

FRACTURE REPAIR: CHALLENGES AND OPPORTUNITIES

AAOS 2007 RESEARCH SYMPOSIUM
THE PALMS SOUTH BEACH / 3025 COLLINS AVENUE / MIAMI BEACH, FL 33140
APRIL 25 – 28, 2007
THOMAS EINHORN, MD; CATO LAURENCIN, MD, PHD; KAREN LYONS, PHD

SYMPOSIUM AGENDA

WEDNESDAY, APRIL 25, 2007

4:30 – 7:00 PM	Check-In and Registration – AAOS Office <i>Please check in to receive your agenda book and nametag. Faculty should bring their PowerPoint presentations on CD or USB media to load to the presentation computer.</i>	Palms Hotel Princess Palm
6:15 – 7:00 PM	Preparatory Moderator Meeting <i>Mandatory for all Session and Recap/ Prioritization Moderators</i>	Palms Hotel Kentia 1 <i>(Lower Lobby Level)</i>
7:00 – 8:30 PM	Welcome Dinner Reception Opening Comments: <i>Thomas Einhorn, MD, Cato Laurencin, MD, PhD, Karen Lyons, PhD</i>	Palms Hotel Poolside Terrace

THURSDAY, APRIL 26, 2007

7:15 – 8:00 AM	AAOS Office Hours	Palms Hotel Princess Palm
7:30 – 8:00 AM	Continental Breakfast	Palms Hotel Royal Palm
8:00 – 8:05 AM	Symposium Welcome & Call to Order: <i>Karen Lyons, PhD</i>	Palms Hotel Royal Palm
8:05 – 8:10 AM	AAOS Symposium History <i>Research Development Committee – Christopher Evans, PhD</i>	Palms Hotel Royal Palm

SESSION I: BASIC SCIENCE I TISSUE RESPONSE AND CELLULAR RECRUITMENT AFTER SKELETAL INJURY

MODERATORS: MARK BOLANDER, MD AND JOSEPH LANE, MD

8:10 – 8:15 AM	Panel Introductions	Palms Hotel Royal Palm
8:15 – 8:35 AM	1) The Fracture Healing Environment – Tissue Response to Injury Immediately After Fracture <i>Mark Bolander, MD</i>	Palms Hotel Royal Palm
8:35 – 8:55 AM	2) Cell Fate Decisions During Skeletal Tissue Regeneration <i>Jill Helms, PhD</i>	Palms Hotel Royal Palm
8:55 – 9:15 AM	3) Bone Marrow Cell Mobilization and Homing to Sites of Fracture Repair <i>Gary Balian, PhD</i>	Palms Hotel Royal Palm
9:15 – 9:35 AM	4) Circulation of Osteoblast Progenitors In the Peripheral Blood <i>Sundeep Khosla, MD</i>	Palms Hotel Royal Palm

9:35 – 9:50 AM	BREAK	
9:50 – 10:10 AM	5) Periosteal Signaling in Cortical Bone Repair <i>Xinping Zhang, PhD</i>	Palms Hotel Royal Palm
10:10 – 10:30 AM	6) Essential Role of Endochondral Bone Formation in Fracture Healing <i>Louis Gerstenfeld, PhD</i>	Palms Hotel Royal Palm
10:30 – 10:50 AM	7) Visualizing Osteoblasts in Vivo <i>David Rowe, PhD</i>	Palms Hotel Royal Palm
10:50 – 11:50 AM	Discussion <i>Panel</i>	Palms Hotel Royal Palm
12:00 – 1:10 PM	LUNCHEON	Palms Hotel Veranda Terrace
SESSION II: BASIC SCIENCE II		
CELLULAR SIGNALING DURING BONE FORMATION AND REPAIR		
MODERATORS: GARY BALIAN, PHD AND VICKI ROSEN, PHD		
1:15 – 1:20 PM	Panel Introductions	Palms Hotel Royal Palm
1:20 – 1:40 PM	8) BMPs in Bone Formation and Homeostasis <i>Vicki Rosen, PhD</i>	Palms Hotel Royal Palm
1:40 – 2:00 PM	9) ECM Regulation of Growth Factor Availability <i>Lynn Sakai, PhD</i>	Palms Hotel Royal Palm
2:00 – 2:20 PM	10) Mechanotransduction and Fracture Repair <i>Elise F. Morgan, PhD</i>	Palms Hotel Royal Palm
2:20 – 2:40 PM	BREAK	
2:40 – 3:00 PM	11) FGF Signaling Pathways in Bone Formation and Maintenance <i>Marja Hurley, MD</i>	Palms Hotel Royal Palm
3:00 – 3:20 PM	12) BMP Signaling in Osteoblast Differentiation and Bone Formation <i>Peter ten Dijke, PhD</i>	Palms Hotel Royal Palm
3:20 – 3:40 PM	13) Tissue Engineering of Bone: Material and Matrix Considerations <i>Michael Yaszemski, MD, PhD</i>	Palms Hotel Royal Palm
3:40 – 4:40	Discussion	Palms Hotel Royal Palm
4:40 PM	Adjournment – Free Evening	

