Basic Science Focus Forum

Wednesday - Thursday
October 17-18
2018

Basic Science Committee Chair
Edward J. Harvey, MD

Gaylord Palms in Kissimmee
(Orlando area), Florida

CME credits will be awarded for your participation at this activity.
OVERVIEW

The 2018 Basic Science Focus Forum Course is geared towards orthopaedic surgeons whose passion is basic science and how it relates or may affect their practice. Basic science researchers will also obtain valuable knowledge about translational opportunities and how their research may change orthopaedic care. This course will involve 6 main symposia and 29 papers that are targeted at basic science studies and their outcomes.

The attendees of the BSFF program will have the chance to combine with the attendees of the International Trauma Care Forum for an exchange of ideas during the symposium titled, “The Science of Bone Grafting.” This combined session has proved to be a great collaboration and a chance to discuss ideas with our international colleagues.

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 this course, participants will be able to:

- Understand how precision medicine principles will change how we look at research
- Outline internal fixation principles to guide treatment
- Discover new options for treatment of soft tissue injuries
- Comprehend the patient parameters that make fracture healing difficult
- Explore the basic science and clinical applications of bone grafting
- Understand current concepts in cell based therapies for fracture healing

BASIC SCIENCE COMMITTEE

Edward J. Harvey, MD, Chair
Michael T. Archdeacon, MD
Mohit Bhandari, MD, PhD
Joseph Borrelli, MD
Todd O. McKinley, MD
Tyler Morris, MD, Resident Member
Aaron Nauth, MD
Emil Schemitsch, MD

FEATURED SYMPOSIA

- Precision Medicine Approaches to Delivery and Analysis of Trauma Systems
- Optimal Internal Fixation Configuration
- Softer Tissue Issues
- Making Nonunions into Unions
- The Science of Bone Grafting – Combined Session with International Trauma Care Forum
- Cell-Based Therapies for Fractures

OTA Member

On/Before 10/1/18 After 10/1/18

OTA Member $250 $350
Non-Member $350 $450

Course Fee:

REGISTER TODAY at www.OTA.org
2018 BASIC SCIENCE FOCUS FORUM

COURSE AGENDA

Wednesday, October 17, 2018

7:30 AM  INTRODUCTION  Edward J. Harvey, MD

7:35–  SYMPOSIUM I
8:35 AM  Precision Medicine Applications to Manage Multiply Injured Patients with Orthopaedic Trauma
Moderators: Todd O. McKinley, MD  Samir Mehta, MD

7:35 AM  INTRODUCTION
7:40 AM  Precision Methods for Wound Management  Felipe A. Lisboa, MD
7:53 AM  Precision Methods for Nonunions  Annamarie Horan, PhD
8:06 AM  Precision Methods to Stage Orthopaedic Interventions  Greg Gaski, MD

8:19 AM  Discussion

8:35–  PAPER SESSION I
9:15 AM  New Techniques in Patient Care and Diagnosis
Moderators: Todd O. McKinley, MD  Samir Mehta, MD

8:35 AM  Overview  Todd O. McKinley, MD
8:40 AM  Paper 1  Quantifying Ionizing Radiation Dosage to Clinicians’ Brains During Fluoroscopic-Guided Orthopaedic Surgery: Simulated Cadaver Experiment. QIRDOSC Study  Darryl Ramoutar, FRCS; Yogesh Thakur, PhD; Vineet Batta, FRCS; Petar Seslija; Vivian Chung; Danmei Liu, PhD; Pierre Guy, MD

8:46 AM  Paper 2  Infection and Biofilms After Washout In Braided Versus Barbed-Monofilament Sutures: A Murine Model  David Markel, MD; Christopher Bergum, BS; Bin Wu, MD; Therese Bou-Akl, PhD; Weiping Ren, PhD

8:52 AM  Paper 3  Can Dorsal Dermal Fascial Fenestrations Treat Acute Compartment Syndrome of the Foot?  Reuben Lufrano, MD; Matthew Nies, MD; Benjamin Ebben, MD; Scott Hetzel, MS; Robert O’Toole, MD; Christopher Doro, MD

8:58 AM  Paper 4  Detection of Elevated Compartment Pressure in a Cadaver Model Using Standard Musculoskeletal Ultrasound  Meir Marmor, MD; Jonathan Charlu, BS; Riley Knox, BS; Safa Herfat, PhD

9:04 AM  Discussion

9:15–  Refreshment Break

9:30 AM  SYMPOSIUM II
10:30 AM  Optimal Locking Plate Configuration  Emil H. Schemitsch, MD

