screening with Magnetic Resonance Imaging  
Masahiro Hasegawa, Kakunoshin Yoshida, Hiroki Wakabayashi, Noriki Miyamoto, Akihiro Sudo

Poster No. 1773  
Wear of Crosslinked and Non-Crosslinked UHMWPE With and Without Vitamin E  
Nic Gowland, Sophie Williams, John Fisher, Joanne L Tipper

Poster No. 1774  
Demonstrating the Beneficial Effect of Tribolayer(s) in Metal-On-Metal Hip Joints Through a Synergistic Approach of Wear and Corrosion  
Mathew Mathew, Christopher Nagelli, Robin Pourzal, Michel Laurent, Alfons Fischer, J. Jacobs, Markus A Wimmer

Poster No. 1775  
Electrochemical Behavior of Bare and Protein Coated CoCrMo Surfaces in Physiological Media  
Michael A Schymura, Christopher Sodl, Markus A Wimmer, Alfons Fischer

Poster No. 1776  
Effect of Larger Femoral Head on the Wear Resistance of the Biocompatible Polymer-Grafted Cross-Linked Polyethylene Liner  
Toru Moro, Masayuki Kyomoto, Kazuhiko Ishihara, Sakae Tanaka, Hirofumi Oshima, Takeyuki Tanaka, Hideya Ito, Kozo Nakamura, Hiroshi Kawaguchi, Yoshio Takatori

Poster No. 1777  
Comparison of First and Second Generation Annealed Highly Cross-linked Ultra High Molecular Weight Polyethylene Materials in the Hip  
Barbara H Currier, John H Currier, Evan M Carlson, John P Collier, Douglas W Van Citters, Michael B Mayor

Poster No. 1778  
Retrieval Analysis of Sequentially Annealed Highly Crosslinked Polyethylene Used in Total Hip Arthroplasty  
Steven M Kurtz, Daniel MacDonald, Sevi Kocagoz, Mariya Tohafarosh, Javad Parvizi, Michael Mont, Arthur Malkani

Poster No. 1779  
Fatigue and Wear Characterization of Various Contemporary Hip Bearing Materials  
Jason A Longaray, Kim-Phuong Le, Gregg Schmidig, Sue Coyle, Lizeth Herrera, Lin Song, Aaron Essner

Poster No. 1780  
Precise Digital Radiographic Wear Phantoms for Validation of Methods to Detect Wear in Total Hip and Total Knee Arthroplasty  
John M Martell, Michael Chinander

Poster No. 1781  
Correlating MOM Retrieval Wear with Functional “In Vivo” Implant Positioning in 28mm MOM Patients  
Jean yves Lazennec, Ian C Clarke, A. Brusson, Thomas K Donaldson

Poster No. 1782  
Increased Wear in Low and High Crosslinked Polyethylene Due to Microseparation of Total Hip Arthroplasty Components  
Darryl D D’Lima, Jonathan Netter, Nikolai Steklov, Juan C Hermida, Peter Chen, Jim Nevelos

Poster No. 1783  
Surface Roughness of Femoral Heads from Metal-on-Polyethylene Total Hip Arthroplasty Retrieved at Over 10 Years  
Wendy W Wong, Ian C Clarke, Thomas K Donaldson, Michelle Burgett

Poster No. 1784  
In Vitro Comparison of Corrosion Properties of CoCr and Ti Alloys in Orthopaedics - An Electrochemical Study  
Haitong Zeng, Jaroslaw Karwowski, Daniel Lawrynowicz

Poster No. 1785  
In Vitro Wear Performance of MPC-Grafted UHWMPE for Total Hip Replacement  
Ryan L Siskey, Steven M Kurtz, Masayuki Kyomoto, Ueno Masaru, Joel Weisenburger, Hani Haider

Poster No. 1786  
Using Contact-Patch-To-Rim Distance to Predict Edge Loading in Metal-On-Metal Hip Resurfacing Retrievals  
Karren Takamura, Danyal H Nawabi, Nader Nassif, Marcella Elpers, Kirsten Stoner, Timothy Wright, Douglas Padgett

Poster No. 1787  
Circumferential Form Analysis of Large Diameter MOM Wear Zones  
Daniel Sufficool, Joseph G Elsissy, Ian C Clarke, Michelle Burgett, Thomas K Donaldson

Poster No. 1788  
Macro-damage Abrasion Mode Created by the Particulates Formed During Impingement of Large-diameter MOM Bearings (THA)  
Ian C Clarke, Jean yves Lazennec, Edward McPherson, Thomas K Donaldson, John Bowsher, Christine Savisaar

PS2 ARTHROPLASTY: IMPLANT WEAR AND BEARING KINEMATICS

Poster No. 1789  
Can Volumetric Wear of Metal-On-Metal Hips be Predicted from Patient Characteristics?  
Evan M Carlson, William Mosenthal, Dermott J McHugh, Meredith K Bartelstein, John H Currier, John P Collier
Poster No. 1790
Adverse Testing in Metal-On-Metal and Crn-Ag Coated Hip Replacements
Danielle de Villiers, Matt Royle, Andy Fox, Jonathan Housden, Amy Kinbrum, Leona Morton, Simon Collins, Julia C Shelton

Poster No. 1791
Antioxidation and High Wear Resistance of Life-Long Liners by Vitamin E Blending and Poly(MPC) Grafting
Masayuki Kyomoto, Toru Moro, Kenichi Saiga, Shihori Yamane, Yoshio Takatori, Kazuhiko Ishihara

Poster No. 1792
Significant Wear Reduction Maintained After 44 Mc with a Grafted-Vitamin E Polyethylene
Diego A Orozco Villasenor, Kimberly Mimnaugh, Justin S Hertzler, Alicia Rufner

Poster No. 1793
The Effects of Cup Compression on Trunnion Micromotion in Metal-on-Metal THA Designs
Philip C Noble, Newton Chan, Ashley K Matthias, Hugh Jones, Jacquelynn Gonzalez, Alister Hart

Poster No. 1794
The Role of Protein Films on Hip Bearings Lubricated with Varied Protein Concentration
Michelle Burgett, Connor Myant, Philippa Cann, Ian C Clarke, Thomas K Donaldson

Poster No. 1794A
Creating Hydrodynamic Lubrication in Metal-On-Polyethylene Hip Joints Using Surface Microtexture
Bart Raeymaekers, Anthony Chyr, Anthony P Sanders

Poster No. 1795
Polyethylene Wear Increases with Increasing Contact Area for THR
Saariga Uma, Reginald Lee, Lizeth Herrera, Aiguo Wang

Poster No. 1796
Fretting Corrosion, Corrosion Products and Adverse Tissue Response Associated with CoCr Dual Modular Neck Hip Prostheses
Deborah J Hall, Robert M Urban, Herbert J Cooper, Jennifer L Wright, Erica L Dahlmeier, Joshua J Jacobs

Poster No. 1797
Does Visual Inspection of the Taper Head / Stem Junctions in Metal-on-Metal Hips Accurately Characterize the Corrosion and Wear?
Richard J Underwood, Daniel MacDonald, Genymphas Higgs, Judd Day, Ryan L Siskey, Steven M Kurtz

Poster No. 1798
Modern Taper and Trunnion Designs May Increase Taper Fretting Wear in THA Systems
Finn E Donaldson, James Coburn, Karen L Siegel

Poster No. 1799
Analysis of Taper-Trunnion Articulation in Retrieved Metal on Metal Total Hip Replacements
Nader Nassif, Danyal H Nawabi, Kirsten Stoner, Timothy Wright, Douglas Padgett

Poster No. 1800
Mechanical Disassembly and Taper Damage Assessment of Retrieved Femoral Stems with Modular Necks
Riley M Csernica, Melinda K Harman, Massimiliano Baleani, Gianluca Tozzi, Paolo Erani, Susanna Stea, Aldo Toni

Poster No. 1801
Methodology and Validation of Taper Wear Measurements in Hip Arthroplasty Retrievals
Jay M Vincelli, Evan M Carlson, John H Currier, Douglas W Van Citters, John P Collier

Poster No. 1802
Relevant Method of Recreating 3rd Body Damage in TKA
Rebecca Sjostrom, Jason A Longaray, Lizeth Herrera, Aaron Essner, Bennie Lindeque

Poster No. 1803
Comparison of TKA Kinematics Between Cruciate Retaining Insert and Condylar Stabilized Insert
Norimasa Shimizu, Tetsuya Tomita, Shantanu Patil, Takaharu Yamazaki, Masahiro Kurita, Darryl D’Lima, Kazuomi Sugamoto

Poster No. 1804
How Does 3rd Body Debris Affect Polyethylene Wear in TKR?
Jason A Longaray, Lizeth Herrera, Aaron Essner

Poster No. 1805
Recreating Third Body Damage on RP Knee Inserts
Amber M Metcalfe, Matthew R Dressler, Catherine Hardaker

Poster No. 1806
A Grafted-Vitamin E Polyethylene: Wear Improvement in Knee Applications
Kimberly Mimnaugh, Alicia Rufner

Poster No. 1807
Influence of Kinematic and Setup Conditions on the Wear of Three Total Knee Replacement Bearings
Claire Brockett, Louise Jennings, John Fisher

Poster No. 1808
Retrieval Analysis of the Mobile Meniscal Polyethylene Insert of the Oxford® Partial Knee Arthroplasty
Marcella Elpers, Stephen Kayiaros, Timothy Wright, Geoffrey Westrich

Poster No. 1809
Oxidized Zirconium vs. Cobalt-Chromium TKA: Surface Roughness of Retrieved Femoral Components
Marcella Elpers, Thomas Heyse, Timothy Wright, Steven Haas

Poster No. 1810
Do Retrieved PS Tibial Inserts Accumulate Backside Damage at a Higher Rate than CR Inserts?
Kasisin Klunklin, Marcel E Roy, Leo A Whiteside

Poster No. 1811
Wear Behavior of Ceramic-on-Ceramic Pairings Under Simplified Knee Joint Conditions
Tomas Correa, Berna Richter, Anke Turger, Sven Ostermeier, Berend Denkena, Christof Hurschler
**Poster No. 1812**
The Effect of Alignment on Polyethylene Wear in Unicompartment Knee Arthroplasty
Aaron Essner, Larissa A Korduba-Rodriguez, Clint B Blackwood, Thomas M Coon

**Poster No. 1813**
Biomimetic Hydration Lubrication With Various Polyelectrolyte Layers on Orthopedic Polymeric Bearing Materials
Masayuki Kiyomoto, Toru Moro, Kenichi Saiga, Shihori Yamane, Yoshiro Takatori, Kazuhiko Ishihara

