BASIC SCIENCE FOCUS FORUM

Edward J. Harvey, MD – Program Chair

Target Audience
Academic orthopaedic surgeons, community surgeons with an interest in clinically relevant basic science, basic and clinical researchers, residents and fellows will benefit most from this Basic Science Focus Forum.

Attendees of this activity can earn up to 11.75 AMA PRA Category 1 Credits™

Objectives
Upon successful completion of the Basic Science Focus Forum, you will be able to:
- Review clinical relevance for hot topics in biomechanically directed fixation
- Understand pertinence and efficacy of augmenting bone repair
- Better judge treatment modalities in the severely injured limb
- Know about the use of big data sets in trauma research
- Review chondroprotective treatment options
- Understand where we are in the treatment of osteoporosis and fragility fractures

Wednesday, October 15, 2014

6:30 am  Registration and Continental Breakfast
7:25 am  Introduction
Edward J. Harvey, MD, Program Chair

7:30 am -
8:35 am  Symposium 1
Biomechanical Concepts for Fracture Fixation
Moderators: Emil H. Schemitsch, MD
Michael Bottlang, PhD

7:30 am  Radial Head and Coronoid Fractures: Biomechanical Evidence for Modern Approaches
TBD

7:40 am  Unstable Sacral Fractures: Is Standard Iliosacral Screw Fixation Adequate?
TBD

7:50 am  Periprosthetic Femur Fractures: 90/90 Fixation Versus a Single Locking Plate?
Emil H. Schemitsch, MD

8:00 am  Distal Femur Fractures: Far Cortical Versus Conventional Locking Screws: Is There a New Gold Standard?
Michael Bottlang, PhD

8:10 am  Syndesmosis Injuries: What Is the Ideal Fixation Construct?
Kenneth A. Egol, MD

8:20 am  Discussion

8:35 am -
9:15 am  Paper Session 1
Biomechanically-Directed Fixation
Moderators: Emil H. Schemitsch, MD
Michael Bottlang, PhD

8:35 am  Overview
Michael Bottlang, PhD

8:42 am  Paper 1
How to Use Fluoroscopic Imaging to Prevent Intra-Articular Screw Perforation During Locked Plating of Proximal Humerus Fractures: A Cadaveric Study
Jason Allen Lowe, MD; Shafagh Monazzam, MD; Blaine T. Walton, MD; Elisha M. Nelson; Philip R. Wolinsky, MD

8:48 am  Paper 2
Cortical Bone Drilling Induced Heat Production with Common Drill Devices
Andrew Palmisano, MD; Bruce Li-Jung Tai, PhD; Barry Belmont, MS; James R. Holmes, MD; Albert Shih, PhD

8:54 am  Paper 3
Can Views of the Proximal Femur be Reliably Used to Predict Malrotation After Femoral Nailing? A Cadaveric Validation Study
Andrew Dubina; Michael Robert Rozak, BA, BS; Robert V. O'Toole, MD

9:00 am  Paper 4
Polyether Ether Ketone Carbon Fiber Composites can Improve Healing of Fractures Stabilized with Intramedullary Nails
Matthew Cantwell

