

Program

ADVANCES IN OPTICS FOR BIOTECHNOLOGY, MEDICINE AND SURGERY

July 24 – 28, 2005
Copper Mountain Resort
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Organizing Committee Members:

Gary Tearney, M.D. - Clinical I – Skin and Eye
(Harvard/MGH)

Irene Georgakoudi. - Clinical II – Function and Bio-chemistry.
(Tufts University)

Lothar Lilge, Ph.D. - Clinical III – Deep Tissue Diagnostics.
(University of Toronto)

Duncan J. Maitland, Ph.D.- Clinical Technologies-Therapeutics
(Lawrence Livermore Natl. Lab)

Samuel I. Achilefu, Ph.D. - Optical Molecular Imaging & Genomics
(Washington University)

Tuan Vo-Dinh, Ph.D. - Optical Sensors & Biotechnologies
(Oak Ridge National Lab)

Peter So, Ph.D. – High Resolution Imaging
(MIT)

Sunday, July 24, 2005

16:00 – 18:00 Conference Registration

18:00 – 19:30 Dinner

Session I: Clinical I – Skin & Eye

Session Chair: *Gary Tearney*, MGH/Harvard, USA

19:30 – 20:10 **STRUCTURAL AND FUNCTIONAL TISSUE ASSESSMENT WITH OPTICAL COHERENCE TOMOGRAPHY**

Alex Vitkin, University of Toronto, Canada

20:10 – 20:50 **REFRACTIVE AND CORNEAL SURGERY**

David Huang, University of Southern California, USA

20:50 – 21:30 **REAL-TIME DETECTION OF DYSPLASIA USING TRI-MODAL SPECTROSCOPY**

James W. Tunnell, Massachusetts Institute of Technology, USA

21:30 – 22:30 Social Hour

IMPORTANT ANNOUNCEMENTS

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, July 25, 2005

- 07:30 – 08:30 Breakfast
- Session II: Clinical Technologies – Therapeutics**
Session Chair: *Duncan J. Maitland*, Lawrence Livermore National Laboratory, USA
- 08:30 – 09:15 **OPTIMIZING LASER THERAPY DESIGN FOR PROSTATE CANCER BY CONTROLLING HEAT SHOCK PROTEIN EXPRESSION**
Nichole Rylander, The University of Texas, USA
- 09:15 – 10:00 **OPTICAL IMAGING IN PULMONARY AND CRITICAL CARE MEDICINE**
Matthew Brenner, University of California Irvine Medical Center, USA
- 10:00 – 10:30 Coffee Break
- 10:30 – 11:15 **A CARDIOVASCULAR INTERVENTIONALIST'S WISH LIST**
Kendrick A. Shunk, University of California – San Francisco, USA
- 11:15 – 12:00 **TARGETED REMOVAL OF SINGLE CELLS AND INDIVIDUAL ORGANELLES WITH FEMTOSECOND LASER SURGERY**
Nan Shen, Lawrence Livermore National Laboratory, USA
- 12:00 – 13:30 Lunch
- 13:30 – 18:00 Ad-hoc Sessions / Free Time
- 18:00 – 19:30 Dinner
- Session III: Clinical II – Function & Biochemistry**
Session Chair: *Irene Georgakoudi*, Tufts University, USA
- 19:30 – 20:10 **CELLULAR ASTRONOMY**
Robert H. Webb, MGH/Harvard, USA
- 20:10 – 20:50 **MECHANISMS OF CONTRAST IN POLARIZED LIGHT IMAGING OF TISSUES**
Steven Jacques, Oregon Health & Science University, USA
- 20:50 – 21:30 **MULTI-DIMENSIONAL FLUORESCENCE IMAGING**
Paul French, Imperial College London, United Kingdom
- 21:30 – 22:00 Debate Session
INTRINSIC SOURCES OF OPTICAL CONTRAST ARE BETTER THAN EXTRINSIC SOURCES FOR IN VIVO BIOMEDICAL APPLICATIONS
Affirmative Team Leader: Steven Jacques
Negative Team Leader: David Benaron
- 22:00 – 23:00 Social Hour

Tuesday, July 26, 2005

- 07:30 – 08:30 Breakfast
- Session IV: Optical Molecular Imaging & Genomics**
 Session Chair: *Samuel I. Achilefu*, Washington University, USA
- 08:30 – 09:15 **MOLECULAR IMAGING**
 Juri Gelovani, M. D. Anderson Cancer Center, USA
- 09:15 – 10:00 **FLUORESCENT PROBES**
 Darryl Bornhop, Vanderbilt University, USA
- 10:00 – 10:30 Coffee Break
- 10:30 – 11:15 **QUANTUM DOTS BRIGHTEN CANCER IMAGING**
 John Frangioni, Harvard Medical School, USA
- 11:15 – 12:00 **WELLS TO CELLS TO ANIMALS: OPTICAL IMAGING'S ROADMAP TO
PERSONALIZED MEDICINE**
 Eric Agdeppa, GE Healthcare
- 12:00 – 13:30 Lunch
- 13:30 – 18:00 Ad-hoc Sessions / Free Time
- 18:00 – 19:30 Dinner
- 19:30 – 21:30 Poster Session and Social Hour

Wednesday, July 27, 2005

07:30 – 08:30 Breakfast

Session V: High Resolution Imaging

Session Chair: *Peter So*, MIT, USA

08:30 – 09:15

NANOMETER SCALE OPTICAL MICROSCOPY

Stefan Hell, Max Planck Institute for Biophysical Chemistry, Germany

09:15 – 10:00

HIGH SPEED MOLECULAR AND CELLULAR ASSAYS IN LIVE ANIMALS USING IN VIVO MICROSCOPY AND FLOW CYTOMETRY

Charles Lin, Massachusetts General Hospital, USA

10:00 – 10:30

Coffee Break

10:30 – 11:15

SEEING MORE WITH STRUCTURED LIGHT IN WIDE-FIELD MICROSCOPY

Andreas Stemmer, ETH, Switzerland

11:15 – 12:00

HIGH RESOLUTION IMAGING OF TUMOR BIOLOGY AND TREATMENT

Edward Brown, U. Rochester, USA

12:00 – 13:30

Lunch

13:30 – 16:30

Ad-hoc Session / Free Time

Session VI: Clinical III – Deep Tissue Diagnostics

Session Chair: *Lothar Lilge*, University of Toronto, Canada

16:30 – 17:00

OPTICAL TOMOGRAPHY OF BREAST CANCER AND BRAIN FUNCTION

Arjun Yodh, University of Pennsylvania, USA

17:00 – 17:30

IN-VIVO OPTICAL IMAGING OF PHARMACOKINETICS

David Benaron, Stanford University and Spectros Corp., USA

17:30 – 18:00

TIME-RESOLVED FLUORESCENCE TOMOGRAPHY

Gordon Turner, Harvard University, USA

19:00 – 19:30

Social Hour

19:30 – 21:30

Banquet

Thursday, July 28, 2005

07:30 – 08:30 Breakfast

Session VII: Optical Sensors & Biotechnologies

Session Chair: *Tuan Vo-Dinh*, Oak Ridge National Laboratory, USA

08:30 – 09:15 TBA
Greg Bearman, JPL, USA

09:15 – 10:00 TBA
Richard Levenson, CRI, USA

10:00 – 10:30 Coffee Break

10:30 – 11:15 TBA
Rashid Bashir, Purdue, USA

11:15 – 12:00 **APPLICATIONS OF CARBON NANOTUBES FOR CANCER RESEARCH**
B. Panchapakesan, University of Delaware, USA

12:00 – 13:30 Lunch

13:30 – Departure