

Theodore Miclau, III, 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 **10.25 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 etiology of and therapy for venous thromboembolism in trauma patients
- Review the epidemiology and treatment of atypical femur fractures
- Know about state-of-the-art technologies and practices in intraoperative imaging
- Recognize the cycle of innovation and its importance to clinical research

## Wednesday, October 9, 2013

6:30 am Registration & Breakfast

7:25 am Introduction:  
Theodore Miclau, III, MD  
Program Chair

### 7:30 am–8:40 am Symposium 1

Hot Topics in Biomechanics:  
Hip Fracture Fixation  
Moderators: Steven A Olson, MD;  
Loren L Latta, PhD

7:30 am Fixation Recommendations in 2013:  
Intramedullary Nailing  
Emil H Schemitsch, MD

7:40 am Fixation Recommendations in 2013: Plating  
Steven A Olson, MD

7:50 am Considerations in New Devices Development:  
Ease of Use to FDA Concerns  
Joseph Ferrante, BS, ME

8:00 am Selecting the Best Model: Comparing Existing  
Devices to New Constructs  
Loren L Latta, PE, PhD

8:10 am Translating Biomechanical Findings into  
Clinical Practice  
Thomas A Russell, MD

8:20 am Discussion

### 8:40 am–9:38 am Paper Session 1

Biomechanically-Directed Fixation: Hot Topics  
Moderators: Steven A Olson, MD;  
Loren L Latta, MD

8:40 am Overview: Steven A Olson, MD

8:50 am Paper 1

Lunotriquetral Ligament Injuries Associated  
With Distal Radius Fractures: The Effect Of  
Wrist Position And Forearm Rotation During  
A Fall Onto An Outstretched Hand  
Check C Kam; Prasad Sawardeker, MD;  
Raz Nicolescu; David Kaimrajh, MS;  
Jordan Fennema, MD; Paul Diaz-Granados, MD;  
Edward Milne; Loren L Latta, MD, PhD;  
Elizabeth Anne Ouellette, MD, MBA

8:56 am Paper 2

Biomechanical Analysis Of Far Proximal Radial  
Shaft Fracture Fixation  
Gregory Gaski; Stephen M Quinnan, MD;  
David Kaimrajh, MS; Edward Milne;  
Loren L Latta, MD, PhD

9:02 am Paper 3

No Difference In Fatigue Failure Between  
Non-Locked And Locked Interlocking  
Screws Of Intramedullary Nails In Proximal  
Tibia Fractures  
Utku Kandemir, MD; Safa Herfat;  
Murat Pekmezci, MD

9:08 am Discussion

9:14 am Paper 4

Is Overdrilling Of Cortical Screws An  
Appropriate Surrogate For Osteoporosis  
In Biomechanical Testing?  
Jacob Cartner, BS; Megan Fessenden;  
Tim Petteys; Paul Tornetta, III, MD

9:20 am Paper 5

Finite Element Analysis Of The Distal Femur:  
Fracture Motion Predicts Clinical Callus  
William Lack; Jacob Elkins, MS;  
Trevor Lujan, PhD; Richard Peindl, PhD;  
James Kellam, MD; Donald D Anderson, BS, MS, PhD;  
Thomas D Brown, PhD; J Lawrence Marsh, MD

9:26 am Paper 6

The Minimal Screw Length For Tricortical  
Syndesmosis Fixation In Ankle Fracture:  
A Cadaveric Study  
Derrick O Cote, MD; Alexander Chong;  
Bradley Dart; Nils Hakansson; Michael Ward;  
Pie Pichetsurthorn; Paul Wooley

9:32 am Discussion

9:38 am Break

# Basic Science Focus Forum (cont.)

## 10:00 am – 11:10 am Symposium 2

### Inflammation

Moderators: Peter V Giannoudis, MD;  
Chelsea Bahney, PhD

- 10:00 am **Inflammation and Healing: When is Too Much a Bad Thing?**  
*Chelsea Bahney, PhD*
- 10:10 am **Inflammatory-Related Cytokines: What Role Do They Have in Healing?**  
*David J Hak, MD, MBA*
- 10:20 am **Can PRPs Modulate the Inflammatory Response During Healing?**  
*Peter V Giannoudis, MD*
- 10:30 am **Anti-Inflammatories: How and When Can They be Useful in Orthopaedic Trauma?**  
*David W Sanders, MD*
- 10:40 am **Systemic Trauma: Evidence-Based Recommendations for Timing of Fixation in 2013**  
*Hans-Christopher Pape, MD*
- 10:50 am Discussion