**Poster No. 1814**
Linear Wear Rates of Laser Sintered Metals
Brent S Mitchell, Dale Swarts

**Poster No. 1815**
Predicting Wear of UHMWPE: Wear is Directly Related to the Curvature of Articular Motion
Matthew R Dressler, Elizabeth Hippensteel, Michelle Ross, Catherine Hardaker

**Poster No. 1816**
Comparative Evaluation of Highly Crosslinked UHMWPE by an Universal Performance Index
Dehchuan Sun, Steve Lin, David Brooks, Mark Allen, Ruey Tsay, Anuj Bellare, Paul Higham

**Poster No. 1817**
Can Pin-on-Disk Testing Be Used to Assess the Wear Performance of Retrieved UHMWPE Liners?
Daniel MacDonald, Doruk Baykal, Sevi Kocagoz, Mariya Tohfafarosh, Steven M Kurtz

**Poster No. 1818**
The Initial Concentration of Vitamin E in Irradiated UHMWPE Affects Vitamin E Grafting
Andrew Neils, Ebru Oral, Orhun K Muratoglu

**Poster No. 1819**
Oxidation Resistant Peroxide Crosslinked UHMWPE
Rizwan Gul, Ebru Oral, Orhun K Muratoglu

**Poster No. 1820**
Impact Strength Correlates with Fatigue Strength of Irradiated Vitamin E/UHMWPE Blends
Jerel Ward, Brinda Doshi, Ebru Oral, Orhun K Muratoglu

**Poster No. 1821**
Oxidation Induced by Compressive Cyclic Loading of Conventional UHMWPE
Zachary Konsin, Keith Wannomae, Orhun K Muratoglu

**Poster No. 1822**
Optimized Wear Resistance and Toughness of Vitamin E blended, High Temperature Melted and Radiation Cross-linked UHMWPE
Brinda Doshi, Ebru Oral, Orhun K Muratoglu

**Poster No. 1823**
Diffusion of Vitamin E in Radiation Cross-linked UHMWPE Using Homogenization Under Pressure
Brinda Doshi, Ebru Oral, Orhun K Muratoglu

**Poster No. 1824**
Vitamin E Grafted in UHMWPE is Effective Against Thermo-Oxidation
Ebru Oral, Maria J Martinez-Morlanes, Orhun K Muratoglu, José Antonio Puértolas

**Poster No. 1825**
In-Vivo Biological Response to Particles from Electron Beam Irradiation Crosslinked Vitamin E-Grafted UHMWPE
Oludele Popoola, Satish Degala, Alicia Rufner, David Miller, James C Fryman

**Poster No. 1826**
The Effect of Vitamin E Content on the Tensile Properties of Irradiated Vitamin-E-blended UHMWPE
Christine Stamer, Jeffrey Halperin, Andrew George, Anuj Bellare

**Poster No. 1827**
Identification of Oxidized Regions in Retrieved, Highly Crosslinked UHMWPE Bearings Using Xylene Etching
Steven D Reinitz, Sara N Heard, Meagan E Tibbo, Evan M Carlson, Barbara H Currier, John P Collier

**Poster No. 1828**
Significance of Total Pressure Versus Oxygen Partial Pressure in Accelerated Aging of UHMWPE
Steven D Reinitz, Dermott J McHugh, Evan M Carlson, John P Collier

**Poster No. 1829**
Thickness Dependence of Small Punch Test for Thin Specimens
Steven D Reinitz, Katherine J Franklin, Evan M Carlson, Tanille J Paniogue, Douglas W Van Citters

**Poster No. 1830**
Irreversible Grafting of Vitamin E in UHMWPE via E-beam Irradiation
Norman Stark, Ming Guo, Alicia Rufner

**Poster No. 1831**
Wear Rate and Crosslink Density Relationship in Highly Crosslinked Vitamin E Blended UHMWPE
Dirk L Pletcher, Alicia Rufner

**Poster No. 1832**
Expression of Toll-Like Receptors (Tlrs) and Cathepsin K in Periprosthetic Aseptic Osteolysis of Total Hip Arthroplasty
Yasunobu Tamaki, Yuya Takakubo, Tomoyuki Hiyarima, Yasushi Naganuma, Kan Sasaki, Stuart B Goodman, Yrjö T Konttinen, Michiaki Takagi

**Poster No. 1833**
Irak2 Maintained Increased Cellular Reactivity of Macrophages After Phagocytosis Lipoteichoic Acid-Coated Titanium Particles
Yasushi Naganuma, Tomoyuki Hiyarima, Yasunobu Tamaki, Yuya Takakubo, Kan Sasaki, Michiaki Takagi
Poster No. 1834
Titanium Particles-Challenged Osteoblasts Promote Osteoclastogenesis and Osteolysis in a Murine Model of Periprosthetic Osteolysis
Shang-You Yang, Yunpeng Jiang, Tanghong Jia, Jianghao Jiang, Paul Wooley

Poster No. 1835
Expression Levels of Angiogenic Factors are Elevated in Myeloid and Mesenchymal Cells and in Calvarial Sections Following Treatment With PMMA Particles
Yousef Abu-Amer, Ryan Tomlinson, Gaurav Swarnkar, Matt Silva, John C F Clohisy

Poster No. 1836
Targeting Plcγ2 SH2 Domain Protects from Inflammation and Osteolysis in a Murine Model of Aseptic Implant Loosening
Roberta Faccio, Yousef Abu-Amer, Kailhua Zhang, Corinne Decker

Poster No. 1837
Determination of Osteolytic Response to Vitamin E-Diffused UHMWPE Wear Particles Using Micro-CT in a Murine Model
David Bichara, Erik Malchau, Nanna Sillesten, Orhun K Muratoglu

Poster No. 1838
Macromolecular Prodrug for Prevention of Particle-induced Osteolysis in a Murine Knee Prosthesis Failure Model
Ke Ren, Anand Dusad, Yijia Zhang, P. Edward Purdue, Edward V. Fehringer, Steven R. Goldring, Dong Wang

PS2 ARTHROPLASTY: CLINICAL OUTCOMES RESEARCH

Poster No. 1839
Assessing Validity and Improving Sensitivity of the Risk Assessment and Prediction Tool in Total Hip and Knee Arthroplasty
Viktor J Hansen, Marc A Bragdon, Pamela Tobichuk, Lauren M Lebrun, Robert P Dorman, Janet M Dorrwachter, Charles Bragdon, Henrik Malchau, Andrew A Freiberg

Poster No. 1840
Greater Musculoskeletal Pain in TKR and THR Patients Correlates with Poorer Function in a National Consortium
David Ayers, Leslie Harrold, Wenjun Li, Benjamin Snyder, Jeroan Allison, Courtland Lewis, Philip Noble, Regis O’Keefe, Vincent Pellegrini, Patricia Franklin

Poster No. 1841
Differences Between Women and Men Undergoing TKR and THR in a National Research Consortium
David Ayers, Patricia Franklin, Leslie Harrold, Courtland Lewis, Benjamin Snyder, Milagros Rosal, Sharina Person

Poster No. 1842
Clinical Profile and Disability Levels of Younger vs. Older TKR and THR Patients: Results from a National Research Consortium
David Ayers, Leslie Harrold, Benjamin Snyder, Sharina Person, Patricia Franklin

Poster No. 1843
Pre-Operative Emotional Health Affects Post-Operative Patient Function But Not Patient Satisfaction Following Primary Total Hip Arthroplasty
Benjamin Snyder, Wenyun Yang, Anthony Porter, Patricia Franklin, David C Ayers

Poster No. 1844
A System for Remote Monitoring and Activity Recognition After Knee Arthroplasty
Peter R Cavanagh, Molly D Glauberman, Paul A Manner, Karl T Manner, Elizabeth A Peterson, Murray E Maitland, Vi D Nguyen, Alex Bykov

Poster No. 1845
Early Follow-Up of a Long-term Registry-Based Multicenter Total Hip Replacement Outcome Study: Vitamin E Doped Polyethylene Liner and Porous-Titanium Coated Acetabular Shells
James I Huddleston, Meridith E Greene, Audrey K Nebergall, Young-Min Kwon, Charles Bragdon, Peter Gebuhr, Eduardo Garcia-Cimbrelo, Henrik Malchau

Poster No. 1846
Antibiotic Pre-Exposure Reduces the Ability to Detect Heat Production of Bacteria in Biofilm
Christen Ravn, Ulrika Furustrand Taffin, Bertrand Betriséy, Søren Overgaard, Andrej Trampuz

Poster No. 1847
Disparity in Access to Care and Pre-Operative Patient Characteristics Between Insurance Type in Joint Arthroplasty
Christopher Martin, John Callaghan, Steve Liu, Yubo Gao, Richard Johnston

PS2 ARTHROPLASTY: IMPLANT FIXATION

Poster No. 1848
Comparison of the United States and International Ongrowth Surface of a Monoblock Acetabular Design: Characterizing Ongrowth Surfaces Through Interferometry
Jay M Vincelli, Ivan Tomek, Evan M Carlson, Douglas W Van Citters

Poster No. 1849
Does a Cobalt-Chrome Locking Wire Affect Metal Ion Release when Mating a Tibial Insert with a Titanium Tibial Tray?
Jason A Longaray, Lizeth Herrera, Matthew Poggie, Aaron Essner

Poster No. 1850
A Novel Technique for Three Dimensional Analysis of Bone Contact Area of Various Tapered Wedge Hip Designs
Thies Wuestemann, Elizabeth Hyde, Peter Sharkey

Poster No. 1851
Adhesion of Plasma-Sprayed Commercially Pure Ti to Mg-PSZ Ceramic Substrates Without Grit-Blasting
David S Tilden, Marcel E Roy, Leo A Whiteside

Poster No. 1852
A Review of Current Fixation Usage and Registry Outcomes in Total Hip Arthroplasty: The uncemented Paradox
Nanna H Sillesten, Erik Malchau, Anders Troelsen, Henrik Malchau
Poster No. 1853
Assessment of Bone Implant Contact Using High Resolution Micro-Computed Tomography
Rachna Parwani, Amarjit S Virdi, D. Rick Sumner

Poster No. 1854
Fast Powder Sintering a Technological Tool with High Potential for Joint Prostheses Development
Francesco Bucciotti, Luca Facchini, Eleonora Preve, Pierfrancesco Robotti

PS2 ARTHROPLASTY: OTHER

Poster No. 1855
Application of an Image-Stitching Technique for the Examination of Retrieved Implant Components
Yechiel Mor, Daniel S Choi, Charles Carrier, Darren Lebl, Timothy Wright