9:30 AM  Overview  Emil H. Schemitsch, MD
9:35 AM  How Stiff Should The Construct Be?  Michael Hast, PhD
9:43 AM  Role of Screw Location, Screw Type And Plate Working Length!  Mark Heyland, PhD.c
9:51 AM  Role of Lag Screws and Miniplates  Utku Kandemir, MD
9:59 AM  Are Active Plates Better than Conventional Locking Plates?  Michael Bottlang, PhD

10:07 AM  How to Reduce the Risk of Implant Failure and Nonunion  Brett D. Crist, MD
10:15 AM  Discussion

REGISTER TODAY at www.OTA.org
10:30–11:35 AM  
**PAPER SESSION II**  
**Biomechanics in Clinical Models**  
**Moderator:**  
Emil H. Schemitsch, MD

10:30 AM  
**Paper 5**  
Fixation of Acetabular Fractures With Precontoured Plates Alone Causes Fracture Malreduction  
Nicholas Alfonso, MD; Weston Ryan, BS; Todd Baldini, MSc; Christopher Joyce, MD; Michael Reiter, MD; Cyril Mauffrey, MD

10:36 AM  
**Paper 6**  
Hybrid Screw Fixation for Femoral Neck Fractures: Does It Prevent Mechanical Failure?  
Derly Cuellar, MD; J. Bledsoe, PhD; J. Tracy Watson, MD

10:42 AM  
**Paper 7**  
Precontoured Quadrilateral Surface Acetabular Plate Fixation Demonstrates Increased Stability When Compared to Pelvic Reconstruction Plates: A Biomechanical Study  
Weston Ryan, BS; Nicholas Alfonso, MD; Todd Baldini, MSc; Michael Reiter, MD; Christopher Joyce, MD; Wei Chen, MD; Ying-Ze Zhang, MD; Cyril Mauffrey, MD

10:48 AM  
**Paper 8**  
Elevated Joint Contact Stress Is Associated With Radiographic Measures of Osteoarthritis in Operatively Treated Acetabular Fractures at 2 Years  
Holly Thomas-Aitken, MS; Kevin Dibbern, MS; Tyler Carilee, MD; J. Lawrence Marsh, MD; Michael Willey, MD; Jessica Goetz, PhD; Donald Anderson, PhD

11:04 AM  
**Discussion**

11:10 AM  
**Paper 10**  
Calcar Screw Position in Proximal Humerus Fracture Fixation: Don’t Miss High  
Samir Mehta, MD; Matthew Chin, BS; Surena Namdari, MD; Michael Hast, PhD

11:16 AM  
**Paper 11**  
Characterization of a Novel Murine Femur Fracture Model  
Joseph Johnson, MD; Jeremy Truntzer, MD; P. Mansuripur, MD; Nathan Thomas, BS; Justin Kleiner, BS; Sarath Koruprolu, MS; Christopher Born, MD

11:22 AM  
**Discussion**

11:30 AM  
**Move down to Exhibit Hall D / Room 2**

11:40 AM–12:30 PM  
**INTERNATIONAL INDUSTRY LUNCH SESSION**

12:30 PM  
**ZIMMER BIOMET**

Innovative Concepts in External Fixation  
FastFrame™ External Fixation System Overview & Early Clinical Experience  
Faculty: Jason Nascone, MD  
Box Lunch Provided by OTA

12:30 PM  
**Return to Sun Ballroom B**

12:40–1:40 PM  
**SYMPOSIUM III**  
**Softer Tissue Issues**  
**Moderators:**  
Aaron Nauth, MD  
Henry Broekhuyse, MD

12:40 PM  
**Introduction**  
Aaron Nauth, MD

12:45 PM  
**Joint Contractures following Intra-articular Fracture Surgery: Where are We Now?**  
Ken Egol, MD

12:55 PM  
**Staged versus Early Definitive Fixation of High Energy Tibial Plateau and Plafond Fractures: What is Best for the Soft Tissues and the Patient?**  
Henry Broekhuyse, MD
1:05 PM Soft Tissue Coverage Following Open Tibia Fractures: Timing and Flap Selection  
Martin I. Boyer, MD

1:15 PM Heterotopic Ossification in Orthopaedic Trauma: State of the Art  
Jeffrey Anglen, MD

1:25 PM Discussion

1:40–2:14 PM  
PAPER SESSION III  
Non-Bone Issues  
Moderators:  
Aaron Nauth, MD  
Henry Broekhusye, MD

1:40 PM Paper 12  
Delayed Fixation of Intra-Articular Fractures Increased Cartilage Degeneration in a Large Animal Model  
Jessica Goetz, PhD; Christopher Heck, BS; Emily Petersen, DVM; Douglas Fredericks, BS; Michael Willey, MD

