

# BASIC SCIENCE FOCUS FORUM

## 2016 Basic Science Committee

Edward J. Harvey, MD, Chair  
Mohit Bhandari, MD; Joseph Borrelli Jr, MD;  
Aaron Nauth, MD; Todd O. McKinley, MD;  
Emil H. Schemitsch, MD; Brett D. Crist, MD

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

## 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.

## Learning Objectives

Upon successful completion of the Basic Science Focus Forum, you will be able to:

- ◆ Summarize the complex physiological issues associated with polytrauma patients
- ◆ Outline the biomechanical principles in directed fixation for controversial fractures and subluxations
- ◆ Identify other musculoskeletal conditions we need to treat in musculoskeletal health
- ◆ Describe the changing treatment and diagnostic parameters for critical size bone defects
- ◆ Explain the clinical outcome quality associated with patient related scores
- ◆ Discuss current concepts in nonunion management

## Wednesday, October 5, 2016

7:30 am **Introduction**  
**Edward J. Harvey, MD**

7:35 am - **Symposium 1**  
8:45 am **Biomechanics-Hot Topics 2016**  
Moderators: **Edward J. Harvey, MD**  
**Brett D. Crist, MD**

7:35 am **No-Motion, Micro-Motion and Macro-Motion: What is Going on at the Fracture?**  
*Mitchell Bernstein, MD*

7:50 am **Why I Still Use Plates for Intertrochanteric Femur Fractures**  
*Mark A. Lee, MD*

8:05 am **When Should We Weight Bare Lower Extremity Periarticular Fractures- Science behind the Anecdote**  
*John D. Adams, MD*

8:20 am **High Energy Young Femoral Neck Fractures-The Unsolved Fracture**  
*Christopher Finkemeier, MD*

8:35 am Discussion

8:45 am Refreshment Break

8:55 am - **Paper Session 1**  
9:55 am **Applied Biomechanics**  
Moderators: **Brett D. Crist, MD**  
**Mark A. Lee, MD**

8:55 am **Overview**  
*Brett D. Crist, MD*

9:00 am **Paper 1**  
**Dynamization of Simple Fractures with Active Locking Plates Delivers Faster and Stronger Healing Relative to Conventional Compression Plating**  
**Michael Bottlang, PhD;**  
*Stanley Tsai, MS; Emily Bliven, MS; Brigitte von Rechenberg, MD; Julia Henschel, BS; Peter Augat, PhD; Daniel Fitzpatrick, MD; Steven Madey, MD*

9:06 am **Paper 2**  
**Vascular Anatomy of the Medial Femoral Neck and Implications for Surface Plate Fixation- Preliminary Results**  
*Sara Putnam, MD; Cory Collinge, MD; Michael Gardner, MD; William Ricci, MD; Christopher McAndrew, MD, MSc*

9:12 am **Paper 3**  
**A Biomechanical Comparison of Intrapelvic and Extrapelvic Fixation for Associated Acetabular Fractures of the Quadrilateral Plate**  
**Sharon Babcock, MD;** *Gregory Gillispie, BS; Philip Brown, PhD; Kyle McNamara, BS; Arun Aneja, MD; Joel Stitzel, PhD; Eben Carroll, MD*

9:18 am Discussion

9:28 am **Paper 4**  
**A New and More Sensitive View for the Detection of Syndesmotic Instability**  
**Nayla G. Papadopoulos, MD;**  
*Georges-Yves Laflamme, MD; Jérémie Ménard, Ing; Stéphane Leduc, MD; Dominique Rouleau, MD; Jonah Hebert-Davies, MD; Marie-Lyne Nault, MD*

9:34 am **Paper 5**  
**Reducing the Syndesmosis Under Direct Vision: Where Should I Look?**  
*Paul Tornetta III, MD; Mark Yakovonis, MD; David Veltre, MD; Anjan Shah, MD*

# BASIC SCIENCE FOCUS FORUM, continued

Wednesday, October 5, 2016, cont'd

9:40 am **Paper 6**  
**Location Location Location:  
 Does the Distance of Fixation  
 from the Plafond Affect  
 Reduction of the Syndesmosis?**  
*Michael Beebe, MD; Kyle Stoops, MD;  
 Sean Lannon, MD; Charles Clark, MD;  
 David Watson, MD; Paul Toretta, MD;  
 Roy Sanders, MD; Hassan Mir, MD;  
 Anjan Shah, MD*

9:46 am Discussion

9:55 am - **Symposium 2**  
 11:05 am **Outside the Bone-  
 What is Happening**  
 Moderators: *Emil H. Schemitsch, MD  
 Stephen L. Kates, MD*

9:55 am **Osteoporosis Management:  
 What the Trauma Surgeon  
 Needs to Know!**  
*Stephen L. Kates, MD*

