



2008 AAOS/ORS ADVANCED IMAGING AND COMPUTER ASSISTED SURGERY OF THE KNEE AND HIP (AICKH) RESEARCH SYMPOSIUM

THURSDAY – SATURDAY, MAY 15 – 17, 2008

RENAISSANCE PROVIDENCE HOTEL / 5 AVENUE OF THE ARTS / PROVIDENCE, RHODE ISLAND 02903

SYMPOSIUM CO-CHAIRS: **MARTHA L. GRAY, PhD AND ANDREW D. PEARLE, MD**

S Y M P O S I U M A G E N D A

WEDNESDAY MAY 14, 2008

5:00 – 7:00 PM	Symposium Check In / Faculty Presentation Loading <i>Symposium Faculty and Attendees</i>	Registration/ Office Room
6:00 – 7:00 PM	Moderator Meeting <i>Session Moderators/Breakout Leaders</i>	Capitol Room
7:00 – 8:30 PM	Opening Dinner Reception	Symphony Foyer

THURSDAY MAY 15, 2008

7:30 – 8:00 AM	Continental Breakfast	Symphony B
SESSION I: SETTING THE STAGE		
MODERATORS: MARTHA L. GRAY, PhD AND ANDREW D. PEARLE, MD		
8:15 – 8:25 AM	Symposium Welcome / Call to Order <i>Martha L. Gray, PhD and Andrew D. Pearle, MD</i>	Symphony B
8:25 – 8:30 AM	1) AAOS Symposium History <i>Richard M. Terek, MD</i> <i>AAOS Research Development Committee</i>	
8:30 – 8:35 AM	Panel Introductions <i>Martha L. Gray, PhD</i> <i>Harvard / MIT</i>	
8:35 – 8:50 AM	2) Needs and Opportunities in the Assessment and Treatment of Knee and Hip Osteoarthritis: The View from a Rheumatologist <i>Steven R. Goldring, MD</i> <i>Hospital for Special Surgery</i>	
8:50 – 9:05 AM	3) Perspectives on Computer Assisted Orthopedic Surgery: Movement toward Quantitative Orthopedic Surgery <i>Andrew D. Pearle, MD</i> <i>Hospital for Special Surgery</i>	
9:05 – 9:20 AM	4) Challenges of Technology Integration & Computer Assisted Surgery <i>Meir (Iri) Liebergall, MD</i> <i>Hadassah-Hebrew University Medical Center, Jerusalem, Israel</i>	
9:20 – 9:35 AM	5) Clinical Validation of Emerging Technologies <i>Barbara D. Buch, MD</i> <i>U.S. Food and Drug Administration / Center for Devices and Radiological Health</i>	
9:35 – 10:05 AM	Questions and Answers	
10:05 – 10:20 AM	BREAK	

**SESSION II: BASIC SCIENCE ISSUES IN ADVANCED MUSCULOSKELETAL IMAGING
AND COMPUTER-ASSISTED SURGERY
MODERATOR: BRANISLAV JARAMAZ, PHD**

10:20 – 10:25 AM	Panel Introductions <i>Branislav Jaramaz, PhD</i> <i>Carnegie Mellon University Robotics Institute</i>	Symphony B
10:25 – 10:40 AM	6) Technology Integration: From Navigation to Robotics and Beyond <i>Leo Joskovicz, PhD</i> <i>Hebrew University, Jerusalem, Israel</i>	
10:40 – 10:55 AM	7) Future of Robotics <i>Russell H. Taylor, PhD</i> <i>Johns Hopkins University</i>	
10:55 – 11:10 AM	8) Tracking: Advantages of Optical v. Electromagnetic <i>Neil D. Glossop, PhD</i> <i>Traxtal Technologies Inc, Canada</i>	
11:10 – 11:25 AM	9) Registration: Image-Based, Image-Free, Image-Derived, and Future Directions <i>Randy E. Ellis, PhD</i> <i>Queens University, Canada</i>	
11:25 – 11:55 AM	Questions and Answers	
12:00 – 1:00 PM	Luncheon	Symphony A

