Present

FRONTIERS OF OPTICAL COHERENCE TOMOGRAPHY (OCT)

Program Director:
Carmen A. Puliafito, MD, MBA

SATURDAY, FEBRUARY 15, 2014
Langham Huntington Hotel
PASADENA, CALIFORNIA
Optical coherence tomography (OCT) is widely recognized as the most powerful ophthalmic imaging technique.

The scientific importance of OCT was recognized by the presentation of the 2012 Champalimaud Vision Award (the so-called Nobel Prize of Vision Research) to the co-inventors of OCT.

Starting with a single “home-built” instrument (from the Massachusetts Institute of Technology and MIT Lincoln Laboratory) studied at the New England Eye Center of the Tufts University School of Medicine in 1994, ophthalmic OCT has grown to more than 20,000 systems in every nation of the world and is used to perform millions of clinical studies every year.

OCT has enabled the successful development of retinal pharmacotherapy for wet macular degeneration and diabetic macular edema, a major victory in the war against global blindness.

OCT is an extraordinarily robust technology that continues to evolve and yield exciting scientific, engineering and biological results. Almost 15% of the papers at the 2013 meeting of the Association for Research in Vision and Ophthalmology (ARVO) employed OCT as a clinical or basic science research tool.

OCT systems are likely to evolve along several divergent lines. In one line, OCT systems will become smaller and ubiquitous in every clinical environment and are likely to be frontline eye examination systems. Along another line, advanced OCT systems will provide functional information about the retina, and yield practical innovations such as OCT angiography. OCT is likely to enable completely automated, digital characterization of the human retina, and ultimately the entire clinically relevant anatomy of the eye.
Frontiers of Optical Coherence Tomography is a unique scientific meeting that features as its faculty leading clinicians, clinician-scientists, and OCT basic scientists from around the world. It brings together for the first time on single scientific program all five of the co-inventors that were awarded the 2012 Champalimaud Vision Award.

THE PROGRAM IS DIRECTED TO:
1| Ophthalmologists who wish to obtain a solid foundation in both basic and advanced OCT clinical techniques. The emphasis will be on use of OCT as a practical clinical decision-making tool.
2| Vision scientists and engineers who wish to learn about the most important new developments in fundamental OCT research and technology.

THE PROGRAM OBJECTIVES ARE:
1| Provide a comprehensive review of the development and current status of ophthalmic OCT technology.
2| Review the use of OCT in the diagnosis and management of glaucoma.
3| Review OCT applications in the management of diabetic retinopathy, macular degeneration, and vitreomacular adhesions.
4| Review the use of en-face OCT techniques for studying macular degeneration.
5| Review OCT techniques for choroidal imaging.
6| Present the latest information on the use of intra-operative OCT.
7| Review current studies in functional OCT, ophthalmic swept source (SS) OCT, OCT angiography, wide-field OCT, and photoacoustic ophthalmoscopy.

3-D OCT images of the macula. Courtesy Shuliang Jiao, PhD, and Carmen A. Puliafito, MD, MBA.
### PROGRAM

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<td>Optical Coherence Tomography Commercialization: History, Current Status, and Future Opportunities</td>
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### SESSION II: THE FUTURE OF OCT

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<td>Srinivas Sadda, MD, Richard Spaide, MD, Philip J. Rosenfeld, MD</td>
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<td>SDOCT Photoreceptor Visualization: Now you see them, Now you don't</td>
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<td>OCT in Stem Cell Transplantation and the Retinal Prosthesis</td>
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<td>The Use of SDOCT to Measure the Progression of GA in Wet AMD after Anti-VEGF Therapy</td>
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Carmen A. Puliafito, MD, MBA, is Dean of the Keck School of Medicine of USC and Professor of Ophthalmology and Health Management. He shared the Rank Prize in Opto-electronics and the 2012 Champalimaud Vision Award for his role in the invention of OCT.

Yannis C. Yortsos, PhD, was appointed Dean of the USC Viterbi School of Engineering in 2005. He is the Chester F. Dolley Professor of Chemical and Petroleum Engineering, and holds the Zohrab A. Kaprielian Dean's Chair in Engineering. Dean Yortsos has been a leader in building bridges between engineering and medicine and, along with Dean Puliafito, established the Health Technology and Engineering @ USC Program in 2010.

Donald Budenz, MD, is Professor and Chair of the Department of Ophthalmology at the University of North Carolina School of Medicine and Director of the Kittner Eye Institute.

