



# 2007 AAOS/NIH OSTEOLYSIS AND IMPLANT WEAR: BIOLOGICAL, BIOMEDICAL ENGINEERING AND SURGICAL PRINCIPLES

**FRIDAY-SUNDAY, NOVEMBER 9-11, 2007**

RENAISSANCE AUSTIN HOTEL  
9721 ARBORETUM BOULEVARD  
AUSTIN, TX 78759

**STUART GOODMAN, MD, PHD AND TIMOTHY WRIGHT, PHD**  
SYMPOSIUM CO-CHAIRS

## SYMPOSIUM AGENDA

### THURSDAY, NOVEMBER 8, 2007

**AAOS OFFICE HOURS: 3:00 – 8:00 PM (GUADALUPE ROOM)**

5:00 – 8:00 PM	<b>Check In / Registration</b> Participants will receive their name badge and agenda book. Faculty should bring PowerPoint presentations and manuscript figures to load.	Symposium Faculty and Attendees	Guadalupe Room
7:00 – 8:00 PM	<b>Moderator Meeting</b>	All Session Moderators	Bosque Room

### FRIDAY, NOVEMBER 9, 2007

**AAOS OFFICE HOURS: 7:15 AM – 6:00 PM (GUADALUPE ROOM)**

7:15 – 7:50 AM	<b>Continental Breakfast</b>		
7:50 – 8:00 AM	Symposium Welcome Dedication to Professor Seppo Santavirta	Stuart Goodman, MD, PhD, Timothy Wright, PhD, and James Panagis, MD, MPH	Wedgewood Room
8:00 – 8:10 AM	Opening Remarks	Yrjö Konttinen, MD Helsinki, Finland	
<b>SESSION IA: CLINICAL QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: THOMAS P. SCULCO, MD</b>			
8:10 – 8:15 AM	Speaker Introductions	Thomas P. Sculco, MD	
8:15 – 8:45 AM	1) How prevalent is implant wear and osteolysis and how has the scope changed since 2000?	Wayne Paprosky, MD	Wedgewood Room
		Michael Ries, MD	
8:45 – 9:15 AM	2) What patient (e.g., gender, race, and activity level) and surgical (approach, component alignment) factors contribute to implant wear?	Audrey Tsao, MD	
		David Lewallen, MD	
9:15 – 9:55 AM	Discussion	Speaker Panel	
9:55 – 10:10AM	<b>BREAK</b>		
<b>SESSION IB: CLINICAL QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: JOHN J. CALLAGHAN, MD</b>			
10:10 – 10:15 AM	Speaker Introductions	John J. Callaghan, MD	Wedgewood Room
10:15 – 10:45 AM	3) How are wear-related problems diagnosed and what forms of surveillance are necessary?	Hollis Potter, MD	
		Henrik Malchau, MD	



10:45 – 11:15 AM	4) What guidelines (non operative and operative) are there for the treatment of osteolysis?	Alejandro Gonzalez Della Valle, MD Bernard Stulberg, MD	
11:15 – 11:55 AM	Discussion	Speaker Panel	
12:00 – 1:00 PM	<b>LUNCHEON</b>		Arbor Room
<b>SESSION IC: CLINICAL QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: JORGE GALANTE, MD, D.MED.SCI.</b>			
1:05 – 1:10 PM	Speaker Introductions	Jorge Galante, MD, D.Med.Sci	Wedgewood Room
1:10 – 1:40 PM	5) What is the outcome of treatment for osteolysis?	William Maloney, MD Aaron Rosenberg, MD	
1:40 – 2:10 PM	6) How have alternative bearings (such as metal-on-metal, highly cross-linked polyethylenes, and ceramic-on-ceramic) affected the prevention and treatment of osteolysis?	John Cuckler, MD John J. Callaghan, MD	
2:10 – 2:50 PM	Discussion	Speaker Panel	
2:50 – 3:05 PM	<b>BREAK</b>		
<b>SESSION IIA: BIOLOGICAL QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: STUART GOODMAN, MD, PHD</b>			
3:05 – 3:10 PM	Speaker Introductions	Stuart Goodman, MD, PhD	Wedgewood Room
3:10 – 3:40 PM	7) What are the local and systemic biological reactions and mediators to wear debris and what host factors determine or modulate the biological response to wear particles?	R. Lane Smith, PhD Rocky Tuan, PhD	
3:40 – 4:10 PM	8) How has the biological reaction to wear particles changed with newer bearing surfaces?	Joshua J. Jacobs, MD Patricia Campbell, PhD	
4:10 – 4:50 PM	Discussion	Speaker Panel	
4:55 – 5:55 PM	<b>BREAKOUT SESSIONS:</b> <b>A) Surgeon Breakout:</b> <i>Thomas P. Sculco, MD, John J. Callaghan, MD, Jorge Galante, MD</i> <b>B) Biologist Breakout:</b> <i>Victor Goldberg, MD, Regis O'Keefe, MD, PhD</i> <b>C) Engineer Breakout:</b> <i>Timothy Wright, PhD, Seth Greenwald, D.Phil.(Oxon), Jack Lemons, PhD</i>	All Symposium Attendees	A) Bosque B) Concho C) Nueces
6:00 – 7:00 PM	<b>BREAK</b>		
7:00 – 8:30 PM	<b>DINNER RECEPTION</b>		Trinity Plaza (at the end of the hallway/outdoors)
Post Dinner	<b>First revision of draft answers to clinical questions emailed to attendees for review</b>		Faculty