10:10 am **The Trauma Patient with a  
 Fracture: Role of  
 Vitamin C and D**  
*Brad A. Petrisor, MD*

10:25 am **Atypical Fractures:  
 Best Practices in 2016**  
*Sanjit R. Konda, MD*

10:40 am **Nonunions: How Important is  
 Nutrition and Medical  
 Management?**  
*Michael D. McKee, MD*

10:55 am Discussion

11:05 am Refreshment Break

11:15 am - **Paper Session 2**  
 11:55 am **The Science of Trauma**  
 Moderators: *Edward J. Harvey, MD  
 CAPT. Eric A. Elster, MD, FACS, MC, USN*

11:15 am **Overview**  
*Edward J. Harvey, MD*

11:20 am **Paper 7**  
**The Severity of Compartment Syndrome-  
 Associated Microvascular Dysfunction May  
 Be Diminished by the Neutralization of  
 Pro-Inflammatory Cytokines**  
*Erin Donohoe, MB; David Sanders, MD;  
 Aurelia Bihari, MS; Abdel-Rahman Lawendy, MD*

11:26 am **Paper 8**  
**The Dose-response Effect of Ketotifen  
 Fumarate on Substance P-containing Nerves  
 Mast Cells and Myofibroblasts in  
 Post-traumatic Joint Contractures**  
*Prism Schneider, MD; Herman Johal, MD;  
 Mei Zhang, PhD; David Hart, PhD;  
 A. Befus, PhD; Paul Salo, MD; Cun-Yi Fan, PhD;  
 Xiangdang Liang, PhD; Kevin Hildebrand, MD*

11:32 am **Paper 9**  
**Reamed Intramedullary Nailing Affects  
 Trauma-induced Coagulopathy Based on  
 Thrombelastography**  
*Prism Schneider, MD; Elizabeth Davis, BS;  
 Matthew Galpin, RC; Robert Hudson, BS;  
 Patrick Mitcham, BS; Mark Prasarn, MD;  
 Joshua Gary, MD*

11:38 am **Paper 10**  
**Compartment Release in Austere Locations  
 (CORAL): A Pilot Study of Tele-surgery for  
 Compartment Syndrome**  
*Max Talbot, MD; Rudolph Reindl, MD;  
 Gregory Berry, MD; Homer Tien, MD;  
 Gerard Slobogean, MD; Edward Harvey, MD;  
 CORAL Collaborators*

11:44 am Discussion

12:15 pm - 1:15 pm **International Industry Lunch**

1:25 pm - **Symposium 3**  
 2:35 pm **Selected Topics in Trauma**  
 Moderators: *Todd O. McKinley, MD  
 CAPT. Eric A. Elster, MD, FACS, MS, USN*

1:25 pm **War Extremity Wounds**  
*Jonathan A. Forsberg, MD*

1:40 pm **Clinical Science Learned from  
 War Wounds**  
*Benjamin Kyle Potter, MD*

1:55 pm **Advancements in Soft Tissue  
 Techniques**  
*Ian L. Valerio, MD*

2:10 pm **Osteoingrated Prostheses**  
*Kevin Tetsworth, MD*

2:25 pm Discussion

# BASIC SCIENCE FOCUS FORUM, continued

2:35 pm - **Symposium 4**  
3:45 pm **Fracture Healing Adjuncts-  
The World's Perspective**

Moderators: **Joseph Borrelli Jr, MD**  
**Peter V. Giannoudis, MD**

2:35 pm **Introduction**

*Joseph Borrelli Jr, MD*

2:40 pm **Is there a Role for Allograft?**

*Gerhard Schmidmaier, MD*

2:50 pm **Induced Membrane Technique:  
What Have We Learned?**

*Peter V. Giannoudis, MD*

3:00 pm **Titanium Cages:**

**How We Can Enhance Their Success**

*Ronald W. Lindsey, MD*

3:10 pm **Intramedullary Lengthening Devices:  
Do They Always Work?**

*Christian Krettek, MD*

3:20 pm **Bone Transport and Treatment of the  
Docking Site: My Preferred Method**

*David W. Lowenberg, MD*

3:30 pm Discussion

3:45 pm Refreshment Break

3:55 pm - 4:55 pm **Paper Session 3**  
**New Approaches for  
Bone Healing**

Moderators: **Joseph Borrelli Jr, MD**  
**Peter V. Giannoudis, MD**

3:55 pm **Overview**

*Peter V. Giannoudis, MD*

4:00 pm **Paper 11**

**Acceleration of Fracture Healing Modulated  
by Compounds that Stimulate Inducible  
Nitric Oxide Synthase**

**Rebecca Rajfer Trueblood, MD; Ayhan Kilic, MD;**  
**Su Hlaing, BS; Leah Schulte, MD;**  
**Andrew Neviasser, MD; Edward Ebramzadeh, PhD;**  
**Monica Ferrini, PhD; Sang Hyun Park, PhD**