## 11:10 am – 11:44 am Paper Session 2

### Inflammation and Bone Healing

Moderators: Peter V Giannoudis, MD;  
Chelsea Bahney, PhD

- 11:10 am **Overview:** Peter V Giannoudis, MD
- 11:20 am **Paper 7**  
**Age-Related Changes in Macrophage Polarization Affects Osteogenesis**  
*Fei Gao, MD, PhD; Jesse Shantz; Yan Yiu Yu, PhD; Ralph S Marcucio, MD; Theodore Miclau, III, MD*
- 11:26 am **Paper 8**  
**T-Lymphocyte Immune Modulation In Fracture Repair: The Role Of Il-17F In A Novel GSK3/Beta-Catenin Independent Pathway**  
*Elaine Mau, MD, MSc; Yufa Wang; Heather Whetstone; Diane Nam, MSc, MD, FRCSC*
- 11:32 am **Paper 9**  
**Lipopolysaccharide-Induced Systemic Inflammation Affects Bone Healing In A Murine Tibia Fracture Model**  
*Jesse A Shantz, MD, MBA; Gao Fei, MD; Yan Yiu Yu, PhD; Theodore Miclau, III, MD; Ralph S Marcucio, PhD*
- 11:38 am Discussion
- 11:44 am Lunch

## 12:45 pm – 1:55 pm Symposium 3

### Bone Grafting

Moderators: Joseph Borrelli, Jr, MD;  
Kenneth A Egol, MD

- 12:45 pm **Efficacy of Autografts: Do Harvest Sites Matter?**  
*Aaron Nauth, MD*
- 12:55 pm **Grafting in the Setting of Infection: Strategies**  
*Hans-Christoph Pape, MD*
- 1:05 pm **Bone Graft Extenders: Which Ones Work?**  
*J Tracy Watson, MD*
- 1:15 pm **Bone Graft Timing: What is Most Optimal?**  
*Mark A Lee, MD*
- 1:25 pm **Bone Graft Substitutes: Is Anything as Effective as Autograft?**  
*Kenneth A Egol, MD*
- 1:35 pm Discussion

## 1:55 pm – 3:24 pm Paper Session 3

### Bone Regeneration and Repair

Moderators: Joseph Borrelli, Jr, MD  
Kenneth A Egol, MD

- 1:55 pm **Overview:** Joseph Borrelli, Jr, MD
- 2:05 pm **Paper 10**  
**The Influence Of Construct Stiffness On Bone Regeneration In A Rodent Defect Model**  
*Joel C Williams, MD; Matthew A Anderson, BS; Blaine A Christiansen, PhD; A Hari Reddi, PhD; Mark A Lee, MD*
- 2:11 pm **Paper 11**  
**A Novel Rodent Critical Sized Defect Model And BMP-7 Dose Response Study**  
*Joel C Williams, MD; Sukanta Maitra; Matthew J Anderson, BS; Blaine A Christiansen, PhD; A Hari Reddi, PhD; Mark A Lee, MD*
- 2:17 pm **Paper 12**  
**Spacer Composition Influences Properties Of The Masquelet Membrane In Animals And Observed Gene Expression Patterns Of Inducible Membranes In Humans**  
*Monique Bethel, MD; Susan M McDowell, MD; Brahmananda R Chitteti, PhD; Tien-Min Gabriel Chu, DDS, PhD; Janos P Ertl, MD; Brian H Mullis, MD; Melissa A Kacena, PhD; Jeffrey O Anglen, MD*
- 2:23 pm **Paper 13**  
**The Masquelet Technique Induces The Formation Of A Mesenchymal Stem Cell Rich Periosteum Like Membrane**  
*Peter V Giannoudis, MD; Richard Cuthbert; Sarah Churchman; Tan Boon; Dennis McGonagle*
- 2:29 pm Discussion