<b>SATURDAY, NOVEMBER 10, 2007</b>			
<b>AAOS OFFICE HOURS: 7:30 AM – 5:00 PM (GUADALUPE ROOM)</b>			
7:30 – 8:00 AM	<b>Continental Breakfast</b>		Wedgewood Room
8:00 – 8:05 AM	AAOS Research Symposium History	Denis R. Clohisy, MD Chair, AAOS Research Development Committee	Wedgewood Room
8:05 – 8:10 AM	Orthopaedic Research Society (ORS) Young Investigator Program	Clare M. Rimnac, PhD ORS Program Committee Chair	
<b>SESSION IIB: BIOLOGICAL QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: VICTOR GOLDBERG, MD</b>			
8:10 – 8:15 AM	Speaker Introductions		Victor Goldberg, MD
8:15 – 8:45 AM	9) What other biological and mechanical factors might contribute to osteolysis (e.g., pressure and endotoxin)?	Ed Greenfield, PhD	Wedgewood Room
		Joan Bechtold, PhD	
8:45 – 9:15 AM	10) What experimental approaches (e.g., in vivo, in vitro, tissue retrieval) are effective in investigating the biological effects of particles?	Gail Anderson, PhD	
		Mathias Bostrom, MD	
9:15 – 9:55 AM	Discussion		Speaker Panel
9:55 – 10:10 AM	<b>BREAK</b>		
<b>SESSION IIC: BIOLOGICAL QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: REGIS O'KEEFE, MD, PHD</b>			
10:10 – 10:15 AM	Speaker Introductions		Regis O'Keefe, MD, PhD
10:15 – 10:45 AM	11) Are there biological markers of wear?	Thomas Bauer, MD, PhD	Wedgewood Room
		Arun Shanbhag, MD	
10:45 – 11:15 AM	12) What potential biological treatments are there for osteolysis?	Edward Schwarz, PhD	
11:15 AM–12:05 PM	Discussion		
12:05 – 1:00 PM	<b>LUNCHEON</b>		
<b>SESSION IIIA: ENGINEERING/MATERIALS QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: TIMOTHY WRIGHT, PHD</b>			
1:05– 1:10 PM	Speaker Introductions		Timothy Wright, PhD
1:10 – 1:40 PM	13) How have new sterilization techniques and new forms of polyethylene influenced wear in total joint replacement?	Roy Crowninshield, PhD	Wedgewood Room
		Orhun Muratoglu, PhD	
1:40 – 2:10 PM	14) How have alternate bearing surfaces (metal-on-metal, ceramic-on-ceramic) influenced wear behavior?	Michael Manley, PhD	
		Ian Clarke, PhD	
2:10 – 2:50 PM	Discussion		Panel
2:50 – 3:00 PM	<b>BREAK</b>		