4:06 pm **Paper 12**

**Doxycycline-Loaded Coaxial Nanofiber  
Coating Enhances Osseointegration and  
Inhibits Infection**

**David Markel, MD; Wei Song, PhD; Shi Tong, MS;**  
**Nancy Jackson, PhD; Chris Bergum, MS;**  
**Jeffrey Flynn, PhD; Weiping Ren, MD**

4:12 pm **Paper 13**

**Three Dimensional Printed Scaffolds for  
Segmental Defects in Long Bones**

**Sandeep Pandit, MD; Todd Goldstein, PhD;**  
**James Mullen, MD; Mikael Starecki, MD;**  
**Lewis Lane, MD; Daniel Grande, PhD;**  
**Katy Nellans, MD**

4:18 pm Discussion

4:28 pm **Paper 14**

**Investigating an Endothelial  
Progenitor Cell Dose Response  
for the Healing of Critical Size  
Bone Defects**

**David Ramnarain, MSc;**  
**Charles Godbout, PhD;**  
**Emil Schemitsch, MD;**  
**Aaron Nauth, MD**

4:34 pm **Paper 15**

**The Impact of Surgical Fixation  
on Fracture Healing:  
Radiographic Analysis of a Novel  
Fracture Model in Rats**

**Alejandro Marquez-Lara, MD;**  
**Ian Hutchinson, MD;**  
**Thomas Smith, PhD; Anna Miller, MD**

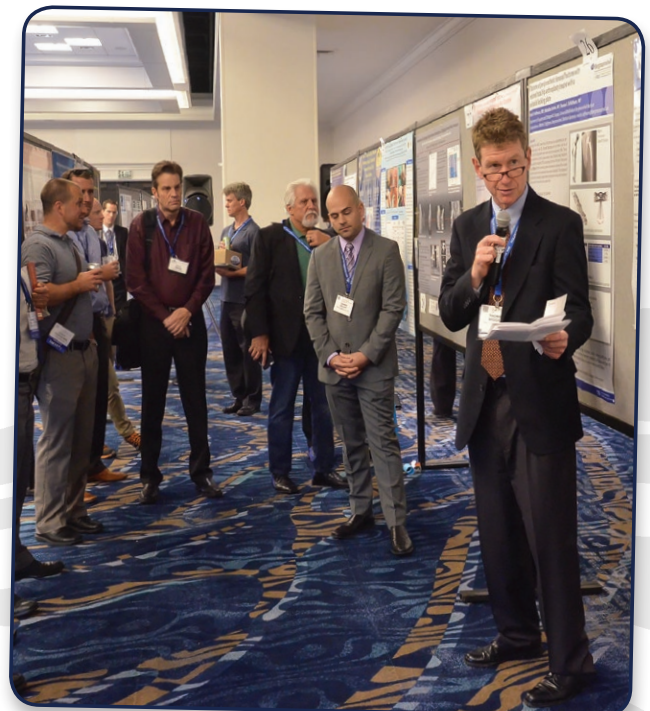
4:40 pm **Paper 16**

**Assessment of RIA Filtrate  
Osteoinductive Potential in an  
Ectopic in vivo Model**

**Alexander Wessel, MD;**  
**James Stannard, MD;**  
**James Cook, DVM; Brett D Crist, MD;**  
**Gregory Della Rocca, MD**

4:46 pm Discussion

4:55 pm Adjourn for the Day



# BASIC SCIENCE FOCUS FORUM, continued

Thursday, October 6, 2016

7:30 am **Introduction**  
 Edward J. Harvey, MD

7:35 am - **Symposium 5**  
 8:25 am **Patient Related Outcomes- Helpful or Not so Much?**

Moderators: **William T. Obremskey, MD**  
**Douglas W. Lundy, MD**

7:35 am **Are the Currently Available PROs Adequate for Research in Orthopaedic Trauma?**  
 Thomas F. Higgins, MD

7:45 am **Which PROs are the most Appropriate for Outcomes in Trauma and How Do We Account for the Lack of Pre-Injury Measures?**  
 William T. Obremskey, MD

7:55 am **Mobility as Validated PRO for an Assessment of General Health**  
 Janet A. Prvu Bettger, ScD, FAHA

8:05 am **How PROs will be used by Others: Granting Agencies, Insurers, FDA, CMS, NQF**  
 Mark S. Vrahas, MD

8:15 am Discussion

8:25 am - **Paper Session 4**  
 8:58 am **How We Measure Outcomes**  
 Moderator: **Douglas W. Lundy, MD**