9:06 am  Discussion

9:15 am - 9:35 am  Break

Pre-Registration Deadline October 1, 2014; On-site Registration - additional $100. See Page 47.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>9:35 am</td>
<td><strong>Symposium 2</strong></td>
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<tr>
<td>10:30 am</td>
<td><strong>Bone Graft Substitution and Augmentation</strong></td>
<td>Aaron Nauth, MD, Peter V. Giannoudis, MD</td>
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<tr>
<td>9:35 am</td>
<td><strong>Selecting the Right Bone Graft Substitute for Your Patient</strong></td>
<td>Aaron Nauth, MD</td>
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<td>9:45 am</td>
<td><strong>BMPs: Is There Still a Role in 2014?</strong></td>
<td>Peter V. Giannoudis, MD</td>
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<td>9:55 am</td>
<td><strong>Injectable Calcium Phosphates and Sulfates: When I Use Them and Which One I Use</strong></td>
<td>J. Tracy Watson, MD</td>
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<td>10:05 am</td>
<td><strong>Bone Marrow Aspirate and Autologous Stem Cells: Are They Effective?</strong></td>
<td>TBD</td>
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<td>10:15 am</td>
<td><strong>Discussion</strong></td>
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<tr>
<td>10:30 am</td>
<td><strong>Paper Session 2</strong></td>
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<tr>
<td>11:35 am</td>
<td><strong>Inflammation and Bone Healing</strong></td>
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<td>10:30 am</td>
<td><strong>Overview</strong></td>
<td>Aaron Nauth, MD</td>
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<tr>
<td>10:36 am</td>
<td><strong>Paper 5</strong></td>
<td>John J. Wixted, MD, Daniel Mandell, MD, Christopher Raskett, BS, Vivek Venugopal, Jane B. Lian, PhD, Paul Joseph Fanning, PhD</td>
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<tr>
<td>10:42 am</td>
<td><strong>Paper 6</strong></td>
<td>Mark A. Lee, MD, Joel C. Williams, MD, Dominik R. Haudenschild, PhD</td>
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<td>10:48 am</td>
<td><strong>Paper 7</strong></td>
<td>Derek J. Klaus, MD, Douglas Crowder, Ethan Scott, Stephen Fening, PhD, Faye Safadi, Eric T. Miller, PhD</td>
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<td>10:54 am</td>
<td><strong>Paper 8</strong></td>
<td>John J. Wixted, MD, Vivek Venugopal, BS, Christopher Raskett, BS, Jane B. Lian, PhD, Paul Joseph Fanning, PhD</td>
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<td>11:00 am</td>
<td><strong>Discussion</strong></td>
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<td>11:10 am</td>
<td><strong>Paper 9</strong></td>
<td>The Development of Vascularity in a Healing Fracture</td>
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<tr>
<td>11:16 am</td>
<td><strong>Paper 10</strong></td>
<td>Modulating the Vasculature at a Fracture Through the Therapeutic Application of Placental Stem Cells</td>
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<tr>
<td>11:22 am</td>
<td><strong>Paper 11</strong></td>
<td>Osteogenic, Stem Cell and Molecular Characterization of the Human Biomembrane (“Induced Membrane”) from Trauma Patients</td>
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<td>11:28 am</td>
<td><strong>Discussion</strong></td>
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<td>11:35 am</td>
<td><strong>Lunch</strong></td>
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<td>12:35 pm</td>
<td><strong>Symposium 3</strong></td>
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<td>1:35 pm</td>
<td><strong>The Mangled Extremity- Functionality through Mechanics or Biologics?</strong></td>
<td>Edward J. Harvey, MD</td>
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<td>12:35 pm</td>
<td><strong>Current Concepts for Infection Management in High MESS Legs</strong></td>
<td>Philip Wolinsky, MD</td>
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<td>12:45 pm</td>
<td><strong>Heterotopic Ossification in Trauma and Amputations</strong></td>
<td>Roman Hayda, MD</td>
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<td>12:55 pm</td>
<td><strong>New Concepts in Stump Management and Rehabilitation</strong></td>
<td>TBD</td>
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<td>1:05 pm</td>
<td><strong>The Peg Leg or the Six Million Dollar Man- Where Are We?</strong></td>
<td>Danielle Melton, MD</td>
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<td>1:15 pm</td>
<td><strong>Discussion</strong></td>
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<td>11:10 am</td>
<td><strong>Paper 9</strong></td>
<td>Nicholas Mignemi, Masato Yuasa, PhD, Joey Victor Barnett, Justin Cates, MD, PhD, Jeffry Nyman, PhD, MS, Christopher M. Stutz, MD, William T. Obremskey, MD, MPH, Herbert S. Schwartz, MD, Jonathan G. Schoenecker, MD</td>
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<td>11:16 am</td>
<td><strong>Paper 10</strong></td>
<td>Chelsea S. Bahney, PhD, Aaron Taylor, BS, Ali Sadat, DDS, Kathryn Tormos, PhD, Theodore Miclau III, MD, Emin Maltepe, MD, MPH, Ralph Marcucio, PhD</td>
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<tr>
<td>11:22 am</td>
<td><strong>Paper 11</strong></td>
<td>Gabriella Ode, MD, Gretchen Hoelscher, MS, James Ingram, Synthia Bethea, Madhav A. Karunakar, MD, Helen Elizabeth Gruber, PhD, Michael J. Bosse, MD</td>
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### Paper Session 3

**1:35 pm - 2:40 pm**

**MESS**

**Moderators:** Edward J. Harvey, MD  
Philip Wolinsky, MD

**1:35 pm**  
**Overview**  
Edward J. Harvey, MD

**1:45 pm**  
**Paper 12**  
**Pharmacological Treatment of Compartment Syndrome with Phenylephrine and Dobutamine Was Similar to Fasciotomy**  
Utku Kandemir, MD; Xuhui Liu, MD; James Moon Mok, MD; Heejae Kang; Erik Nathan Hansen, MD; Mark Rollins, MD, PhD; Hubert T. Kim, MD, PhD

**1:51 pm**  
**Paper 13**  
**Carbon Monoxide Releasing Molecule-3 (Corm-3) Diminishes the Oxidative Stress and Leukocyte Migration Across Human Endothelium in an In Vitro Model of Compartment Syndrome**  
Relka Bihari, MSc; Aurelia Bihari, MS; Gediminas Cepinskas, DVM, PhD; David Sanders, MD; Abdel-Rahman Lawendy, FRCS