Wolfgang Drexler, PhD, is Professor of Medical Physics and Head of the Center for Medical Physics and Biomedical Engineering at the Medical University of Vienna, Austria.

Scott Fraser, PhD, is Provost Professor of Biological Sciences and Biomedical Engineering and the Director of Science Initiatives at the University of Southern California. He was previously Anna L. Rosen Professor of Biology and founder of the Biological Imaging Center at the Beckman Institute of the California Institute of Technology.

James G. Fujimoto, PhD, is Elihu Thomson Professor of Electrical Engineering at the Massachusetts Institute of Technology and Adjunct Professor of Ophthalmology at the Tufts University School of Medicine. He shared the Rank Prize in Opto-Electronics and 2012 Champalimaud Vision Award for his role in the invention of OCT.

David Huang, MD, PhD, is Weeks Professor of Ophthalmic Research at the Casey Eye Institute and Professor of Ophthalmology and Biomedical Engineering at the Oregon Health Sciences University. He shared the 2012 Champalimaud Vision Award for his work on the invention of OCT.

Mark Humayun, MD, PhD, holds the Cornelius Pings Chair of Biomedical Science and is Professor of Ophthalmology, Biomedical Engineering, and Cell and Neurobiology at the Keck School of Medicine of USC and USC Viterbi School of Engineering.

Joseph Izzatt, PhD, is Professor of Biomedical Engineering at Duke University.

Peter K. Kaiser, MD, is Professor of Ophthalmology and Chaney Family Chair for Ophthalmology Research at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University.
Shuliang Jiao, PhD, is Professor of Biomedical Engineering at Florida International University.

Richard Lee, MD, PhD, is Associate Professor of Ophthalmology at the Bascom Palmer Eye Institute and the University of Miami Miller School of Medicine.

Brandon Lujan, MD, is a Clinical Assistant Professor of Ophthalmology at the University of California, San Francisco, and a research investigator at the University of California, Berkeley.

Andrew Moshfeghi, MD, MBA, is with Retina Associates of Lexington, Kentucky. He was previously Associate Professor of Ophthalmology at the Bascom Palmer Eye Institute in Miami and Palm Beach Gardens, FL.

Elias Reichel, MD, is Vice Chair and Professor of Ophthalmology at the Tufts University School of Medicine and Director of the Retina Service at the New England Eye Center.

Philip J. Rosenfeld, MD, PhD, is Professor of Ophthalmology at the Bascom Palmer Eye Institute and the University of Miami Miller School of Medicine. He is a world leader in developing innovative treatment for age-related macular degeneration and the development of advanced OCT analytic techniques.

Srinivas Sadda, MD, is Professor of Ophthalmology at the Keck School of Medicine of USC and a leader in OCT research and quantitative interpretation of OCT.

Joel S. Schuman, MD, is Eye and Ear Foundation Professor and Chairman, Department of Ophthalmology, Director of the UPMC Eye Center, Director of the Louis J. Fox Center for Vision Restoration, and Professor of Bioengineering at the University of Pittsburgh School of Medicine. He shared the 2012 Champalimaud Vision Award for his work on the invention of OCT.

Richard F. Spaide, MD, is with the Vitreous, Retina, Macula Consultants of New York and a clinical OCT investigator who pioneered the use of OCT for the study of the choroid.

Eric Swanson, MS, is a scientist, engineer and entrepreneur who shared the 2012 Champalimaud Vision Award for his role in the invention of OCT.

Alexander Walsh, MD, is developing a hand-held, self-operated binocular device capable of performing a complete eye examination. He was previously Assistant Professor of Ophthalmology of the Keck School of Medicine of USC.

Jay Wang, MD, PhD, is Associate Professor of Ophthalmology and Electrical and Computer Engineering at the Bascom Palmer Eye Institute.
“MULTIMODAL OCT”

Wolfgang Drexler, PhD
Medical University of Vienna

Albert A. Michelson (1852-1931) was the first American scientist to be awarded a Nobel Prize (Physics, 1907) for “his optical precision instruments and the spectroscopic and metrological investigations carried out with their aid.” A Michelson interferometer, one of the innovations that he developed in his life-long quest to measure the speed of light experimentally, was a key element of the time domain optical coherence tomography (OCT) first described in 1991. OCT represents a significant step in using quantitative, physical science techniques to describe the human eye in health and disease.