1:46 PM Paper 13  
Progression of Inflammation in Muscle and Callus in a Rat Model of a High-Energy Open Tibia Fracture  
Kayla Delaney, BS; Kayla Delaney, BS; Natalie Taylor, BS; Hans-Christoph Pape, MD; Fletcher White, PhD; Todd McKinley, MD

1:52 PM Paper 14  
Mitigating Pathologic Fibrosis Following Volumetric Muscle Loss Injury  
Benjamin Corona, PhD; Jessica Rivera, MD; Sarah Greising, PhD

1:58 PM Paper 15  
Inflammatory Cytokines Provide Unique Predictive Value Beyond Injury Severity: A Prospective Cohort Study of Orthopaedic Trauma Patients  
Arun Aneja, MD PhD; Alejandro Marquez-Lara, MD; David Landy, PhD; Boshen Liu, MD; Peter Mittwede, MD; Seth Phillips, DO; Lusha Xiang, MD; George Russell, MD

2:04 PM Discussion

2:14–2:30 PM  
Refreshment Break

2:30–3:00 PM SYMPOSIUM IV  
Making Nonunions into Unions  
Moderators:  
Michael T. Archdeacon, MD  
Joseph Hsu, MD

2:30 PM Overview  
Michael T. Archdeacon, MD

2:35 PM What Is the Role of Nutritional Optimization in the Treatment of Nonunions?  
Ivan Tarkin, MD

2:45 PM Does Vitamin D Supplementation Impact Fracture Healing / Nonunion Surgery?  
Laurence B. Kempton, MD

3:05 PM Is the Endocrinologist an Integral Member of the Team for Improving Outcomes in Nonunion Surgery?  
Patrick Bergin, MD

3:30–4:00 PM  
PAPER SESSION IV  
Chemicals and Compounds in Fracture Optimization  
Moderators:  
Michael T. Archdeacon, MD  
Joseph Hsu, MD

3:30 PM Overview  
Michael Archdeacon, MD

3:35 PM Paper 16  
Beta-Blocker Treatment Prevents Delayed Fracture Healing Observed With Selective Serotonin Reuptake Inhibitors Treatment  
Sooyeon Lee, PhD; Vivian Bradaschia Correa, PhD; Nury Yim, MD; Madeleine Wong, BS; Philipp Leucht, MD

3:41 PM Paper 17  
Enhanced Healing of Rat Calvarial Bone Defect With Stem Cell-Seeded Collagen Nanofibers  
Therese Bou-Akl, PhD; Bin Wu, MD; Conor Daly-Seiler, MS; Mario Rossi, BS; Weiping Ren, PhD; David Markel, MD
Paper 18  
Effects of Powdered Rifampin and Vancomycin on Biofilm Production of Staphylococcus aureus on Orthopaedic Implants  
Christian Douthit, MD; Brent Gudenkauf, BS; Abdul Hamood, PhD; Nithya Mudaliar, MS; Mark Jenkins, MD; Cyrus Caroom, MD

3:53 PM Discussion

Paper 19  
Serum 25(OH)D Alters Bone Turnover Marker Response After Hip Fracture: A Multihospital Prospective Cohort of 296 Elderly Patients  
Christopher Stewart, BA; Nathan O’Hara, MPH; Denise Orwig, PhD; Marc Hochberg, MD MPH; Sheila Sprague, PhD; Jay Magaziner, PhD; Gerard Slobogean, MD MPH

4:09 PM Paper 20  
Diagnosing Orthopaedic Infections: A Novel Serum Screening Tool  
Aaron Johnson, MD; D. Marinos, BS; Robert O’Toole, MD; Roman Natoli, MD; R. Montalvo, BS; Timothy Zerhusen, BS; Janette Harro, PhD; Manjari Joshi, MD; Ted Manson, MD; Mark Shirtliff, PhD

4:15 PM Paper 21  
Differences in Local O2 Supply and Consumption After Intramedullary Nailing Depends on the Degree of Injury: A Study in Hemodynamically Stable Pigs  
Yannik Kalbas; Klemens Horst, MD; Zhi Qiao, MD; Michel Teuben, MD; Frank Hildebrand, MD; Hans-Christoph Pape, MD; Roman Pfeifer, MD