FRIDAY, APRIL 27, 2007

7:15 – 8:00 AM	AAOS Office Hours	Palms Hotel Princess Palm
7:30 – 8:00 AM	Continental Breakfast	Palms Hotel Royal Palm
SESSION III: EMERGING TECHNOLOGIES IN FRACTURE REPAIR		
MODERATORS: KHALED SALEH, MD AND THEODORE MICLAU, MD		
8:00 – 8:05 AM	Panel Introductions	Palms Hotel Royal Palm
8:05 – 8:25 AM	14) WNT Signaling in Bone Formation (From Session II) <i>Yingzi Yang, PhD</i>	Palms Hotel Royal Palm
8:25 – 8:45 AM	15) Fracture Repair 2007 <i>Adam Jennings Starr, MD</i>	Palms Hotel Royal Palm
8:45 – 9:05 AM	16) Regional Gene Therapy to Enhance Bone Repair <i>Jay R. Lieberman, MD</i>	Palms Hotel Royal Palm
9:05 – 9:25 AM	17) Clinical Enhancement of Fracture Repair Via Stem Cell Mediated Therapies <i>George Muschler, MD</i>	Palms Hotel Royal Palm
9:25 – 9:45 AM	BREAK	
9:45 – 10:05 AM	18) Nanotechnology and Fracture Repair <i>Lakshmi Nair, PhD</i>	Palms Hotel Royal Palm
10:05 – 10:25 AM	19) Clinical Enhancement of Fracture Repair: Ultrasound, and Electrically Mediated Pathways <i>Yusuf Khan, PhD</i>	Palms Hotel Royal Palm
10:25 – 10:45 AM	20) Parathyroid Hormone Enhancement of Fracture Repair <i>George Barnes, PhD</i>	Palms Hotel Royal Palm
10:45 – 11:35 AM	Discussion	
11:35 – 11:45 AM	Roderic Pettigrew, MD, PhD Director, National Institute of Biomedical Imaging and Bioengineering (NIBIB) <i>The NIBIB and Regenerative Medicine</i>	Palms Hotel Royal Palm
12:00 – 1:15 PM	Working Luncheon/Breakout Groups (see last page of this tab) Please pick up a lunch in the Royal Palm Foyer and proceed to your breakout. Breakout assignments are located at the end of the Agenda tab. Group 1A – Tissue Response/Cellular Recruitment Moderator: <i>Hari Reddi, PhD</i> Scribe: <i>Assigned On-Site</i> Group 1B – Cellular Signaling Moderator: <i>Steven Goldstein, PhD</i> Scribe: <i>Assigned On-Site</i>	Palms Hotel Royal Palm Queen Palm (Lobby Level) Kentia I (Lower Lobby Level)

	Group 1C – Emerging Practices Moderator: <i>Adam Jennings Starr, MD</i> Scribe: <i>Assigned On-Site</i>	Kentia II (Lower Lobby Level)
1:25 – 2:25 PM	Recap and Prioritization – Presentations of Breakout Groups/Discussion	Palms Hotel Royal Palm
2:30 – 6:45 PM	Free Time	
6:45 PM	Attendees Meet in Lobby Groups are encouraged to take taxicabs together to the restaurant.	
7:00 – 8:30 PM	Group Reception and Dinner The YUCA restaurant is 1.7 miles (4-5 minutes) from the Palms Hotel. Directions: Head north on Collins Ave toward 31st Street / Turn left at 31st Street / Turn left at Indian Creek Drive / Slight right at Collins Avenue / Turn right at 16th Street / Turn right at Drexel Avenue to 501 Lincoln Road	YUCA Restaurant (Upstairs Dining Room) 501 Lincoln Road, Miami Beach

SATURDAY, APRIL 28, 2007

Check-out time is 11:00 AM. You may check-out in the morning or during break, and check your baggage with the valet. Bellhops will be available to call taxicabs to the airport.

Please note: It is a flat rate of \$32.00 to the Greater Miami International Airport.