8:25 am **Overview**  
 Douglas W. Lundy, MD

8:30 am **Paper 17**  
**Does the Modified RUST Score Correlate with the Biomechanical Properties of Bone? Evaluation in a Murine Model**  
 Paul Tornetta III, MD; **Margaret Cooke, MD**;  
 Amira Hussein, PhD; Jody Litrenta, MD;  
 William Ricci, MD; Jason Nascone, MD;  
 Robert O'Toole, MD; Louis Gerstenfeld, PhD

8:36 am **Paper 18**  
**Does a Patient's Self-Reported Ability to Weightbear Immediately After Injury Predict Stability for Ankle Fractures?**  
**Bonnie Chien, MD**; Kurt Hofmann, MD;  
 Mohammad Ghorbanhoseini, MD;  
 David Zurakowski, PhD; Edward Rodriguez, MD;  
 Paul Appleton, MD; John Ellington, MD;  
 John Kwon, MD

8:42 am **Paper 19**  
**Health-Related Quality of Life Following Operative Management of Open Fractures**  
 Brad Petrisor, MD; **Kyle Jeray, MD**;  
 Sheila Sprague, PhD; Paula McKay, BSc;  
 Gordon Guyatt, MD; Stephen D. Walter, BSc;  
 Emil Schemitsch, MD; Susan Liew, MD;  
 Diane Heels-Ansdell, MSc;  
 Sun Makosso-Kallyth, PhD; Mohit Bhandari, MD;  
 FAITH Investigators

8:48 am Discussion

8:58 am Refreshment Break

9:05 am - **Symposium 6**  
 10:00 am **The Basics: A Principle Based Approach to Nonunion Management**

Moderators: **Aaron Nauth, MD**  
**Philipp Leucht**

9:05 am **Managing Infection in the Setting of Non-Union**  
 Paul Tornetta III, MD

9:14 am **Bone Grafting: What is the Ideal type?**  
 Philipp Leucht, MD

9:23 am **Biological Therapies for Non-Union**  
 Michael J. Gardner, MD

9:32 am **Cell-based Therapies for Non-Union Management**  
 Mark A. Lee, MD

9:41 am **Metabolic Workup of Non-Union**  
 Mark R. Brinker, MD

9:50 am Discussion

10:00 am - **Paper Session 5**  
 11:00 am **New Approaches to Healing**  
 Moderators: **Aaron Nauth, MD**  
**Philipp Leucht, MD**

10:00 am **Overview**  
 Aaron Nauth, MD

10:05 am **Paper 20**  
**Selective Serotonin Reuptake Inhibitors Impair Fracture Healing**  
 Vivian Bradaschia Correa, DDS; Devan Mehta, BS;  
 Anna Josephson, BS; Jason Huo, BS;  
 Matthew Mizrahi, BS; Kenneth Egol, MD;  
**Philipp Leucht, MD**;

10:11 am **Paper 21**  
**Pharmacokinetics of Depot Administered Vancomycin Powder in a Rat Femur Fracture Model: Retention Time is Brief**  
 Zachary Working, MD; Hunter Frederiksen, BS;  
 Alex Drew, BS; Catherine Loc Carrillo, PhD;  
 Erik Kubiak, MD

# BASIC SCIENCE FOCUS FORUM, continued

Thursday, October 6, 2016, cont'd

10:17 am **Paper 22**  
**The Effect of Timing of Aminobisphosphonate Therapy on Fracture Healing: A Rabbit Osteoporosis Model**  
*Jesse Otero, MD; Rory Metcalf, BS; Nicole Watson, PhD; Emily Peterson, DVM; Douglas Fredericks, MD; Michael Wiley, MD*

10:23 am Discussion

10:33 am **Paper 23**  
**Propionibacterium Acnes Colonization Impairs Fracture Healing in a Rat Model of an Open Femur Fracture Treated with Intramedullary Fixation**  
*Robert Duerr, MD; Mark Longwell, BS; Michael Florack, MD; Laura Nistico, PhD; Daniel Altman, MD; Gregory Altman, MD; Rachael Kreft*

10:39 am **Paper 24**  
**Impedance Measurements Correlate to Callus Maturation of Mice Tibia Fractures**  
*Monica Lin, BS; Frank Yang, BS; Safa Herfat, PhD; Chelsea Bahney, PhD; Michel Maharbiz, PhD; Meir Marmor, MD*

10:45 am Discussion

11:00 am **Adjourn to Industry Symposia**

Are you interested in joining OTA colleagues to participate in a research study group and/or multi-center clinical research project?



If the answer is yes, join us for an OTA Research Town Meeting!

Wednesday, October 5, 2016  
6:00 pm – 7:00 pm  
(Room TBD)