4:21 PM Discussion

4:30 PM Adjourn for the Day

COURSE AGENDA  
Thursday, October 18, 2018

7:30 AM  
INTRODUCTION (Exhibit Hall D - Room 2)  
Edward J. Harvey, MD

7:35–

8:35 AM  
JOINT SESSION (Exhibit Hall D - Room 2)  
The Science of Bone Grafting  
Moderators: Peter V. Giannoudis, MD, FACS, FRCS Edward J. Harvey, MD

7:35 AM  
Limitations of Autologous Bone Graft  
Joseph Borrelli Jr., MD

7:45 AM  
Ant/Post Iliac Crest Graft Harvesting: Tips / Tricks  
Steven A. Olson, MD

7:55 AM  
Distal Femur: How I Do It  
Paul Tornetta III, MD

8:05 AM  
RIA Grafting: Technique–Issues–Solutions  
Brent L. Norris, MD

8:15 AM  
Composite Grafting: What I Do and Why?  
Peter V. Giannoudis, MD, FACS, FRCS

8:25 AM  
Discussion  
All Faculty

8:35 AM  
Break  
Remain in Exhibit Hall D

8:40–

9:20 AM  
PAPER SESSION V  
Making Bone Heal  
Moderators: Paul Tornetta III, MD Steven A. Olson, MD

8:40 AM  
Overview  
Joseph Borrelli Jr., MD

REGISTER TODAY at www.OTA.org
8:45 AM  Paper 22  Noninvasive Localized Cold Therapy Enhances Angiogenesis in Bone Defect Model  
Marianne Comeau-Gauthier, MD;  
Daniel Castano, MD; Geraldine Merle, PhD;  
Justin Drager, MD MsC;  
Edward Harvey, MD MsC

8:51 AM  Paper 23  Biological Activity of Human-Induced Membranes: Differences Between Femoral and Tibial Sites  
Vaida Glatt, PhD; Anna Woloszyk, PhD;  
Kevin Tetsworth, MD

8:57 AM  Paper 24  hPTH(1-34) Promotes Bone Fracture Healing in Multiple Diabetic Murine Models  
Shasta Henderson, MD;  
Francis Lee, MD PhD

9:03 AM  Paper 25  Inflammatory Profile and Osteogenic Potential of Fracture Hematoma in Humans  
Gavin Walters; Ippokratis Pountos, MD;  
Peter Giannoudis, MD

9:09 AM  Discussion

9:20–  Refreshment Break  
9:35 AM

9:35–  SYMPOSIUM VI  
10:25 AM  Cell Based Therapies for Fractures  
Moderators:  
Joseph Borrelli Jr., MD  
Gregory J. Della Rocca, MD, PhD, FACS

9:35 AM  Introduction  
Joseph Borrelli Jr., MD

9:40 AM  Osteoimmunology and Fracture Healing  
Prism Schneider, MD, PhD, FRCSC

9:48 AM  The Importance of Cell to Cell Communication and the Role of Extracellular Vesicles  
Hans-Christoph Pape, MD

9:56 AM  Stem Cell Based Therapy for Prevention of Delayed Fracture Union  
Yoram Weil, MD

10:04 AM  Bone Marrow Aspirate Concentration In the Treatment of Fractures  
J. Tracy Watson, MD

10:12 AM  Discussion  
All Faculty

10:25–  PAPER SESSION VI  
11:05 AM  Bone Healing by Treatment with Cells and Adjuncts  
Moderators:  
Joseph Borrelli Jr., MD  
Gregory J. Della Rocca, MD, PhD, FACS

10:25 AM  Paper 26  Mesenchymal Stem Cell Spheroids Augment Myoblast Secretome to Increase Osteoblast Activity  
Augustine Saiz, MD;  
Marissa Gionet-Gonzales, BS;  
Jonathan Leach, PhD; Mark Lee, MD

10:30 AM  Paper 27  Biomarkers of Neutrophil Extracellular Trap Formation (NETosis) and Their Relationship to Wound Healing in Ankle Fracture Surgery  
William Kent, MD; Mathew Whittaker, BS;  
Vitor Martins, BS; Simon Schenk, PhD;  
Paul Girard, MD; Alexandra Schwartz, MD

10:36 AM  Paper 28  Are RIA-MSCs More Stressed and Proapoptotic Than Bone Marrow-MSCs?  
Jehan El-Jawhari, PhD;  
Payal Ganguly, MSc; Elena Jones, PhD;  
Peter Giannoudis, MD

10:42 AM  Paper 29  The Effect of Different Washing Solutions on the Growth and Function of Primary Human Osteoblasts In Vitro  
Therese Bou-Akl, PhD; Jacob Markel, BA;  
Alan Afshari, MD

10:48 AM  Discussion

11:05 AM  Adjourn to Industry Symposia