7:30 – 8:00 AM	Continental Breakfast	Palms Hotel
SESSION IV: CRITICAL ISSUES IN TRANSLATIONAL AND CLINICAL RESEARCH FOR THE STUDY OF NEW TECHNOLOGIES TO ENHANCE BONE REPAIR		
MODERATORS: THOMAS EINHORN, MD AND CATO LAURENCIN, MD, PHD		
8:00 – 8:05 AM	Panel Introductions	Palms Hotel Royal Palm
8:05 – 8:25 AM	21) Fundamental Challenges in Fracture Healing: The Hip Fracture Example <i>Kenneth J. Koval, MD</i>	Palms Hotel Royal Palm
8:25 – 8:45 AM	22) Selection and Development of Preclinical Models in Fracture Healing Research <i>Joseph Lane, MD</i>	Palms Hotel Royal Palm
8:45 – 9:05 AM	23) Clinical Trial Design in Fracture Healing Research <i>Saam Morshed, MD, PhD, MBA</i>	Palms Hotel Royal Palm
9:05 – 9:20 AM	BREAK	
9:20 – 9:40 AM	24) New Technologies for the Imaging of Fracture Healing in Basic and Clinical Research <i>Harry K Genant, MD, FACP, FRCR</i>	Palms Hotel Royal Palm
9:40 – 10:00 AM	25) Selection and Feasibility of Measuring Primary and Secondary Outcomes in the Conduct of Clinical Trials in Fracture Healing <i>Theodore Miclau, MD</i>	Palms Hotel Royal Palm
10:00 – 10:20 AM	26) Outcomes and Results in Clinical Trial Design <i>Khaled Saleh, MD</i>	Palms Hotel Royal Palm

10:20 – 10:40 AM	27) Critical Issues in Translational and Clinical Research for the Study of New Technologies to Enhance Bone Repair <i>Jörg Goldbahn, MD</i>	
10:40 – 11:25 AM	Discussion	Palms Hotel Royal Palm
11:30AM–12:40PM	Working Luncheon/Breakout Groups (see agenda book tab on assignments) Please pick up a luncheon in the Royal Palm Foyer and proceed to your breakout. Group 2A – Clinical Research Issues Moderator: <i>Gary Friedlaender, MD</i> Scribe: <i>Assigned On-Site</i> Group 2B – Translational Research Issues Moderator: <i>Theodore Miclau, MD</i> Scribe: <i>Assigned On-Site</i>	Kentia I & II (Lower Lobby Level) Queen Palm (Lobby Level)
12:45 – 1:45 PM	Recap and Prioritization – Presentations of Breakout Groups <i>Karen Lyons, PhD/Thomas Einhorn, MD/Cato Laurencin, MD, PhD</i>	Palms Hotel Royal Palm
1:45 – 2:30 PM	Wrap-Up/Conclusions <i>Karen Lyons, PhD/Thomas Einhorn, MD/Cato Laurencin, MD, PhD</i>	Palms Hotel Royal Palm
2:30 – 3:00 PM	Close Out Meeting <i>Mandatory for Moderators and Breakout Session Leaders</i>	Washington Palm (Mezzanine Level)

Invited Guests:

American Academy of Orthopaedic Surgeons (AAOS)

Christopher Evans, PhD, Research Development Committee

Food and Drug Administration (FDA)

Barbara Buch, MD, Deputy Director, Division of General, Restorative, and Neurological Devices (DGRND), FDA, Center for Devices and Radiological Health (CDRH)/Office of Device Evaluation (ODE)

Theresa Kehoe, MD, Medical Officer, Center for Drug Evaluation and Research (CDER)

Ted Stevens, FDA, CDRH, ODE, DGRND

Celia M. Witten, MD, PhD, Director of the Office of Cellular, Tissue, and Gene Therapies at CBER, FDA

Journal of Bone and Joint Surgery (JBJS)

James D. Heckman, MD, Editor-In-Chief, JBJS

National Institute on Aging (NIA)

Evan Hadley, MD, Director, Geriatrics and Clinical Gerontology Program, NIA

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

James Panagis, MD, MPH, Director, Orthopaedic Program, NIAMS

Fei Wang, PhD, Director, Musculoskeletal Development, Tissue Engineering, and Regenerative Medicine Program, NIAMS

(continued)

National Institute of Biomedical Imaging and Bioengineering (NIBIB)

Roderic Pettigrew, MD, PhD, Director, NIBIB

Society of Military Orthopaedic Surgeons (SOMOS)

Joseph C. Wenke, PhD, SOMOS Representative

Young Investigators

Céline Colnot, PhD, University of California, San Francisco

Anthony E. Johnson, MD, McDonald Army Health Center

Philip Leucht, MD, University of Stanford

Saam Morshed, MD, MPH, PhD, University of California, San Francisco

Patrick W. O'Donnell, MD, PhD, University of Minnesota

John J. Wixted, MD, University of Massachusetts Medical School

Teri Zachos, DVM, PhD, Michigan State University