- 2:37 pm **Paper 14**  
**Opiates Impair Healing In Rat Femur Fracture Model**  
*Jesse Chrastil, MD; Thomas F Higgins, MD; Christopher Sampson; Kevin Jones*
- 2:43 pm **Paper 15**  
**Systemic Inhibition Of Notch Signaling Alters Multiple Phases Of Fracture Healing**  
*Michael Dishowitz, PhD; Luke Lopas; Joel Takacs; Julie Engiles; Jaimo Ahn, MD, PhD; Kurt D Hankenson, DVM*
- 2:49 pm **Paper 16**  
**Unexpected Dispensable Role Of MMP9 In A Stabilized Femur Fracture Model**  
*Cesar S Molina, MD; Masato Yuasa, MD; Johnathan G Schoencker, MD, PhD*
- 2:55 pm Discussion
- 3:01 pm **Paper 17**  
**The Non-Essential And Potentially Pathogenic Role Of A Fibrin Clot In Fracture Healing**  
*Masato Yuasa, MD; Nicholas Mignemi; Heather Cole; Lynda O'Rear; Jesse Bible, MD; William T Obremsky, MD, MPH; Jeffrey Nyman; Justin Cates; Herbert Schwartz; Jonathan Gregory Schoenecker*
- 3:07 pm **Paper 18**  
**Single Nucleotide Polymorphisms In Osteogenic Genes In Atrophic Delayed Fracture Healing – A Preliminary Investigation**  
*Vikram Sathyendra, MD; Henry J Donahue, PhD; Kent E Vrana, PhD; Arthur Berg, PhD; David Fryzel, BS; Jonathan Gandhi, BS; J Spence Reid, MD*
- 3:13 pm **Paper 19**  
**Systemic Proteomic Profiles Associated With Healing And Nonunion Of Mid-Shaft Femur Fractures**  
*Andrew Ringnes, MD; Melissa Nicole Zimel, MD; Denise Koueiter, MS; Tristan Maerz; Timothy Geddes; Kevin Grant, MD; Kevin Baker*
- 3:19 pm Discussion
- 3:25 pm Break

**3:45 pm–4:50 pm Symposium 4**

- Building Networks: The Basics**  
**Moderators: Saam Morshed, MD, PhD; Paul Volberding, MD**
- 3:45 pm **Global Clinical Research: Why Do We Need It?**  
*Paul Volberding, MD*
- 4:00 pm **What Kind of Evidence is Needed to Change Practice or Policy?**  
*David Shearer, MD, MPH*
- 4:10 pm **Conducting International Clinical Research: What Resources are Necessary?**  
*Emil H Schemitsch, MD*
- 4:20 pm **Selecting the Right Study Design: Balancing Science and Resources**  
*Saam Morshed, MD, PhD*
- 4:30 pm **International Research Studies: How to Partner?**  
*Gerard P Slobogean, MD, MPH*
- 4:40 pm Discussion

**4:50 pm–5:30 pm Paper Session 4**

- International Research Studies**  
**Moderators: Saam Morshed, MD, PhD; Paul Volberding, MD**
- 4:50 pm **International Registries: INORMUS**  
*Clary K Foote, MD*
- 4:56 pm **Paper 20**  
**Management Of Closed Femur Fractures With The SIGN Intramedullary Nail In Two Developing African Countries (Multicenter Observational Study)**  
*Kyle R Stephens, DO; Daniel Galat, MD; Duane Anderson, MD; Kiprono G Koech, MD; Paul Whiting, MD; Michael Mwachiro, MD; Douglas W Lundy, MD*
- 5:02 pm **Paper 21**  
**The Design Of A Prospective Observational Study To Evaluate The Outcomes Of Operatively Treated Femoral Shaft Fractures In Sub-Saharan Africa (Single-Center Observational Study)**  
*David Shearer, MD; MPH, Edmund Eliezer, MD; Billy Haonga, MD; Saam Morshed, MD, PhD*
- 5:08 pm **International Randomized Control Trial: FLOW**  
*Kyle J Jeray, MD*
- 5:14 pm Discussion
- 5:30 pm **Adjourn to International Poster Reception**