**SESSION III: MORPHOLOGY, INTRAOPERATIVE IMAGING AND IMAGE PROCESSING
MODERATOR: PHILIPP K. LANG, MD, MBA**

1:05 – 1:10 PM	Panel Introductions <i>Philipp K. Lang, MD, MBA</i>	Symphony B
1:10 – 1:25 PM	10) Isotropic High Resolution Imaging of Cartilage Morphology and Cartilage Scoring <i>Philipp K. Lang, MD, MBA</i> <i>Brigham and Women's Hospital</i>	
1:25 – 1:40 PM	11) Quantitative Cartilage Morphology: How is it Measured and What Have We Learned? <i>Sharmila Majumdar, PhD</i> <i>University of California, San Francisco</i>	
1:40 – 2:05 PM	12) Correlation Between Joint Morphology and Pain; Correlation between MRI, Histology, and MicroCT <i>Thomas M. Link, MD</i> <i>University of California, San Francisco</i>	
2:05 PM – 2:20 PM	13) Challenges in Modeling, Segmentation and Visualization: Bringing Advanced Imaging to the Clinician <i>Terence M. Peters, PhD, FCCPM</i> <i>Robarts Research Institute</i>	
2:20 PM – 2:35 PM	14) Use of Intraoperative 3D Imaging With and Without Navigation <i>Tobias Hüfner, MD, PhD</i> <i>Hannover Medical School</i>	
2:35 – 3:00 PM	Questions and Answers	
3:05 – 4:05 PM	Breakout Sessions:	A) Mozart
	1A) Hurdles for Clinical Adaptation of Quantitative Computer Assisted Surgery Moderator: Meir (Iri) Liebergall, MD	B) Haydn
	1B) Which Imaging Surrogates for Arthritis Trials Moderator: Peter Steiger, PhD	C) Handel
4:10– 4:50 PM	1C) Image Processing: What Does Not Work? What are the Areas to Focus on? Moderator: Terence M. Peters, PhD, FCCPM	
	Presentation of Breakout Group Reports	Symphony B
	Free Evening	

FRIDAY MAY 16, 2008

7:45 – 8:10 AM	Continental Breakfast	Symphony B	
8:10 – 8:15AM	Morning Welcome / Call to Order <i>Martha L. Gray, PhD and Andrew D. Pearle, MD</i>		
SESSION IV: MACROMOLECULAR IMAGING MODERATOR: SHARMILA MAJUMDAR, PHD			
8:15 – 8:20 AM	Panel Introductions <i>Sharmila Majumdar, PhD</i> <i>University of California, San Francisco</i>	Symphony B	
8:20 – 8:35 AM	15) Toward Imaging Biomarkers for Cartilage Glycosaminoglycan <i>Martha L. Gray, PhD</i> <i>Harvard/MIT</i>		
8:35 – 8:55 AM	16) Non-Contrast Macromolecular Imaging: T1 Rho / T2 <i>Fernando E. Boada, PhD</i> <i>University of Pittsburgh Medical Center</i>		
8:55 – 9:25 AM	Questions and Answers		
9:25 – 9:40 AM	BREAK		
SESSION V: KNEE DEGENERATION MODERATOR: S. DAVID STULBERG, MD			
9:40 – 9:45 AM	Session Introductions <i>S. David Stulberg, MD</i> <i>Northwestern University</i>	Symphony B	
9:45 – 10:05 AM	17) Tracking Longitudinal Changes in Knee Degeneration <i>Deborah Burstein, PhD</i> <i>Beth Israel Deaconess Medical Center</i>		
10:05 – 10:25 AM	18) X-Ray and MRI Diagnostics: Validated Staging and Scoring <i>Ali Guermazi, MD</i> <i>Boston University</i>		
10:25 – 10:40 AM	19) Navigated TKA: State of the Art and Rationale <i>S. David Stulberg, MD</i> <i>Northwestern University</i>		
10:40 – 10:55 AM	20) Robotic UKA <i>Martin W. Roche, MD</i> <i>Holy Cross Hospital</i>		
10:55 – 11:10 AM	21) UKA Using Resurfacing Implants and Personalized Jigs <i>Wolfgang Fitz, MD</i> <i>Brigham & Women's Hospital</i>		
11:10 – 11:40 AM	Questions and Answers		
11:45 – 11:50 AM	Group Photo		
11:55 AM – 12:55 PM	LUNCHEON		Symphony A
SESSION VIA: MALALIGNMENT AND LIGAMENTOUS INJURY MODERATOR: ANDREW D. PEARLE, MD			
1:00 – 1:05 PM	Session Introductions <i>Andrew D. Pearle, MD</i> <i>Hospital for Special Surgery</i>	Symphony B	
1:05 – 1:20 PM	22) Evaluation of Knee Stability Using Robotic Testing System <i>Savio L-Y. Woo, PhD, DSc</i> <i>University of Pittsburgh</i>		
1:20 – 1:35 PM	23) When Does Alignment Matter? <i>David J. Hunter, MD, PhD</i> <i>New England Baptist Hospital</i>		
1:35 – 1:50 PM	24) Evaluation of Reliability of Navigated Lower Leg Alignment <i>Andrew D. Pearle, MD</i> <i>Hospital for Special Surgery</i>		