Robert Millikan, first president of the California Institute of Technology and one of Michelson’s students and colleagues wrote of him: “…The three American physicists whose work has been most epoch-making… are Benjamin Franklin, Josiah Willard Gibbs, and Albert A. Michelson… Michelson, pure experimentalist, designer of instruments, refiner of techniques, lives because in the field of optics he drove the refinement of measurement to its limits and by so doing showed the skeptical world what far-reaching consequences can follow from that sort of process, and what new vistas of knowledge can be opened by it.”

It is most appropriate that one of our keynote presentations be presented in honor of Professor Michelson. Michelson’s quest to measure the speed of light took him to Pasadena and the San Gabriel Valley many times. In 1926, he used a time-of-flight technique between Mt. Wilson and Mt. San Antonio (separated by 22 miles) to achieve an extraordinarily accurate measurement of the velocity of light (before lasers and modern electronics!).
Michelson’s biography is quintessentially American: He was a high-achieving immigrant. Born in Prussia, as a small child he came to California, where his parents sold supplies to gold miners in the town of Murphy’s Camp. Appointed to the United States Naval Academy (Annapolis) by President Ulysses S. Grant, he performed his initial light experiments as a young naval officer. He studied with Helmholtz (one of the inventors of the ophthalmoscope) in Berlin. Moving back to the U.S., he taught and researched at the Case School of Applied Science in Cleveland, where in collaboration with Professor Edward Morley he demonstrated experimentally that the “luminiferous ether” did not exist. After a brief stint at Clark University, he moved on to the University of Chicago as first Head of the Department of Physics, where he trained the first generation of America’s great physicists (for instance, Robert Millikan, winner of the 1923 Nobel Prize). In 1930, after retiring from the University of Chicago, he returned to Pasadena and Southern California where he continued his speed of light experiments. He died in Pasadena in 1931.

We celebrate the unique role that the scientists and terrain of the San Gabriel Valley have played in the great achievements of modern physical sciences.
COURSE REGISTRATION

TUITION
$150 for Health Care Professionals or Researchers, if registered and paid by noon PDT on 2/12/14. Additional $25 for onsite registration. Fellows, residents, MD’s in 1st three years of practice, USC affiliates are complimentary. Tuition is non-refundable, unless program is cancelled by USC.

LOCATION
Langham Huntington Hotel, 1401 S. Oak Knoll Avenue, Pasadena, CA 91106.

LODGING
Room Rate $199 per night, single or double, plus taxes and fees — book early as space is limited

626.568.3900 (Group Reservations) mention Keck School of Medicine OCT Conference

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Courses are subject to cancellation. USC will not refund travel costs for cancelled courses.

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Online: OCT.USC.EDU
Phone: 1-800-USC-1119 or Fax: 1-888-665-8650
Mail: Office of CME | 1540 Alcazar Street, CHP 223 | LA 90033
Onsite: Langham Huntington, Viennese Ballroom Foyer
Registration confirmation and event reminder will be emailed.

SPECIAL NEEDS
Advance notice of any special physical or dietary needs by February 1, 2014 will help us serve you better.

APPLICATION FOR FRONTIERS OF OPTICAL COHERENCE TOMOGRAPHY
SATURDAY, FEBRUARY 15, 2014

TUITION
$150 for Health Care Professionals or Researchers if registered and paid by noon PDT on 2/12/14. $25 surcharge for onsite registration.

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ACCREDITATION STATEMENT: The Keck School of Medicine of USC is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

CREDIT DESIGNATION: The Keck School of Medicine of USC designates this live activity for a maximum of 8.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
“...This century is poised to be the Age of Medicine and Biology. ...the leaders of the future will be universities that generate research and innovation in these areas, through cross-disciplinary approaches that generate intellectual friction and intellectual sparks.”

C.L. Max Nikias
President
University of Southern California

The USC Viterbi School of Engineering and the Keck School of Medicine of USC are proud to present a new interdisciplinary educational program for medical and engineering students. Health, Technology and Engineering (HTE@USC) will augment the training of select doctors and engineers through project-focused collaboration resulting in the most effective and efficient solutions to real-world healthcare problems. HTE@USC is part of a larger USC effort to promote rapid advances in healthcare through research and education combining the essentials of medicine with advanced engineering and scientific technologies. As active members of interdisciplinary teams linking researchers at both the Keck and Viterbi schools, students will learn the patient-centered research approaches required to address the healthcare needs of all patients, including those from traditionally underserved populations.

HTE@USC is directed by Terry Sanger, MD, PhD, and George Tolomiczenko, PhD, MPH, MBA

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To the left, George Tolomiczenko, PhD, MPH, MBA and right, Terry Sanger, MD, PhD