Poster No. 1856
The Influence of Gender on Walking Mechanics Following Total Ankle Replacement
Robin M Queen, Robert J Butler, Samuel B Adams, Mark E Easley, James K DeOrio, James A Nunley

Poster No. 1857
Analysis of Scratching Damage on Cobalt Chrome Humeral Head Retrievals Using 3D Profilometry
Farzana Ansari, Erin Beitel, Amelia Swan, Steve B Gunther, Tom R Norris, Mike Ries, Lisa Pruitt

Poster No. 1858
Evaluation of Intra-Operative Contact Forces Experienced on Trialing Components During Reverse Shoulder Arthroplasty
Laura Scholl, Andrew Nelson, Gregg Schmidig, Michael Mcgovern, Mayur Thakore

Poster No. 1859
Comparison of Population-Based and Patient-Specific Radial Head Implants Using Surface Matching
Simon R Deluce, Hannah Shannon, Emily A Lalone, Louis M Ferreira, Graham J King, James A Johnson

Poster No. 1860
The Use of Neck Height Gauge with the Intramedullary Caliper for Accurate Positioning of the Femoral Component in Total Hip Arthroplasty
Tetsuro Nakamura, Toshihiko Hara, Satoshi Ikemura

Poster No. 1861
Biomechanical Differences Between Bipolar and Monopolar Radial Head Following Radial Head Arthroplasty
Loren Latta, Prasad Sawardeker, Winston Elliott, Check Kam, Edward Milne, Elizabeth Ouellette

Poster No. 1862
The Effect of the Prosthetic Humeral Head Shape on Glenohumeral Joint Kinematics in a Conforming and Non-Conforming Glenoid Component
Bong Jae Jun, Joseph P Iannotti, Ryan Quigley, Sang Jin Shin, Michelle H McGarry, Thay Q Lee

Poster No. 1863
Development of a Novel Four-Dimensional Pre-Operative Simulation System for Elbow and Forearm Using an Anatomical Rotation Axis
Michiro Yamamoto, Yukimi Murakami, Masaki Ota, Masahiro Tatebe, Takanobu Muraki, Hitoshi Hirata

PS2 ARTHROPLASTY: FINITE ELEMENT ANALYSIS

Poster No. 1864
Treatment of Tibial Bone Loss in Revision Total Knee Arthroplasty - A Finite Element Analysis
Yi Yan Qiu, Chun Hoi Yan, William Weijia Lu, Kwong Yuen Chiu

Poster No. 1865
The Anterior Coverage of the Femoral Component in Total Knee Arthroplasty
Takahiro Noguchi, Makoto Kondo, Kazuhide Tomari, Yasuo Higuma

Poster No. 1866
A Lower Extremity Model for Muscle-Driven Simulation of Activity using Explicit Finite Element Modeling
Kevin Shelburne, Clare K Fitzpatrick, Bradley Davidson, Peter J Laz, Cory Christiansen, Jennifer Stevens-Lapsley, Paul Rullkoetter

Poster No. 1867
Morphologic Factors Responsible for Elevated Wear from Bearing-Foreign Material Deposition in Total Hip Arthroplasty

Poster No. 1868
Effects of Design Modifications of Zweymuller Type Stem on the Femur
Hiroyuki Ike, Yutaka Inaba, Naomi Kobayashi, Yasuhide Hirata, Yohei Yukizawa, Masamitsu Tomioka, So Kubota, Yurika Ata, Tomoyuki Saito

Poster No. 1869
Possible Failure Due to Wear at the Trunnion Interface in Large Diameter Metal-on-Metal Total Hips: A Finite Element Analysis
Jacob Elkins, John Callaghan, Thomas D Brown

PS2 SHOULDER AND ELBOW

Poster No. 1870
Accuracy and Reliability of Postoperative Radiographic Measurements of Glenoid Anatomy and Relationships in Patients with Total Shoulder Arthroplasty
Jason C Ho, Ari Youderian, Iyooh U Davidson, Jason Bryan, Joseph P Iannotti

Poster No. 1871
Development and Validation of a New Method of Three-Dimensional Assessment of Glenoid and Humeral Component Position After Total Shoulder Arthroplasty
Joseph P Iannotti, Eric T Ricchetti, Eric Rodriguez, Jason Bryan
Poster No. 1872
Determination of Humeral Head Size for Anatomic Shoulder Replacement in Glenohumeral Osteoarthritis
Ari Youderian, Eric Ricchetti, Meghan Drews, Joseph P Iannotti

Poster No. 1873
Post-operative 3-Dimensional Computed Tomography Analysis After Anatomic Shoulder Replacement
Ari Youderian, Eric Ricchetti, Iyoosh Davidson, Eric Rodriguez, Jason Bryan, Joseph P Iannotti

Poster No. 1874
Comparison of Reverse Total Shoulder Arthroplasty Biomechanics Using a Medialized or Lateralized Center of Rotation
Heath Henninger, Robert Burks, Robert Tashjian

Poster No. 1875
Correlation of Reverse Shoulder Implant Positioning with Scapular Notching and Bone Spurs, Minimum Follow-up of 2 years
Christopher P Roche, Yann Marczuk, Thomas Wright, Pierre-Henri Flurin, Sean Grey, Richard Jones, Howard Routman, Gregory Gilot, Joseph Zuckerman

Poster No. 1876
Biomechanical Analysis of 3 Commercially Available Reverse Shoulder Designs in a Normal and Medially Eroded Scapula
Christopher P Roche, Phong Diep, Matthew A Hamilton, Thomas Wright, Pierre-Henri Flurin, Joseph Zuckerman, Howard Routman

Poster No. 1877
Impact of Scapular Notching on Reverse Shoulder Glenoid Fixation
Christopher P Roche, Nick Stroud, Brian Martin, Cindy Steiler, Thomas Wright, Pierre-Henri Flurin, Joseph Zuckerman

Poster No. 1878
Computer Assessment of Scapula Cortical and Cancellous Bone Removal When Correcting a Posterior Defect Using 3 Different Glenoid Prosthesis Designs
Christopher P Roche, Phong Diep, Alex Greene, Pierre-Henri Flurin, Sean Grey, Thomas Wright, Joseph Zuckerman

Poster No. 1879
The Effect of Reverse Shoulder Design on the Posterior Rotator Moment Arms During External Rotation
Matthew A Hamilton, Phong Diep, Christopher P Roche, Pierre-Henri Flurin, Thomas Wright, Joseph Zuckerman, Howard Routman

Poster No. 1880
A Comparison of Glenoid Fixation Using Two Different Reverse Shoulder Designs with an Equivalent Center of Rotation in a Low and High Density Bone Substitute
Nick Stroud, Brian Martin, Cindy Steiler, Pierre-Henri Flurin, Thomas Wright, Joseph Zuckerman, Christopher P Roche

Poster No. 1881
Real-Time Kinetics of Native Shoulders and Total Shoulder Arthroplasties
Bradley A Meccia, Edwin Spencer, Sumesh M Zingde, Adrija Sharma, Richard Komistek

Poster No. 1882
The Effect of Rasing Versus Reaming on Prosthetic Radial Head Implant Stability
Dave R Shukla, Decheng Shao, James S Fitzsimmons, Kai-Nan An, Shawn W O’Driscoll

Poster No. 1883
Effect of a Radial Neck Defect on the Occurrence of Iatrogenic Fractures During Radial Head Replacement
Decheng Shao, James S Fitzsimmons, Dave R Shukla, Kai-Nan An, Shawn W O’Driscoll

Poster No. 1884
Limitations in Implant Sizing Can Cause High Contact Stresses in Radial Head Arthroplasty
Sunghwan Kim, Mark Carl Miller

Poster No. 1885
Asymmetric Tensioning of the Rotator Cuff by Changing Humeral Retroversion in Reverse Shoulder Arthroplasty
Christopher P Roche, Phong Diep, Matthew A Hamilton, Thomas Wright, Pierre-Henri Flurin, Joseph Zuckerman, Howard Routman

Poster No. 1886
Comparison of Two Glenoid Component Cementing Techniques Using Real-time Tracking of Rocking-Horse Loosening
Kory Reed, Nick Rotella, Joe Buran, Craig Howard, Philip Stegemann, Mark Ehrensberger

Poster No. 1887
Finite Element Contact Analysis of Axisymmetric and Non-Axisymmetric Radial Head Hemiarthroplasty
G Daniel G Langohr, Ryan Willing, John B Medley, Graham J King, James A Johnson

Poster No. 1888
Radial Head Implant Shape Does Not Affect Radiocapitellar Kinematics During In-Vitro Forearm Rotation
Hannah Shannon, Simon R Deluce, Joshua W Giles, Jim Johnson, Graham King

Poster No. 1889
Dynamic Loosening Evaluation of Prosthetic Glenoids
Gregg Schmidig, Mayur Thakore, Laura Scholl, John LaBarbera, Jeff Sander

Poster No. 1890
Effects of Glenosphere Positioning on Impingement-Free Internal and External Rotation Following Reverse Total Shoulder Arthroplasty
Xinning Li, Zakary Knutson, Daniel Choi, Daniel Lobatto, Joseph Lipman, Edward Craig, Russell F Warren, Lawrence Gulotta

Poster No. 1891
An Instrumented Trial Prosthesis for Intraoperative Joint Force Measurements During Reverse Total Shoulder Arthroplasty
Masaru Higa, Aimee M Struk, Chris Roche, Kevin W Farmer, Thomas Wright, Scott A Banks
Lesser Tuberosity Osteotomy Repair Configuration Affects Time Zero Stability After Total Shoulder Arthroplasty
Brandon Brown, Claude Jarret, Martin DeGravelle, Prasad Sawardeker, Dave Weir, Carmen Latona, Mark Carl Miller, Christopher Schmidt

Scapulohumeral Rhythm of Reverse Shoulder Arthroplasties During Unweighted Shoulder Abduction
David R Walker, Aimee Struk, Thomas Wright, Scott A Banks

The Effect of Superior Offset Humeral Components on Shoulder Muscle Moment Arms and Joint Reaction Force for Reverse Total Shoulder Arthroplasty
Brian R Onstot, Andrew M Jaczynski, B. C Dorenkamp, Marc C Jacofsky, James C Otis, Matthew L Hansen

Histopathologic Retrieval Analysis of Clinically Failed Regenerex® Glenoid Peg Components
Anthony Catanzano, Marcella Elpers, Xinning Li, Timothy Wright, Lawrence Gulotta