1:50 – 2:05 PM	25) Gait Mechanics Influences Cartilage Morphology <i>Thomas P. Andriacchi, PhD</i> <i>Stanford University</i>	Symphony B
2:05 – 2:25 PM	26) Navigated Lower Extremity Fracture Reduction <i>David M. Kabler, MD</i> <i>University of Virginia</i>	
2:25 – 2:55 PM	Questions and Answers	
2:55 – 3:10 PM	BREAK	
SESSION VIB: MALALIGNMENT AND LIGAMENTOUS INJURY		
3:10 – 3:15 PM	Session Introductions <i>Andrew D. Pearle, MD</i> <i>Hospital for Special Surgery</i>	Symphony B
3:15 – 3:30 PM	27) Alternative Realignment and Resurfacing Procedures <i>Alan H. Beyer, MD</i> <i>Newport Orthopaedic Institute, CA</i>	
3:30 – 3:45 PM	28) In Vivo Analysis of the Pivot Shift: Phenomena During Computer Navigated ACL Reconstruction <i>Russell F. Warren, MD</i> <i>Hospital for Special Surgery</i>	
3:45 – 4:00 PM	29) Evaluation of Kinematics of ACL Deficient Knees Using Advanced X-Ray Techniques, 3D Modeling Techniques, and Robotics <i>Guoan Li, PhD</i> <i>Harvard Medical School</i>	
4:00 – 4:15 PM	Questions and Answers	
4:20 – 5:20 PM	Breakout Sessions: 2A) Computer Assisted Orthopedic Surgery in 2015 - Where Are We Going? Moderator: <i>S. David Stulberg, MD</i>	A) Mozart
	2B) Knee Joint Kinematics: Esoteric Basic Science - or the Next Generation of Advanced Diagnostics and Therapeutics? Moderator: <i>Guoan Li, PhD</i>	B) Hadyn
	2C) Imaging of Cartilage Morphology – How Can it be Used Therapeutically in Orthopedics? Diagnostic Gimmick – or Therapy Enabler? Moderator: <i>Martha L. Gray, PhD</i>	C) Handel
5:25 – 5:55 PM	Presentation of Breakout Group Reports	Symphony B
5:55 – 7:15 PM	Free Time	
7:30 – 9:00 PM	Dinner <i>Attendees should proceed via taxicab to the restaurant (2.3 miles from the Renaissance).</i>	Waterman Grille Riverview Room 4 Richmond Square (401) 521-9229