# 2013 OTA ANNUAL MEETING

## Thursday, October 10, 2013

7:25 am Introduction  
Theodore Miclau, III, MD, Program Chair

### 7:30 am–8:40 am Symposium 5

- Infection**  
Moderators: Emil H Schemitsch, MD;  
Joseph C Wenke, PhD
- 7:30 am **Diagnosis of Infection in Orthopaedic Trauma Patients: New Technologies**  
*Joseph C Wenke, PhD*
- 7:40 am **Preventing Orthopaedic Infections**  
*David Markel, MD, MPH*
- 7:50 am **Implant-Related Infections: Bugs and Biofilms**  
*Lawrence X Webb, MD*
- 8:00 am **Managing Hardware-Related Infections: Evidence Based Strategies**  
*Mike D McKee, MD*
- 8:10 am **Treatment of Post-Traumatic Osteomyelitis: The Next Generation!**  
*Todd O McKinley, MD*
- 8:20 am Discussion

### 8:40 am–9:13 am Paper Session 5

- Musculoskeletal Infection**  
Moderators: Emil H Schemitsch, MD;  
Joseph C Wenke, PhD
- 8:40 am **Overview:** Emil H Schemitsch, MD
- 8:50 am **Paper 22**  
**Development And Evaluation Of A Biofilm Dispersing Scaffold**  
*Chad A Krueger, MD; Carlos J Sanchez, PhD; Edna Margarita-Prieto, PhD; Katarzyna J Zienkiewicz, PhD; Desiree R Romano, BA; Kevin S Akers, MD; Scott A Guelcher; Joseph C Wenke, PhD*
- 8:56 am **Paper 23**  
**Intraoperative Dip-Coating Inhibit Biofilms And Support Bone Healing During Infection**  
*Thomas Schaer, DO; Suzanne Stewart, DVM*
- 9:02 am **Paper 24**  
**Evaluation Of An Absorbable Gentamicin Eluting Plate Sleeve In An Ovine Fracture Healing Model**  
*Joanne Haughan, DVM; Carl A Depaula, PhD; David Armbruster, BS; Thomas Schaer, DO*
- 9:08 am Discussion
- 9:13 am Break

### 9:30 am–10:40 am Symposium 6

- Stem Cell Therapies**  
Moderators: Theodore Miclau, III, MD;  
Ralph S Marcucio, PhD
- 9:30 am **Stem Cell Populations: Which Ones are Most Useful?**  
*Aaron Nauth, MD*
- 9:40 am **Stem Cells: How Do They Influence Healing?**  
*Peter V Giannoudis, MD*
- 9:50 am **Progenitor Cells: What are The Sources?**  
*Ralph S Marcucio, MD*
- 10:00 am **Stem Cell Therapies: What Still Needs to be Overcome?**  
*Chelsea Bahney, PhD*
- 10:10 am **Developing Stem Cell Approaches to Bone Defect**  
*George Muschler, MD*
- 10:20 am Discussion

### 10:40 am–11:14 am Paper Session 6

- Stem Cells**  
Moderators: Theodore Miclau, III, MD  
Ralph S Marcucio, PhD
- 10:40 am **Overview:** Ralph S Marcucio, PhD
- 10:50 am **Paper 25**  
**Effects Of Endothelial Progenitor Cell Therapy On Diabetic Rat Fracture Healing**  
*Clifford Lin, MD; Aaron Nauth, MD; Emil H Schemitsch, MD*
- 10:56 am **Paper 26**  
**The Effects Of Aminobisphosphonate In Vitro And In Vivo Treatment On The Osteogenic Capacity Of Bone Marrow Stromal Cells From Senile Osteoporotic Hip Fracture Patients**  
*Richard Andreas Lindtner, MD; André N Tladen, PhD; Konstantin Genelin, MD; Hannes L Ebner, PhD; Ingrid Sitte, MD; Marina Klawitter; Brigitte von Rechenberg, Professor; Peter J Richards, PhD*
- 11:02 am **Paper 27**  
**Healing Segmental Bone Defects With Endothelial Progenitor Cell Subtypes**  
*Erica Giles, BS; Michael Glick, BSc; Tony Lin, BSc; Wendy Chi; Aaron Nauth, MD; Emil H Schemitsch, MD*
- 11:08 am Discussion
- 11:14 am **Adjourn to Industry Lunch Symposia**

# Basic Science