The Effect of Shoulder Instability on Dynamic In-Vivo Glenohumeral Joint Motion: Preliminary Findings
Cathryn Peltz, Jeffrey Haladik, Michael McDonald, Nicole Ramo, Vasilios Moutzourois, Michael Bey

Three-Dimensional Kinetic and Kinematic Analysis of Throwing Motion at Maximum Shoulder External Rotation in Pitchers
Yohei Takagi, Shinichi Yoshiya, Katsuya Nobuhara, Juichi Tanaka, Hiroaki Fujioka, Takanori Oi

Three-Dimensional Kinematic Analysis of Throwing Motion Focusing on the Pelvis Rotation at Foot Plant
Takanori Oi, Yohei Takagi, Hiroshi Tanaka, Hiroaki Inui, Hiroyuki Fujioka, Jyuichi Tanaka, Katsuya Nobuhara, Shinichi Yoshiya

In Vivo Kinematics of the Throwing Shoulder During Simulated Cocking Motion Between Symptomatic and Asymptomatic Baseball Players
Hiroki Yamauchi, Toru Yoshioka, Hitotetsu Hamada, Masayuki Saka, Kazuyoshi Gamada

Biomechanical Characteristics of Osteochondral Defects of the Humeral Capitellum
Teruhisa Mihata, Ryan Quigley, Grant Robicheaux, Michelle H McGarry, Masashi Neo, Thay Q Lee

The Relationships Between Posterior Shoulder Tightness and Humeral Head Position in Collegiate Baseball Players: A Pilot Study Using 3D-Mri Technique
Masayuki Saka, Kazuyoshi Gamada

The Role of Deltoid Muscle in Basic and Pitching Shoulder Motions in Cadaveric Studies
Claudio Rosso, Andreas M Mueller, Brett McKenzie, Vahid Entezari, Andrea Cereatti, Ugo Della Croce, Arun Ramappa, Joseph DeAngelis, Ara Nazarian

Glenohumeral Relationship in Maximum Elevation
Hiroaki Inui, Katsuya Nobuhara

The Brstow-Latarjet: Why These Techniques Should Not Be Considered Synonymous
Joshua W Giles, Ryan Degen, Jasmine Desjardins, James A Johnson, George S Athwal

The Effect of the Remplissage Procedure on Shoulder Range of Motion: A Cadaveric Study
Rei Omi, Alexander Hooke, Kristin Zhao, Tomoya Matshushi, Akira Goto, Nobuyuki Yamamoto, John Sperling, Scott Steinmann, Eiji Ito, Kai-Nan An

3D Planning Software and Transfer Device Improves Glenoid Guide Pin Positioning
Joseph P Iannotti, Justin Baker, Eric Rodriguez, John Brems, Eric Ricchetti, Mena Mesiha, Jason Bryan

Glenoid Wear and Humeral Head Migration Alter the Mechanical Axis of the Glenohumeral Joint
Heinz R Hoenecke, Timothy Wimmer, Cesar Flores-Hernandez, Alex Placek, Darryl D’Lima

The Biomechanical Effects of the Remplissage Technique in Engaging Hill-Sachs Lesions
Nathanael Heckmann, Evan Argintar, Lawrence Wang, James Tibone, Thay Q Lee

Automated Analysis of 3D Glenoid Shape and Orientation
Kang Li, Virak Tan, Balazs Galdi, Soheil Ghafurian

Restoration of Normal Radius of Curvature when Performing an Osteochondral Allograft to the Glenoid Surface: An Anatomic Computed Tomographic Comparison
Daniel Rios, Kyle Jansson, Frank Martetschläger, Robert E Boykin, Peter Millett, Coen A Wijdicks

MicroCT Evaluation of Trabecular Bone Architecture and Characteristics in the Different Regions of the Glenoid
Xinning Li, Phillip Williams, Emily J Curry, Daniel S Choi, Edward Craig, Russell F Warren, Lawrence V Gulotta, Timothy Wright

Advantages of a 3D Objective Measure of Glenoid Version and Humerus Subluxation
Alexandre Terrier, Xabier Larrea, Julien Ston, Dominique Pioletti, Alain Farrow
Poster No. 1913
A Psychometric Evaluation of Patient-Reported Outcome Measures for the Shoulder with an Emphasis on Rotator Cuff Disease
Joel Gagnier, John Grant, Samuel Rosenbaum, Bruce Miller

Poster No. 1914
Distal Humerus Hemiarthroplasty: The Effect of Implant Sizing on Elbow Joint Kinematics
Sagar J Desai, George Athwal, Louis Ferreira, James Johnson, Mark Welsh, Emily Lalonde, Graham King

Poster No. 1915
Measuring the Effect of Surgical Repair on Cartilage Health in the Wrist After Injury Using T2 Relaxation Time
Isaac D Chappell, Phil Lee, Terence McIlff, E Bruce Toby, Kenneth J Fischer

Poster No. 1916
Primary Prosthetic Replacement of the Distal Radio-Ulnar Joint (DRUJ) in Rheumatoid Arthritis Using the First Choice Hemi DRUJ Resurfacing Implant
Magnus Tagil, Philippe Kopylov

Poster No. 1917
Effects of Radial Shortening Deformity on Distal Radioulnar Joint Stability: A Biomechanical Study
Takeshi Saito, Yoshiyasu Nakamura, Takeo Nagura, Masao Nishiwaki, Kazuki Sato, Yoshiaki Toyama

Poster No. 1918
Modeling Thumb Carpometacarpal (CMC) Beak Ligament Elongation In-vivo
Eni Halilaj, Michael J Rainbow, James C Tarrant, Joel B Schwartz, Amy L Ladd, Arnold-Peter C Weiss, Douglas C Moore, Joseph J Crisco

Poster No. 1919
The Incidence of Scapholunate, Lunotriquetral, and Triangular Fibrocartilage Complex Tears: A Cadaveric Investigation
Razvan Nicolescu, Elizabeth A Ouellette, Check Kam, Prasad Sawardeker, Paul Clifford, Loren Latta

Poster No. 1920
Does SL Ligament Injury Adversely Alter In Vivo Wrist Joint Mechanics? An MRI-based Modeling Study
Joshua E Johnson, Phil Lee, Terence E McIlff, Bruce Toby, Kenneth J Fischer

Poster No. 1921
The Incidence of Scapholunate and Lunotriquetral Ligament Tears in Distal Radius Fractures: The Effect of Wrist Position and Forearm Rotation During a Fall onto an Outstretched Hand
Razvan Nicolescu, Elizabeth Ouellette, Check Kam, Prasad Sawardeker, Paul Clifford, Loren Latta

Poster No. 1922
Superior In-Vitro Motion and Stability with Interference Screw Index MP Joint Radial Collateral Ligament Reconstruction
Christopher J Dy, Scott M Tucker, Krystle A Hearns, Michelle G Carlson

Poster No. 1923
In Vivo Biomechanics of Trapeziometacarpal Joint: Implications for Etiology of Basal Joint Osteoarthritis
Qi Zheng, Phil Lee, Terence McIlff, Bruce Toby, Kenneth Fischer

Poster No. 1924
Morphological Difference Among Finger Metacarpophalangeal Joints
Michihiro Takai, Mitsuhioko Takahashi, Ichiro Tonogai, Natsuo Yasui

Poster No. 1925
Biomechanical Properties of Bicortical Screws Versus Unicortical Far Cortex Abutting Screws for Locking Plate Fixation in a Radius Comminuted Fracture Model
Steven J Overturf, Randal P Morris, Zbigniew Gugala, Ronald W Lindsey

Poster No. 1926
Biomechanical Comparison of Bicortical Nonlocking Plate Versus Unicortical Polymer Locking Plate Fixation in the Treatment of Metacarpal Shaft Fractures
Colin Mudrick, John R Owen, Ashton H Goldman, Jennifer S Wayne, Jonathan E Isaacs

Poster No. 1927
Efficacy of a Mesenchymal Stem Cell Loaded Surgical Mesh in the Healing of Rat Achilles Tendon
Lew Schon, Nicholas Gill, Margaret Thorpe, Joel Davis, Joshua Nadaud, Jooyoung Kim, Zijun Zhang

Poster No. 1928
Older Patients Exhibit Increased Tendon Stiffness Asymmetry After Unilateral Achilles Tendon Rupture
Alison N Agres, Sebastian Manegold, Tobias Gehlen, William R Taylor, Adamantios Arampatzis, Georg N Duda

Poster No. 1929
Pre-Operative and Post-Operative Plantar Pressures in Stage IIb Posterior Tibial Tendon Insufficiency
Erika A Matheis, Edward M Spratley, Robert S Adelaar, Jennifer S Wayne

Poster No. 1930
The Effects of Misalignment on Standard Radiographic Measures of the Foot
Patrick D Willauer, Bruce J Sangeorzan, Eric C Whittaker, William R Ledoux

Poster No. 1931
The Use of a 6-DOF Robotic System for Biomechanical Tests of Ankle Joints
Satoshi Yamakawa, Takuma Kobayashi, Kei Kimura, Hidenori Otsubo, Kota Watanabe, Daisuke Suzuki, Mineko Fujimiya, Yoshihiko Yamashita, Hiromichi Fujie

Poster No. 1932
Biomechanical Performance of a New Device for Medial Malleolar Fractures
Tejas Patel, John R Owen, William A Byrd, Ryan B Graves, Ruchi D. Chande, Varatharaj Mounasamy, Robert S Adelaar, Jennifer S Wayne
Poster No. 1933
Using Decision Analysis to Assess Comparative Clinical Efficacy of Ankle Fracture Treatment Options
James D Michelson

Poster No. 1934
A Comparison of Reamer-Irrigator-Aspiration Bone Graft and Iliac Crest Bone Graft in Tibiotalar Fusion
Scott R Nodzo, Nathan Kaplan, Lars Qvick, Christopher Ritter

Poster No. 1935
The Effects of Sub-talar Joints Fusion on Biomechanics of Tibio-talar Joint
Ahmad Chitsazan, Gholamreza Rouhi, Said Pezeshki, Mostafa Abbasi

Poster No. 1936
The Effect of Walking Surface Inclination on Plantar Pressure Distribution in Patients with an Ankle Arthrodesis
Timothy E Cooney, Stephanie Galey, Dustin Bruening, Gregory Daut, Matthew Ray

Poster No. 1937
Computational Modeling to Represent Shoe Behavior in Multibody Movement Simulations
Frances Zhu, Trent M Guess, Mohammad Kia