**1:57 pm**  
**Paper 14**  
**Use of the Reamer/Irrigator/Aspirator During Intramedullary Nailing Decreases Carotid and Cranial Embolic Events**  
Anna N. Miller, MD; Dwight D. Deal, BS; James Green, BS; Tim Houle, PhD; William Roy Brown, PhD; Clara R. Thore, PhD; David Stump, PhD; Lawrence X. Webb, MD

**2:03 pm**  
**Discussion**

**2:10 pm**  
**Paper 15**  
**Superoxide Dismutase Mimetic Disrupts Bacterial Biofilms in an Infected Fracture Model**  
Elizabeth Anne Regan, MD, PhD; Sarah Elizabeth Lindsay; James Crapo, MD

**2:18 pm**  
**Paper 16**  
**Rifampin and Minocycline Containing Coating for Orthopaedic Implants with Potent In Vivo Activity**  
Mark Schallenberger, MS; Todd R. Meyer, PhD

**2:26 pm**  
**Paper 17**  
**In Vivo Chemistry and Implantable Biomaterial for Targeting Therapeutics**  
Jose Manuel Mejia Oneto, MD, PhD; Munish C. Gupta, MD; Kent Leach, PhD; Mark A. Lee, MD; Maksim Royzen, PhD

**2:34 pm**  
**Paper 18**  
**Sonication Has the Potential to Improve Culture Yield in Patients with Clinical Infection**  
Hemil Hasmukh Maniar, MD; Kristin McPhillips, MD, MPH; Jove Graham, PhD; Michael Foltzer, MD; Thomas R. Bowen, MD; Daniel S. Horwitz, MD

**2:42 pm**  
**Discussion**

**2:52 pm**  
**Paper 19**  
**Pulsatile Lavage of Open Musculoskeletal Wounds Causes Muscle Necrosis and Dystrophic Calcification**  
Astor Devon Robertson, MBBS; Stephen Zhao, BS; Thao Nguyen, MD; David E. Jaffe, MD; Carla Hebert, BS; William Lawrence Fourney, PhD; Joseph Stains, PhD; Vincent D. Pellegrini Jr, MD

**2:58 pm**  
**Paper 20**  
**Failure of Indomethacin and Radiation to Prevent Blast-Induced Heterotopic Ossification in an Animal Model**  
Astor Devon Robertson; Stephen Zhao; Thao Nguyen, MD; Robert E. Holmes, MD; David E. Jaffe, MD; Juong G. Rhee, PhD; William Lawrence Fourney; Joseph Stains, PhD; Vincent D. Pellegrini Jr, MD

**3:04 pm**  
**Paper 21**  
**The Surgeon’s Catch-22: A Prospective Study On Inflammation, Wound Failure and Heterotopic Ossification in Combat Wounds**  
Donald Nicholas Hope, MD; Jonathan Agner Forsberg, MD; Benjamin Kyle Potter, MD; Elizabeth Poller, MD; Eric Elster

**3:10 pm**  
**Discussion**

**3:25 pm - 3:45 pm**  
**Break**

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**Pre-Registration Deadline October 1, 2014; On-site Registration - additional $100. See Page 47.**
3:45 pm - Symposium 4
4:50 pm Bigger Data-Bigger Problems?
Moderators: Mohit Bhandari, MD, PhD, FRCSC
Gerald P. Slobogean, MD, MPH, FRCSC
3:45 pm What is Big Data?
Gerald P. Slobogean, MD, MPH, FRCSC
4:00 pm NHS Database- What it can and cannot Do
TBD
4:10 pm Scandinavian Data-Ongoing Challenges and Successes
Frede Frihagen, MD, PhD
4:20 pm Designing Studies That Utilize Large Databases: The Basics
Mary L. Forte, PhD
4:30 pm The Future of Large Scale Databases: Will They Replace the Clinical Trial?
Saam Morshed, MD, PhD
4:40 pm Discussion

4:50 pm - Paper Session 4
5:30 pm International Research Studies
Moderators: Mohit Bhandari, MD, PhD, FRCSC
Gerald P. Slobogean, MD, MPH, FRCSC
4:50 pm INORMUS Invited Paper - Trauma Worldwide Data Set
Mohit Bhandari, MD, PhD, FRCSC
4:56 pm Paper 22
Changing the System: Improving Outcome from Major Trauma by Developing a National System of Regional Major Trauma Networks
Christopher G. Moran, MD; Maralyn Woodford; Fiona Lecky, FRCS, MSc, PhD; Antoinette Edwards, BA; Tim Coates; Keith Willett

5:02 pm Paper 23
Increased Systemic Complications in Open Femoral Shaft Fractures are Associated with the Degree of Soft-Tissue Injury Rather Than New Injury Severity Score (NISS) Values – A Nationwide Data Base Analysis
Chris David Weber, MD; Rolf Lefering, PhD; Thomas Dienstknecht; Philipp Kobbe, MD; Richard Martin Sellei, MD; Frank Hildebrand, MD; Hans-Christoph Pape, MD