<b>SESSION IIIB: ENGINEERING/MATERIALS QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: SETH GREENWALD, D.PHIL.(OXON)</b>			
3:00 – 3:05 PM	Speaker Introductions	Seth Greenwald, D.Phil.(Oxon)	Wedgewood Room
3:05 – 3:35 PM	15) How do material properties influence wear and fracture mechanisms?	Clare M. Rimnac, PhD Lisa Pruitt, PhD	
3:35 – 4:05 PM	16) What design factors influence wear behavior at the bearing surfaces in total joint replacements?	Thomas Brown, PhD Donald Bartel, PhD	
4:05 – 4:45 PM	Discussion	Speaker Panel	
4:45 – 5:45 PM	<b>BREAKOUT SESSIONS:</b> <b>A) Surgeon Breakout–</b> <i>Thomas P. Sculco, MD, John J. Callaghan, MD, Jorge Galante, MD</i> <b>B) Biologist Breakout:</b> <i>Victor Goldberg, MD, Regis O’Keefe, MD, PhD</i> <b>C) Engineer Breakout:</b> <i>Timothy Wright, PhD, Seth Greenwald, D.Phil.(Oxon), Jack Lemons, PhD</i>	All Symposium Attendees	A) Bosque B) Concho C) Nueces
5:45 - 7:00 PM	<b>BREAK</b>		
7:00 – 8:30 PM	<b>DINNER</b>		
Post Dinner	Draft answers to all questions emailed to attendees for review	Symposium Attendees	Trinity Plaza (at the end of the hallway/outdoors)

<b>SUNDAY, NOVEMBER 11, 2007</b>			
<b>AAOS OFFICE HOURS: 7:30 AM – 12:00 PM (GUADALUPE ROOM)</b>			
7:30 – 8:00 AM	Continental Breakfast		Wedgewood Room
<b>SESSION IIIC: ENGINEERING/MATERIALS QUESTIONS IN IMPLANT WEAR</b>			
<b>MODERATOR: JACK LEMONS, PHD</b>			
8:00 – 8:05 AM	Speaker Introductions	Jack Lemons, PhD	Wedgewood Room
8:05 – 8:35 AM	17) How have new designs and new types of joint replacement influenced wear behavior (e.g., mobile bearing TKA, large heads for THA, disc replacement)?	Peter Walker, PhD Steven Kurtz, PhD	
8:35 – 9:05 AM	18) How has wear testing and joint simulator studies helped in discriminating among materials and designs?	Harry McKellop, PhD Darryl D’Lima, MD, PhD	
9:05 – 9:45 AM	Discussion	Speaker Panel	
9:45 – 10:00 AM	<b>BREAK</b>		



<b>10:00 – 11:00 AM</b>	<b>BREAKOUT SESSIONS:</b> <b>A) Surgeon Breakout:</b> <i>Thomas P. Sculco, MD, John J. Callaghan, MD, Jorge Galante, MD</i> <b>B) Biologist Breakout:</b> <i>Victor Goldberg, MD Regis O’Keefe, MD, PhD</i> <b>C) Engineer Breakout:</b> <i>Timothy Wright, PhD, Seth Greenwald, D.Phil.(Oxon), Jack Lemons, PhD</i>	Symposium Attendees	A) Bosque B) Concho C) Nueces
<b>11:05 – 11:20 AM</b>	<b>Breakout Session Reports</b>	Breakout Leaders	Wedgewood Room
<b>11:20 AM–12:00 PM</b>	<b>Discussion on final drafts of Future Research Directions</b>		
<b>12:00 PM</b>	<b>Symposium Adjourned</b>		

Invited Guests:

Matthew Collier, MS, Anderson Orthopaedic Research Institute  
Tad Gerlinger, MD, LTC, Society of Military Orthopaedic Surgeons (SOMOS)  
Richard Kyle, MD, Hennepin County Medical Center

Food and Drug Administration (FDA)

Jonette R. Foy PhD, Center for Devices and Radiological Health, Office of Device Evaluation, Division of General, Restorative and Neurological Devices, Orthopedic Joint Devices Branch

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

James S. Panagis, Director, Orthopaedics Program MD, PhD, NIAMS

ORS Young Investigators

James Huddleston, MD (Stanford University School of Medicine)  
Francis Y. Lee, MD (Columbia University)  
Amanda D. Marshall, MD (University of Texas Health Science Center - San Antonio)  
Ebru Oral, PhD (Massachusetts General Hospital / Harvard Medical School)  
Jeremy Wilkinson, PhD, FRCS (Orth) (University of Sheffield – United Kingdom)