Poster No. 1938
Plantar Pressure Relief under Metatarsal Heads: Therapeutic Insole Design using Finite Element Analysis
Wen-Ming Chen, Peter V Lee

Poster No. 1939
Stereological Quantification of the Plantar Foot Pad in Young Versus Aging Rats
Jeremy Molligan, Lew Schon, Zijun Zhang

Poster No. 1940
Declines in Lower Extremity Amputation in the U.S. Medicare Population, 2000-2010
Daniel A Belatti, Phinit Phisitkul

Poster No. 1941
Peripheral Cytokine Markers in a Novel Rat Periprosthetic Shoulder Infection Model
Scott R Nodzo, Paul R Knight, Thomas Russo, Bruce A Davidson, Ruth A Olson, Jadwiga Helinski, Ravi Alluri, Thomas R Duquin

Poster No. 1942
Clinical Characteristics and Diagnostic Predictors of Multifocal Spine Infections
Angelique Parry, Jonathan Wang, Jeremi M Leasure, Dimitriy Kondrashov, Priya Prasad

Poster No. 1943
Clinical Presentations of Hemolytic and Non-Hemolytic strains of Propionibacterium Acnes in Orthopedic Shoulder Infections
Scott R Nodzo, Donald W Hohman, John Crane, Thomas R Duquin

Poster No. 1944
Propionibacterium Acnes (P. Acnes) Diagnosis and Treatment
Donald W Hohman, Scott Nodzo, Thomas R Duquin, John Crane, Philip Stegemann

Poster No. 1945
Establishment of a Novel Bacteria-Resistant Coating for Biomedical Polymers
Hiroko Ishihama, Ken Ishii

Poster No. 1946
Response of Staphylococcus Aureus Biofilm to an Applied DC Electric Field
Andrea R Tan, Troy F Langford, Roy K Aaron, J Chloe Bulinski, Clark T Hung

Poster No. 1947
Feasibility of Daptomycin-Loaded Polymethylmethacrylate Bone Cement for Infection Prophylaxis in Joint Arthroplasty Surgery
Chih-Hung Chang, Yuan-Ming Hsu, Chun-Hsing Liao

Poster No. 1948
Synergy of Polymyxin B and Gentamicin Against S. Aureus and P. Aeruginosa
Krista L Niece, Cassandra L Baker, David I Devore

Poster No. 1949
Preventing Infection Around Osseointegrated Amputation Prosthesis Using Hydroxyapatite, Silver and Fibronectin Coatings
Mukai Chimutengwende-Gordon, Catherine Pendegrass, Gordon Blunn

Poster No. 1950
Vancomycin Delivery from Hydroxyapatite Scaffolds Combats Infection and Promotes Bone Regeneration
Teja Guda, Arpan Satsangi, David D Dean, Victor L Sylvia, Daniel S Oh, Jeffrey O Hollinger, Joo L Ong

PS2 TRAUMA

Poster No. 1951
Correlation Between Functional Assessment and Romberg Test in Post-concussion Children
David Verbunker, Xue-Cheng Liu, Kevin Walter

Poster No. 1952
Validation of GAITRite and PROMIS as High-Throughput Physical Function Outcome Measures of ACL Repair
M. Owen Papuga, Michael D Maloney, Edward M Schwarz

Poster No. 1953
Optimizing Half Pin Placement of Mono-lateral External Fixation Frames for Superior Stability
Wei Yang, Tracy Watson, Yanming Zheng, Ramona Soileau, Zane M Hartsell

Poster No. 1954
Orthopedic Injury Risk and Mitigation for Underwater Explosions
Timothy Walilko, Shaun B Jeffs

Poster No. 1955
Early Risk Stratification for Wound Specific Heterotopic Ossification Formation in Combat Casualties
Keith Alferi, Benjamin K Potter, Thomas Davis, Trevor Brown, Eric Elster, Jonathan Forsberg
PS2 CANCER, TUMORS

Poster No. 1956
Osteosarcoma Stem Cell-Targeted Therapy Using Retinal
Xiaodong Mu, Damel Mektepbayeva, Adel Mahjoub,
Johnny Huard, Kurt Weiss

Poster No. 1957
Y-Box Binding Protein-1 Accelerates Tumor Cell Cycle and
Associates With Clinical Prognosis of Osteosarcoma
Yuko Fujiwara-Okada, Yoshihiro Matsumoto, Jyun-ichi Fukushi,
Toshifumi Fujiwara, Keiichirou Iida, Mihoko Hatano,
Yoshinoa Oda, Hisakata Yamada, Yukihide Iwamoto

Poster No. 1958
A Novel Surface Modification on PCL Scaffold for Local Drug
Delivery to Treat Bone Cancer
Muwan Chen, Dang Q Le, Flemming Besenbacher, Jørgen Kjems,
Cody Bünger

Poster No. 1959
Chemosensitizing Effect of Telomerase-specific Oncolytic
Adenovirus for Human Osteosarcomas via Induction of
Apoptosis and Autophagy
Shuhei Osaki, Tsuyoshi Sasaki, Hiroshi Tazawa, Joe Hasei,
Yasuaki Yamakawa, Yuuri Hashimoto, Toshiyuki Kunisada,
Yasu Urata, Toshiyoshi Fujiwara, Toshifumi Ozaki

Poster No. 1960
Oncolytic Adenovirus-Armed P53 Induces Apoptosis
Significantly Through Upregulating Mir93 and 106b in
Human Osteosarcoma Cells
Joe Hasei, Tsuyoshi Sasaki, Hiroshi Tazawa, Shuhei Osaki,
Yasuaki Yamakawa, Toshiyuki Kunisada, Aki Yoshida, Yasuo Urata,
Toshifumi Ozaki, Toshiyoshi Fujiwara

Poster No. 1961
Arsenic Trioxide Prevents Osteosarcoma Growth
by Inhibition of GLI Transcription Via DNA Damage
Accumulation
Shunsuke Nakamura, Takao Setoguchi, Arisa Tsuru,
Satoshi Nagano, Setsuro Komiya

Poster No. 1962
Solid Tumor Xenografts Recapitulate Primary and Metastatic
Growth in Osteosarcoma
Beth K Chaffee, Matthew Allen

Poster No. 1963
AREG Enhances ICAM-1 Expression and Cell Migration
Via EGFR Dependent Signaling Pathway in Human
Osteosarcoma Cells
Ju Fang Liu, Sheng Mou Hou, Chih shin Tang, Chun Han Hou

Poster No. 1964
GSK3 Inhibitor Inhibits Cell Proliferation andInduces
Apoptosis in Human Osteosarcoma Cell Lines
Hideki Nishimura, Toshiaki Hitora, Yoshiki Yamagami,
Masaki Mori, Ryosuke Horie, Tetsuji Yamamoto

Poster No. 1965
Risk Factors for Local Recurrence of Giant Cell Tumors
of Bone - Preoperative Evaluation Using FDG-PET and
Frequency of Ki-67
Shintaro Sugimoto, Kosuke Matsuo, Takayuki Kamiishi,
Kengo Harigane, Yusuke Kawabata, Yutaka Nezu, Tomoyuki Saito

Poster No. 1966
Giant Cell Tumor of Bone - A Novel In Vivo Model
Shalini Singh, Isabella Mak, Michelle A Ghert

Poster No. 1967
A Three-dimensional Physiological Tumor Construct
for Chemotherapeutic Testing Favors IL-8 as the Main
Angiogenic Driver in Solid Tumors
Pamela H Tan, Thein Than Htike, Su Chin Shia, Siew Lok Toh,
James Goh, Saminathan Suresh Nathan

Poster No. 1968
Microplate Mechanical Measurement System Differentiating
Mechanical Properties of Cells after Epithelial Mesenchymal
Transition at Various Adherence Time
Chiung-Wen Hu, Tsung-Hsien Wu, Ming-Long Yeh

Poster No. 1969
Autophagy Inhibition Enhances Rapamycin-Induced
Apoptosis in Nara-H Cells
Osamu Nakamura, Toshiaki Hitora, Yoshiki Yamagami,
Masaki Mori, Hideki Nishimura, Ryosuke Horie,
Tetsuji Yamamoto

Poster No. 1970
A Novel Murine Model of Post-Radiation Osteonecrosis
Following Simulated Soft-Tissue Sarcoma Resection
Matthew Popa, Travis Burgers, Tessa Grabinski, Daniel Hess,
Matthew Steensma

Poster No. 1971
Regulation of Mitochondrial Number Induces Apoptosis in
Musculoskeletal Malignancies
Yasu Onishi, Teruya Kawamoto, Takeshi Ueha, Hitomi Hara,
Mitsunori Toda, Risa Harada, Masaya Minoda, Masahiro Kurosaka,
Toshihiro Akisue

Poster No. 1972
Cell Migration after Epithelial Mesenchymal Transition on
Various Substrate Stiffness
Tsung-Hsien Wu, Yu-Chih Wang, Chia Hui Li, Ming-Long Yeh

Poster No. 1973
Possible Role of Cadherin-11 in Cell to Cell Adhesion and
Migration of Ewing’s Sarcoma Cells
Mihoko Hatano, Yoshihiro Matsumoto, Jyun-ichi Fukushi,
Keiichirou Iida, Yuko Okada, Akira Nabeshima,
Nobuhiko Yokoyama, Yoshinoa Oda, Yukihide Iwamoto

PS2 DIAGNOSTIC IMAGING

Poster No. 1974
Electroarthrography Provides a Non-Invasive Streaming
Potential-Based Method for Detecting Cartilage
Degeneration in an Equine Model
Adele Changoo, Mohamed A Hoba, Eric Quenneville,
Martin Garon, Karen Gordon, Michael D Buschmann,
Pierre Savard, Mark B Hurtig

Poster No. 1975
The Spatial Pattern of Articular Cartilage
Electromechanical Properties in the Stifle Joint is Similar
in Three Different Species
Sotchead Sim, Gabrielle Picard, Eric Quenneville, Martin Garon,
Michael Buschmann
Poster No. 1976
Age-dependence of the Pattern of Cartilage Electromechanical Properties in the Ovine Stifle Joint
Sotcheadt Sim, Eric Quenneville, Gabrielle Picard, Martin Garon, Michael Buschmann

Poster No. 1977
A Novel Classification System for Subchondral Insufficiency Fractures of the Knee
Fred Nelson, Jeffrey Devitt, Abdulrahman Hamad

Poster No. 1978
Characterization of Perfusion in Subchondral Bone in OA with Multimodality Imaging
Jonathan Dyke, Michael Synan, Douglas Ballon, Roy K Aaron