5:08 pm Paper 24
Anatomic Region and the Risk of Adverse Events in Orthopaedic Trauma: An Analysis of 19,000 Patients
Cesar Sebastian Molina, MD; Rachel V. Thakore, BS; Eduardo J. Burgos, MD; William T. Obremskey, MD, MPH; Manish K. Sethi, MD

5:14 pm Discussion

5:30 pm ADJOURN TO INTERNATIONAL RECEPTION

Thursday, October 16, 2014

7:00 am Continental Breakfast
7:25 am Introduction
Edward J. Harvey, MD

7:30 am - Symposium 5
8:40 am Advances in Articular Cartilage Injury and Treatment - Where We Are and Where We’re Going
Moderators: Joseph Borrelli Jr, MD
Susanna Chubinskaya, PhD
7:30 am Cartilage’s Response to Injury
Dominik Haudenschild, PhD
7:40 am Current/Futures Chondroprotective Products
Susanna Chubinskaya, PhD
7:50 am Chondroplasty/Microfracture/Cells for Treatment of Cartilage Injuries
Seth Gasser, MD
8:00 am Osteochondral Allografts in 2014
James Stannard, MD
8:10 am Joint Preservation: Treatment of Intra-articular Malunions
Christian Krettek, MD, FRACS
8:20 am Discussion
8:40 am - 9:00 am
Paper Session 5
Articular Pathology
Moderators: Joseph Borrelli Jr, MD
           Susanna Chubinskaya, PhD

8:40 am  Overview
Joseph Borrelli Jr, MD

8:45 am  Paper 25
The Dose-Response Effect of the Mast Cell Stabilizer, Ketotifen Fumarate, on Post-Traumatic Joint Contractures
Prism Schneider, MD, PhD; Herman Johal, MD; Andrew Richard Buckley; Kevin A. Hildebrand, MD

8:51 am  Paper 26
Presence and Degree of Matrix Metalloproteinas and Aggrecan Breakdown Products in the Setting of Acute Intra-Articular Fracture
Justin Haller, MD; Molly McFadden, MS; David Rothberg, MD; Erik Kubik, MD; Thomas F. Higgins, MD

8:57 am  Paper 27
Pre-Injury Depletion of Macrophages Results in Increased Acute Joint Inflammation Following Articular Fracture
Steven A. Olson, MD; Karsyn N. Bailey; Bridgette D. Furman, BS; Kelly Ann Kimmerling, MS; Chia-Lung Wu, PhD; Janet L. Huebner; Virginia Byers Kraus, PhD; Farshid Guilak, PhD

9:03 am  Discussion

9:09 am - 9:25 am  Break

9:25 am  Symposium 6
Osteoporosis- Are We Closer to Gold Standards?
Moderators: Theodore Miclau III, MD
           J. Tracy Watson, MD

9:25 am  Paper 28
Is There a Future for Femoroplasty in Hip Fracture Prevention? Introducing Anisotropy Restoring Femoroplasty
Edward K. Rodriguez, MD, PhD; Leandro Grimaldi, MD; Aidin Masoudi, MD; Ara Nazarian

9:35 am  Paper 29
Comparison of Femoral Head Rotation and Varus Collapse Between a Single and Integrated Dual Screw Intertrochanteric Hip Fracture Fixation Device Using a Chair Rise Biomechanical Model
Aniruddh Nayak, MS; Ian Smithson, MD; Seth Cooper, MD; Jacob Cox, MD; Scott Marberry, MD; Brandon Gerard Santoni, PhD; Roy Sanders, MD

9:55 am  Paper 30
Traumatic Fracture Healing in Geriatric Mice Shows Decreased Callus Formation with Associated Deficiencies in Cell Cycle and Immune Cell Function
Luke A. Lopas, BS; Nicole Stephanie Belkin, MD; Patricia Lorraine Mutyaba, BS; Lee McDaniel Jr, MS; Kurt D. Hankenson, DVM; Jaimo Ahn, MD, PhD

10:05 am  Discussion

10:30 am - 11:04 am  Paper Session 6
Bone Density and Modeling
Moderators: Theodore Miclau III, MD
           J. Tracy Watson, MD

10:30 am  Overview
Theodore Miclau III, MD

10:40 am  Paper 28
Is There a Future for Femoroplasty in Hip Fracture Prevention? Introducing Anisotropy Restoring Femoroplasty
Edward K. Rodriguez, MD, PhD; Leandro Grimaldi, MD; Aidin Masoudi, MD; Ara Nazarian

11:04 am  ADJOURN TO INDUSTRY SYMPOSIA

12:45 pm  Registration Required
(Boxed lunch available)