Basic Science Focus Forum

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 Sawaieker, 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, MD; 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 Pichetsurnthorn; Paul Wooley

9:32 am  Discussion

9:38 am  Break

Pre-registration deadline September 3, 2013 (mail); September 10, 2013 (online) – see Page 39
**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  
    *Inflammation and Healing: 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

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  
    *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  
    *T-Lymphocyte Immune Modulation In Fracture Repair: The Role Of II-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  
    *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

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

1:55 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  
    *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  
    *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  
    *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

3:23 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
  - 3:29 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 Obremskey, MD, MPH; Jeffry 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 Geddies; 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)
Kyle J Jeray, MD

5:08 pm  International Randomized Control Trial: FLOW
Kyle J Jeray, MD

5:14 pm  Discussion

5:30 pm  Adjourn to International Poster Reception
**Thursday, October 10, 2013**

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

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| 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

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| 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

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

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| 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

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| 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 Tiaden, 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