Poster No. 1979
Accuracy Assessment of 3D Bone Model Reconstructions
Emily A Lalone, Ryan Willing, Hannah Shannon, Graham King, James Johnson

Poster No. 1980
Failure Strength of Human Vertebrae: Prediction Using Subregional Areal Bone Mineral Density from DXA Compared to Subregional Micro-Architecture from Micro-CT
Egon Perilli, Andrew M Briggs, John D Codrington, Susan Kantor, lan H Parkinson, Karen J Reynolds, Nicola L Fazzalari, John D Wark

Poster No. 1981
MicroCT Based Bone Mineral Content Predictions can be Significantly Improved with a Change in Calibration Methods
Derek P Lindsey, David W Wagner, Gary S Beaupre

Poster No. 1982
Clinical Ultrasound Can Measure Dynamic Intervertebral Disc Deformation In-vivo
Kevin S Shiuian, Mingxin Zheng, Daniel M Buckland, Brian D Snyder

Poster No. 1983
Ultrasound Can Measure Dynamic Motion of Cervical Spine Intervertebral Disc
Kevin S Shiuian, Mingxin Zheng, Daniel M Buckland, Brian D Snyder

Poster No. 1984
fMRI Analysis of Cortical Reorganization Following Flexor Carpi Radialis to Abductor Pollicis Brevis Tendon Transfer
Kiran Yemul, Mohamad Chmayssani, James D Lin, Melvin P Rosenwasser, Joy Hirsch

Poster No. 1985
Diffusion-weighted MR nerve imaging of the median nerve at the carpal tunnel
Eiko Yamabe, Toshinori Sakai, Ryo Miyagi, Toshiyasu Nakamura, Hiroshi Yoshioka

Poster No. 1986
Ultrasound Arthroscopy of Human Knee Joint In Vivo
Jukka Liukkonen, Petri Lehenkari, Jukka Hirvasniemi, Antti Joukainen, Simo Saarakkala, Jukka S Jurvelin, Juha Töyräs

Poster No. 1987
The Tunnel View is Important in the Radiographic Detection of Knee Arthritis
Brett A Rebal, Jonathan Lee, Jonathan Kazam, Oladapo Babatunde, David Patrick, William Macaulay

Poster No. 1988
Computational 3D shape analysis of Bone and Hydroxyapatite Scaffolds in a Lapin Model Over Different Time Points
Alan Parish, Karin A. Hing, Graham Davis

Poster No. 1989
Calculation of In-Plane and Through-Plane Image Distortion From Orthopaedic Materials in Magnetic Resonance Images
Matthew F Koff, Parina Shah, Kevin M Koch, Hollis G Potter

Poster No. 1990
Are Traditional Radiographic Methods Accurate Predictors of Pedicle Morphology?
Brandon Clair, Nathaniel R Ordway, Siddharth A Badve, William F Lavelle

Poster No. 1991
Kinematic Analysis of the Rabbit Temporomandibular Joint
Sarah E Henderson, Riddhi Desai, Scott Tashman, Alejandro J Almarza

Poster No. 1992
Significance of Arthroscopic Findings and MRI Imaging of Meniscal Extrusion and Degenerative Cruciate Ligaments
Fred Nelson, Benjamin Novak, Raimond Zvirbulis, Hemanckur Makker

Poster No. 1993
Imaging Biopsy Composition at ACL Reconstruction
Douglas R Pedersen, James A Martin, Daniel R Thedens, Noelle F Klocke, Nathaniel H Roberts, Jessica Goetz, Annunziato Amendola

Poster No. 1994
EMG Tomography System with Multi Surface Electrodes in Forearm
Yasuhiro Nakajima, Satoshi Yoshinari, Masahiro Todoh, Masahide Harada, Shigeru Tadano
2013 EXHIBITORS
Active Life Scientific
460 Ward Drive, Suite E1
Santa Barbara, CA 93111
Phone (805)770-2600
Fax (805)770-2606
www.activelifescientific.com

Active Life Scientific, Inc. develops and markets translational tools that measure the contribution of material properties to whole bone strength. The flagship product, BioDent™, non-destructively measures tissue level material properties of bone in situ. This innovative technology enables scientists to measure bone in situ, both in vivo and ex vivo.

AMTI
176 Waltham
Watertown, MA 02472
Phone (617)926-6700
Fax (617)926-5045
www.amti.biz

AMTI is the world leader in biotribology and true-to-life joint simulation. We offer multipurpose hip, knee, and spine simulators, as well as a single-station joint simulator and a multidirectional, six station, pin-on-disc machine. AMTI recently produced the most lifelike, multi-axis joint simulator on the market to date, VIVO. VIVO handles all previous simulator features with ease while showcasing new capabilities such as a moveable center of rotation, outstanding multi-fiber modeled soft tissue behavior and fully programmable activities models.

AnalyzeDirect, Inc.
7380 W. 161st Street
Overland Park, KS 66085
Phone (913)338-2527
Fax (913)338-2554
www.analyzedirect.com

AnalyzeDirect is a powerful, comprehensive software suite for advanced visualization and analysis of biomedical imaging data. Using Analyze, thousands of researchers worldwide are able to quickly and effectively display, segment, co-register, and measure multi-dimensional imaging data from modalities like MRI, CT, micro-CT, and PET.

Applied Test Systems **NEW**
154 East Brook Lane
Butler, PA 16002
Phone (724)283-1212
Fax (724)283-6570
www.atspa.com

Applied Test Systems is a leading manufacturer of process heating and material testing equipment. ATS manufactures equipment designed for Creep and Tensile Testing, Burst Testing, Sealant Testing, Asphalt Testing, and a variety of Process Heating applications. Our service department is A2LA accredited. You can be assured that ATS equipment will meet your needs and expectations.

Arteriocyte Inc. **NEW**
7100 Euclid Avenue, Suite 150
Cleveland, OH 44102
Phone (216)456-9640
Fax (216)456-9641
www.arteriocyte.com

Arteriocyte is dedicated to continuously developing and commercializing novel medical products for unmet medical needs. With its Magellan product line as well as other products, we strive to do our best to work with you to manage various disease conditions and give a normal happy life back to patients.

ATI Industrial Automation
1031 Goodworth Drive
 Apex, NC 27539
Phone (919)772-0115
Fax (919)772-8259
www.ATI-IA.com

ATI Industrial Automation’s Multi-Axis Force/Torque Sensors measure all components of force and torque (Fx, Fy, Fz, Tx, Ty, and Tz) and are used in a wide variety of applications including; robotic surgery, haptics, rehabilitation, and neurology. Key features include: High overload protection, high-speed output, span temperature compensation, and high signal-to-noise ratio.

Biomomentum Inc.
970 Michelin Street, Suite 200
Laval, Quebec H7L-5C1
Canada
Phone (450)667-2299
www.biomomentum.com

Biomomentum commercializes the Mach-1™, a mechanical tester designed for biomechanical evaluation of soft tissue and materials, the Arthro-BST™, a medical device developed for precise, non-destructive evaluation of cartilage, and the Cytomec Cellerator™, a continuous expansion cell culture system designed to maintain cells at high density while delaying contact inhibition. Biomomentum also provides specialized testing services.

BioScience Writers, LLC **NEW**
8418 Bluegate Street
Houston, TX 77025
Phone (713)516-1424
Fax (713)664-4597
www.biosciencewriters.com

BioScience Writers is an internationally-recognized scientific editing and writing company committed to providing the highest quality work with rapid turnaround and personalized service. Our Ph.D. and M.D. editors provide expert editing in more than 170 fields. We also offer specialized services for clinicians, copyediting and proofreading for journals and publishers, and scientific writing workshops. Visit our booth to learn how we can assist you!

BioSpherix, Ltd.
19 Demott Street
Lacona, NY 13083
Phone (315)387-3414
Fax (315)387-3415
www.biospherix.com

Research: Wide range of hypoxia systems for In Vitro/In Vivo. Advanced features include multiple simultaneous levels, timed and intermittent exposures, uninterruptible hypoxia, dissolved oxygen cell culture, etc.

Cell Therapy: Xvivo System, first and only barrier isolator optimized for cells. Economical and practical alternative to cleanrooms for cGMP cell production.
Bone & Joint Research (BJR)
22 Buckingham Street
London WC2 N 8UY
United Kingdom
Phone +44 (0) 20 7782 0010
Fax +44 (0) 20 7782 0995
www.bjr.boneandjoint.org.uk

Bone & Joint Research is a major new open access journal covering all areas in musculoskeletal science from basic science, bio-engineering, biomechanics, cell studies as well as translational clinical studies that conform to CONSORT or STROBE.

Bose Corporation -
Electroforce Systems Groups
10250 Valley View Road, Suite 113
Eden Prairie, MN 55344
Phone (952)278-3070
Fax (952)278-3071
www.bose-electroforce.com

Bose Corporation’s ElectroForce Systems Group introduces the ElectroForce® 3200-ES Series II test instrument, combining high fidelity performance with more than 160 mm of displacement, for orthopaedic tissue and biomaterials characterization. Our BioDynamic® test instruments advance tissue engineering by providing a novel approach to specimen stimulation and/or characterization. Visit our booth for a demonstration!

Cambridge Polymer Group
56 Roland Street, Suite 310
Boston, MA 02129
Phone (617)629-4400
Fax (617)629-9100
www.campoly.com

Cambridge Polymer Group, Inc. is a contract research organization specializing in materials. We partner with our clients to solve problems utilizing our multidisciplinary research team and full service laboratory. We provide materials, testing and engineering solutions for clients worldwide.

CSM Instruments
197 First Avenue, Suite 120
Needham, MA 02494
Phone (781)444-2250
Fax (781)444-2251
www.csm-instruments.com

CSM Instruments develops, manufactures and commercializes high quality instruments for measuring surface mechanical properties in both research and industrial fields.

- Scratch Testers: Used to measure characteristics such as adhesion of a coating, delamination effects, or cracking in order to optimize coating techniques and determine failure points of the film-substrate system.
- Indentation Testers: Used to determine the hardness and elastic modulus of coatings and surfaces with extremely high precision at the macro-, micro-, and nano-scales to aid in material selection and development.
- Tribometers: Used to measure the frictional coefficient and wear rate between material pairs, as well as perform lifetime analyses.

Additionally, we have a thorough sample testing service and demonstration laboratory in Boston, MA where you can send us your samples for evaluation or take a firsthand look at our instruments.