SATURDAY MAY 17, 2008		
8:00 – 8:30 AM	Continental Breakfast	Symphony B
SESSION VII: CHONDRAL LESIONS MODERATOR: HOLLIS G. POTTER, MD		
8:30 – 8:35 AM	Session Introductions <i>Hollis G. Potter, MD</i>	Symphony B
8:35 – 8:50 AM	30) Treatment of Chondral Lesions: Current and Novel Biological and Non Biological Approaches to Resurfacing <i>Timothy M. Wright, PhD</i> <i>Hospital for Special Surgery</i>	
8:50 – 9:05 AM	31) State of the Art for Assessing Chondral Lesion Strategies and Resurfacing Procedures <i>Hollis G. Potter, MD</i> <i>Hospital for Special Surgery</i>	

9:05 – 9:20 AM	32) Use of Imaging Outcomes for Regulatory Studies <i>Peter Steiger, PhD</i> <i>Chief Executive Officer, Optasia Medical</i>	Symphony B
9:20 – 9:35 AM	33) Regulatory Challenges <i>Lee S. Simon, MD</i> <i>Harvard Medical School</i>	
9:35 – 9:50 AM	34) Regulatory Challenges with Chondral Replacement: FDA Perspective <i>Jonette R. Foy, PhD</i> <i>Food and Drug Administration / Center for Devices and Radiological Health</i>	
9:50 – 10:15 AM	Questions and Answers	
10:15 – 10:25 AM	BREAK	
SESSION VIII: NOVEL APPROACHES TO IMAGING AND TRACKING OF HIP TOPOLOGY MODERATORS: YOUNG-JO KIM, MD, PHD AND MICHAEL L. SWANK, MD		
10:25 – 10:30 AM	Session Introductions <i>Young-Jo Kim, MD, PhD and Michael L. Swank, MD</i>	Symphony B
10:30 – 10:45 AM	35) Imaging Assessment of Hip Cartilage, Labrum and Femoro-Acetabular Impingement <i>John A. Carrino, MD</i> <i>Johns Hopkins University</i>	
10:45 – 11:00 AM	36) Candidate Imaging Biomarker for Hip Degeneration <i>Young-Jo Kim, MD, PhD</i> <i>Harvard Medical School</i>	
11:00 – 11:15 AM	37) The Combined Use of Simulation and Navigation to Demonstrate Hip Kinematics <i>Robert L. Thornberry, MD</i> <i>Florida State College of Medicine</i>	
11:15 – 11:30 AM	38) Role of Navigation in Total Hip Arthroplasty <i>Michael L. Swank, MD</i> <i>University of Cincinnati</i>	
11:30 – 11:55 AM	Questions and Answers	
11:55 AM– 12:15 PM	Summary Discussion: Next Steps <i>Martha L. Gray, PhD and Andrew D. Pearle, MD</i>	
12:15 PM	Symposium Adjourned	

Young Investigators:

Christian Lattermann, MD, Kentucky Clinic
Xiaojuan Li, PhD, University of California, San Francisco
Allston J. Stubbs, MD, Wake Forest, University
Samuel K. Van de Velde, MD, Massachusetts General Hospital

Food and Drug Administration (FDA)

Barbara Buch, MD, Acting Clinical Deputy Director for the Office of Device Evaluation, Division of General, Restorative, and Neurological Devices (DGRND), FDA, Center for Devices and Radiological Health (CDRH)/Office of Device Evaluation (ODE)
Jonette R. Foy, PhD, Center for Devices and Radiological Health, Orthopedic Joint Devices Branch

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)

James S. Panagis, MD, MPH, Director, Orthopaedics Program

National Institute of Child Health and Human Development (NICHD)

Nancy L. Shinowara, PhD, Director of the Spinal Cord and Musculoskeletal Disorders and Assistive Devices Program

National Institute of Standards and Technology (NIST)

Mrunal Chapekar, PhD, Technical Program Manager, Technology Innovation Program