Dassault Systèmes SIMULIA
166 Valley Street
Providence, RI 02909
Phone (401)276-4400
www.3ds.com

SIMULIA, the Dassault Systèmes brand for Realistic Simulation, delivers a scalable portfolio of applications including Abaqus for unified Finite Element Analysis, Isight for design exploration and optimization, and SLM for managing simulation data, processes and intellectual property. SIMULIA’s applications are used to explore physical behavior, discover innovative solutions, and improve product performance. www.3ds.com.

Elsevier, Inc.
1600 John F. Kennedy Blvd.
Philadelphia, PA 19103
Phone (215)239-3900
Fax (215)238-7883
www.us.elsevierhealth.com

ELSEVIER is a leading publisher of health science publications, advancing medicine by delivering superior reference information and decision support tools to doctors, nurses, health practitioners and students. With an extensive media spectrum — print, online and handheld, we are able to supply the information you need in the most convenient format.

Evans Analytical Group **NEW**
810 Kifer Road
Sunnyvale, CA 94086
Phone (408)530-3500
Fax (408)530-3501
www.eaglabs.com

Evans Analytical Group (EAG) is the global leader in providing materials characterization and testing services to orthopaedic device manufacturers. Services available include: SEM, Auger, XPS, FTIR, ICPMS, extractables/leachables and stability studies. EAG provides fast turnaround and superior data quality to support R&D and production via its global network of laboratories.
Exakt Technologies, Inc.
7002 N. Broadway Ext.
Oklahoma City, OK 73116
Phone (405)848-5800
Fax (405)848-7701
www.exaktusa.com

EXAKT’s NEW Pathology/Bone Saw, designed specifically for pathology labs, offers the SAFEST alternative for grossing samples. Unlike butcher saws, EXAKT’s Diamond Band doesn’t slice, but grinds the bone. It even cuts through metal implants and screws! Reduce the risk of technician injury! See EXAKT’s demonstration and watch the video – www.exaktusa.com/pathology-saw.

Flexcell International Corporation
437 Dimmocks Mill Road, Suite 28
Hillsborough, NC 27278
Phone (919)732-1591
Fax (919)732-5196
www.flexcellint.com

Flexcell International Corporation specializes in designing and manufacturing products to apply mechanical loads, including tension, compression, and fluid shear, to cells in monolayer and 3D culture. Flexcell has high-throughput culture plates, equipment for making 3D cell-seeded constructs, software for analyzing 3D gel compaction, microscope devices for viewing real-time response to mechanical load, and a state of the art microfluidic pump.

Histion
2615 W. Casino Road
Everett, WA 98204
Phone (425)347-0439
Fax (425)353-3604
www.histion.com

Histion specializes in evaluation of medical devices (including drug/device and biologic/device combinations) with a proven track record of success providing data to support regulatory submissions. Services include consulting, design and execution of preclinical studies, soft and hard tissue histology, precision cutting/grinding, immunohistochemistry, histopathology, histomorphometry, micro-CT analysis and mechanical testing.

Hypoxygen **NEW**
5111 Pegasus Court, Suite H
Frederick, MD 21704
Phone (877)497-6994
Fax (301)662-8096
www.hypoxygen.us

Featuring HypOxystation, a purpose built workstation designed to manipulate tissue culture cells in tightly controlled hypoxic or anoxic conditions. Workstation controls Oxygen, Carbon Dioxide, temperature and humidity. For advanced 3D cell culture in these chambers and our CO2 incubators, we offer a complete range of perfusion and vascular culture chambers with several scaffold options for high fidelity tissue and organ culture.

Instron
825 University Avenue
Norwood, MA 02062
Phone (781)575-5690
Fax (781)575-5751
www.instron.com

ElectroPuls™ E1000, Instron’s non-hydraulic testing system, performs static and dynamic testing for orthopaedic applications including spine, joints, and native and bio-engineered tissues. Instron systems, used extensively in the orthopaedic industry, prove solutions for material and device characterization. Instron offers a range of solutions for development, quality and service-life testing requirements.

IOP Publishing
150 S. Independence Mall W.
Philadelphia, PA 19106
Phone (215)627-0880
Fax (215)627-0879
www.ioppublishing.org

IOP Publishing is an international, not-for-profit, learned society publisher. We are a world leader in scientific publishing and the electronic dissemination of peer-reviewed scientific research. Stop by our table for a sample copy of one of our renowned journals, such as Biomedical Materials (www.iopscience.iop.org/bmm) and Biofabrication (www.iopscience.iop.org/bf).

KASRA **NEW**
4975 Agate Drive
Alpharetta, GA 30022
Phone (913)748-6162
www.kasrascientific.com

Hydrostatic Pressure Generator (HPG): This new product is a portable and autoclavable Mechanical Stimulation Bioreactor, receiving samples such as cell cultures and tissues for treatment with hydrostatic pressure. HPG is a standalone mechanical system, which can be hand-operated generating high pressures up to 10 MPa without any electronics involved.

Kubtec
270 Rowe Avenue, Unit E
Milford, CT 06461
Phone (203)364-8544
Fax (203)255-7494
www.kubtec.com

Kubtec Digital X-ray a leading manufacturer of x-ray cabinets for small animal research, provides a range of cabinet sizes and detector sizes, up to 18” x 18”, meeting the requirements of any lab. Our powerful enhancement software, including BMD option offers detailed imaging and the ability to save in multiple formats.

Materialise
44650 Helm Court
Plymouth, MI 48170
Phone (734)259-6445
Fax (734)259-6441
www.materialise.com

Materialise has extensive experience in medical imaging processing with the Mimics Innovation Suite, which provides surgeons, researchers and engineers with the most detailed and precise anatomical models available. The MIS is a powerful, user-friendly image processing software that translates medical images to CAD models, STL files or FEA meshes within minutes.
Micro Photonics, Inc.
4972 Medical Center Circle
Allentown, PA 18106
Phone (866)334-4674
Fax (610)366-7105
www.microphotronics.com

Micro Photonics, and partners Bruker MicroCT and Kub Technologies, are leading the advancement in MicroCT and X-ray imaging solutions for biomaterials and life science research with a focus on bone morphology and BMD. The SkyScan and XPERT product lines meet the high-resolution and versatility required for any demanding research laboratory.

Motion Lab Systems, Inc.
15045 Old Hammond Hwy.
Baton Rouge, LA 70816
Phone (225)272-7364
Fax (225)272-7336
www.motion-labs.com

Motion Lab Systems, Inc. has offered clinically reliable EMG since 1987. Today’s system offers a wide range of channel options. Each with the option of wired or wireless transmission. Your choice of reusable no prep pre-amplifiers or discrete or fine-wire electrodes. In addition, MLS designs comprehensive EMG and C3D software.

The MotionMonitor
3711 North Ravenswood, Suite 150
Chicago, IL 60613
Phone (773)244-6470
Fax (773)244-6473
www.themotionmonitor.com

Innovative Sports Training, Inc is proud to provide The MotionMonitor®, a fully-integrated 3D motion analysis system for use in biomechanical, orthopaedic, and clinical applications. Data from various kinematic tracking systems, EMG, force plates, video, and other analog devices are collected through one platform, synchronized, and presented in real-time. CT/MRI registration capabilities offer subject-specific models and tracking of internal landmarks.

MPI Research
54943 N. Main Street
Mattawan, MI 49071
Phone (269)668-3336
Fax (269)668-5181
www.mpieresearch.com

MPI Research is a full-service preclinical CRO. Our experienced staff offers Sponsors extensive cardiovascular, orthopedic, neurologic, gastroenterological, urologic, wound healing, drug delivery, and medical device capabilities, within industry leading surgical facilities. Learn more about how we can exceed your expectations at www.mpieresearch.com.

MTS Systems Corporation
14000 Technology Drive
Eden Prairie, MN 55344
Phone (952)937-4000
Fax (952)937-4515
www.mts.com

Orthopaedic researchers and manufacturers worldwide depend on MTS to provide test systems that offer precision control for multiaxial test and simulation. MTS delivers innovative solutions for kinematics research, trauma studies, and biomaterial testing. By choosing MTS, you gain a partner who understands how to optimize test design and speed development.

National Institutes of Health
1 AMS Circle
Bethesda, MD 20892-3675
Phone (301)495-4484
Fax (301)718-6366
www.niams.nih.gov

The mission of the National Institute of Arthritis and Musculoskeletal and Skin Diseases is to support research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases; the training of basic and clinical scientists to carry out this research; and the dissemination of information on research progress in these diseases.

Northern Digital Inc. (NDI)
103 Randall Drive
Waterloo, ON N2V1C5
Canada
Phone (519)884-5142
www.ndigital.com/lifesciences

For over 30 years, Northern Digital Inc. (NDI) has been providing researchers with the tools they need for research-grade motion capture. Today the company is a world leader in advanced 3D measurement technology, with over 26,000 installations in more than 30 countries.

Novel Inc.
964 Grand Avenue
St. Paul, MN 55105
Phone (651)221-0505
Fax (651)221-0404
www.novelusa.com

Novel is quality in pressure distribution measurement and manufactures pressure measurement systems that are accurate and reliable for all testing requirements. Novel offers three different systems; the emed platform, the pedar in-shoe, and the pliance system, which measures intraarticular pressure at the patella and tibia, hand/gripping pressures, and much more. Please visit www.novelusa.com for more detailed information.

Numira Biosciences **NEW**
560 Arapeen Drive, Suite 250
Salt Lake City, UT 84108
Phone (801)320-0682
Fax (801)320-0683
www.numirabio.com

Numira Biosciences is a preclinical contract research organization offering in vivo models, ex vivo & in vivo imaging, specialized histology, bone biomarkers, histomorphometry and biomechanical testing—all in house. Numira’s proprietary ex vivo microCT imaging techniques allow us to view and quantify unique measurements for soft tissue, bone and devices.
OsteoMetrics
1240 Clairmont Road, #100
Decatur, GA 30030
Phone (404)876-1004
Fax (404)876-6004
www.osteometrics.com

OsteoMetrics, Inc., with 300 OsteoMeasure systems worldwide, has been redefining Bone Histomorphometry since 1989. OsteoMeasure is now available with outstanding live digital camera support, on-screen pen measurement, thresholding, a complete set of Cortical Bone measurements, a greatly expanded set of non-specific measurements, and a comprehensive GLP validation package. OsteoMetrics is proud that OsteoMeasure is the system of choice of most of the pioneers, the most prominent and the most published scientists in bone research today.

Pacific Research Labs/Sawbones
10221 SW 188th Street
Vashon, WA 98070
Phone (206)463-5551
Fax (206)463-2526
www.sawbones.com

PACIFIC RESEARCH - SAWBONES WORLDWIDE offers a complete range of biomechanical composite analogue bones and blocks for mechanical testing. Designed to simulate the physical properties of human bone; these materials offer a more reliable test bed for biomechanical studies than cadaveric specimens.

PharmaLegacy Laboratories (Shanghai) Co., Ltd
Building 7, 388 Jialilue Road
Shanghai 201203
China
Phone +86-21-61002280
Fax +86-21-61002270
www.pharmalegacy.com

PharmaLegacy is a preclinical specialty CRO that has strong track records in services to worldwide companies committing R & D in therapeutics for Bone Metabolism/Orthopaedics and Tissue Engineering, besides Immune Diseases/Inflammation and Tumor. We provide quality, timely and cost saving execution for experiments under GLP operation and AAALAC certification.

PreClinical Research Services, Inc.
1512 Webster Court
Fort Collins, CO 80524
Phone (970)232-1122
Fax (970)232-1126
www.preclinicalresearch.com

PCRS offers GLP and non-GLP services to support pharmacokinetics, pharmacology and toxicology studies, vascular and surgical models. Our expertise with purpose-bred small and large animal species allows us to efficiently support drug and medical device development. We provide rapid startup times and turnaround to manage our clients’ needs.

PreClinical Surgical Research Laboratory **NEW**
Colorado State University
300 W. Drake Street
Fort Collins, CO 80523
Phone (970)682-0079
www.cvmbs.colostate.edu/cclinsci/srcol/

The Preclinical Surgical Research Laboratory (PSRL) at Colorado State University conducts pilot and pre-clinical research studies with sheep as a validated animal model. The laboratory collaborates with industry and academic institutional partners to evaluate a wide variety of medical devices for treatment of spinal, orthopaedic, sports medicine and soft tissue conditions. Metabolic disorders such as osteoporosis are also commonly studied at the PSRL.

Preclinical Surgical Services
200 E. Third Street
Winston-Salem, NC 27107
Phone (336)713-7399
Fax (336)713-1404
www.preclinicalsurgicalservices.com

Preclinical Surgical Services is a full-service CRO focusing on proof-of-principle, method development, and efficacy testing in the preclinical medical technology research arena. Pre-surgical bench analysis, ex-vivo modeling, dynamic imaging and surgical models in all specialties. From concept to clinical applications, PSS is your innovation partner.

Qualisys Motion Systems
500 Lake Cook Road, Suite 350
Deerfield, IL 60015
Phone (847)597-7013
Fax (847)282-5001
www.qualysis.com

Qualisys Motion Systems is a world wide provider of optical and video high speed, 2D/3D motion systems. Qualisys systems operate in water, out of water, indoors, outdoors, for orthopedics, cerebral palsy, sports medicine, rehabilitation, virtual reality, motor control, sports performance. All Qualisys system can be configured with active and passive marker technology.

Scanco Medical
P.O. Box 646
Southeastern, PA 19399
Phone (610)688-1440
Fax (610)688-4976
www.microCT.com

Scanco Medical (www.microCT.com) is the leading global provider of µCT systems and services. The range of scanners offer capabilities of obtaining 3-dimensional images under 1 micron resolution. All systems are bundled with image analyses, 3D visualization and archiving solutions. Join us in celebrating 25 years of innovation in 2013.
Tekscan, Inc.
307 West First Street
South Boston, MA 02127
Phone (617)464-4500
Fax (617)464-4266
www.tekscan.com

Tekscan manufactures a broad range of tools for better pressure offloading and enhanced gait analysis. Our systems use paper-thin, high-resolution sensors to accurately measure plantar pressure distribution, timing and Center of Force (CoF) trajectory in dynamic evaluations. The unique information these systems provide helps you objectively validate treatments and improve outcomes.

TestResources, Inc.
701 Canterbury Road S
Shakopee, MN  55379
Phone (952)944-6534
Fax (952)233-3682
www.testresources.net

TestResources is a manufacturer of modular all-electric dynamic and static test systems for biomedical/orthopedic testing applications. New products include an all-electric axial/torsion testing system for orthopedic research, a micro-force test system for tissue research, and a variety of new products for biomaterials engineering.

Thelkin AG  **NEW**
Technoparkstrasse 2
Winterthur 8406
Switzerland
Phone +41-79-8435596
www.thelkin.com

THELKIN offers the next generation of test systems for the mechanical characterization of orthopedic implants and their materials. Our technology provides significant savings in time and costs, helping researchers and implant manufacturers in the development of safe, effective and successful products.

Wiley
111 River Street
Hoboken, NJ 07030
Phone (781)388-8313
Fax (781)338-8313
www.wiley.com

Wiley is the leading society publisher. We publish on behalf of more societies and membership associations than anybody else, and offer libraries and individuals 1250 online journals, thousands of books and e-books, reviews, reference works, databases, and more. For more information, visit www.wiley.com, or our online resource: onlinelibrary.wiley.com.

DON’T FORGET TO PARTICIPATE
in this year’s
NEW Innovation Theater & the Exhibit Adventure

–Innovation Theater–
Hall C
Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

Monday, January 28
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length are commercial/promotional activities only.

–Exhibit Adventure –
Hall C
Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:
– Bone & Joint Research: An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
– IOP Publishing: Kindle
– Micro Photonics, Inc.: iPad
– Pacific Research Labs/Sawbones: $200 Gift Card
– Scanco Medical: $150 Gift Card

–Innovation Theater–
Hall C
Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

Monday, January 28
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length are commercial/promotional activities only.

–Exhibit Adventure –
Hall C
Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:
– Bone & Joint Research: An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
– IOP Publishing: Kindle
– Micro Photonics, Inc.: iPad
– Pacific Research Labs/Sawbones: $200 Gift Card
– Scanco Medical: $150 Gift Card

–Innovation Theater–
Hall C
Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

Monday, January 28
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length are commercial/promotional activities only.

–Exhibit Adventure –
Hall C
Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:
– Bone & Joint Research: An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
– IOP Publishing: Kindle
– Micro Photonics, Inc.: iPad
– Pacific Research Labs/Sawbones: $200 Gift Card
– Scanco Medical: $150 Gift Card

–Innovation Theater–
Hall C
Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

Monday, January 28
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length are commercial/promotional activities only.

–Exhibit Adventure –
Hall C
Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:
– Bone & Joint Research: An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
– IOP Publishing: Kindle
– Micro Photonics, Inc.: iPad
– Pacific Research Labs/Sawbones: $200 Gift Card
– Scanco Medical: $150 Gift Card

–Innovation Theater–
Hall C
Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

Monday, January 28
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length are commercial/promotional activities only.

–Exhibit Adventure –
Hall C
Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:
– Bone & Joint Research: An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
– IOP Publishing: Kindle
– Micro Photonics, Inc.: iPad
– Pacific Research Labs/Sawbones: $200 Gift Card
– Scanco Medical: $150 Gift Card

–Innovation Theater–
Hall C
Watch ORS Exhibitors showcase their products and services outside of their exhibit booths.

Monday, January 28
9:45am-10am – MPI Research
3:15pm-3:30pm – Simpleware

Presentations are no more than 15 minutes in length are commercial/promotional activities only.

–Exhibit Adventure –
Hall C
Grab your passport and set out on your 2013 Exhibit Adventure! Visit the ORS Exhibitor Booths to collect your 20 stamps.

At the end of the adventure you will qualify for a variety of prizes donated by these ORS Exhibitors:
– Bone & Joint Research: An online subscription to The Journal of Bone & Joint Surgery and a print and online subscription to Bone & Joint 360
– IOP Publishing: Kindle
– Micro Photonics, Inc.: iPad
– Pacific Research Labs/Sawbones: $200 Gift Card
– Scanco Medical: $150 Gift Card
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 - 6:00 AM</td>
<td>Registration Open / Poster Session 1 Set Up / Exhibitor Move-In</td>
</tr>
<tr>
<td>6:00 - 8:00 PM</td>
<td>RIG - Graduate Student Women’s Group Room 211</td>
</tr>
<tr>
<td>7:00 - 6:00 PM</td>
<td>RIG - Orthopedic Evidence and Outcomes Education Organization Part I Room 209</td>
</tr>
<tr>
<td>7:00 - 6:00 PM</td>
<td>RIG - The Spine Research Community Room 214</td>
</tr>
<tr>
<td>7:00 - 6:00 PM</td>
<td>RIG - Cartilage Mechanobiology Room 209</td>
</tr>
<tr>
<td>7:00 - 6:00 PM</td>
<td>RIG - Orthopaedics Research and Outcomes Room 209</td>
</tr>
<tr>
<td>8:00 - 8:30 AM</td>
<td>Welcome / General Session</td>
</tr>
<tr>
<td>8:00 - 8:30 AM</td>
<td>Networking Breakfast - Collaborations in Foyer - (Registration Required)</td>
</tr>
</tbody>
</table>

**New Horizon W1:** Current Management, Clinical Conroversies, and Basic Scientific Understanding of Polytraumatized Patients with Major Skeletal Trauma

**S1:** Monitoring Progression of Osteoarthritis

**S2:** Fracture Repair and Augmentation

**S3:** Cartilage Biology & OA Meniscus; Function, Attachment and Engineering

**S4:** The Injured and Diseased Tendon

**S5:** Sarcoma

**Keynote Speaker:** Dr. Olivier Pourquie, PhD

*"New Ideas in the Development of the Vertebral Column: From Discs to Scoliosis"

**New Horizon W1:** Current Management, Clinical Conroversies, and Basic Scientific Understanding of Polytraumatized Patients with Major Skeletal Trauma

**S1:** Monitoring Progression of Osteoarthritis

**S2:** Fracture Repair and Augmentation

**S3:** Cartilage Biology & OA Meniscus; Function, Attachment and Engineering

**S4:** The Injured and Diseased Tendon

**S5:** Sarcoma

**Keynote Speaker:** Dr. Olivier Pourquie, PhD

*"New Ideas in the Development of the Vertebral Column: From Discs to Scoliosis"

**New Horizon W1:** Current Management, Clinical Conroversies, and Basic Scientific Understanding of Polytraumatized Patients with Major Skeletal Trauma

**S1:** Monitoring Progression of Osteoarthritis

**S2:** Fracture Repair and Augmentation

**S3:** Cartilage Biology & OA Meniscus; Function, Attachment and Engineering

**S4:** The Injured and Diseased Tendon

**S5:** Sarcoma

**Keynote Speaker:** Dr. Olivier Pourquie, PhD

*"New Ideas in the Development of the Vertebral Column: From Discs to Scoliosis"*