

UCDAVIS
Center for Vision Science



2014 Vision Research Symposium

Friday, January 3, 2014

Genome and Biomedical Sciences Auditorium

Vision Research Symposium: Titles

January 3, 2014

Genome and Biomedical Sciences Auditorium
GBSF 1005

8:30-9:00	Arrivals, Breakfast, Setup
9:00-9:30	CVS Update: Paul FitzGerald, PhD Faculty, Website, Travel Fellowships, Philanthropy, Core Module Updates
	NEI Core Facilities Presentations
5-10 min	Marie Burns, PhD: <i>The New Viral Vector Core</i>
5-10 min	Ed Pugh, PhD: <i>EyePod Small Animal Imaging Core</i>
5-10 min	Andy Ishida, PhD; Paul FitzGerald, Ph.D: <i>Merged modules</i>
9:40-10:40	Ravi Jonnal, PhD, UCD Ophthalmology <i>High Resolution Imaging of the Human Chorioretinal Complex</i>
10:45-11:00	Coffee break
11:00-12:00	Campus Resources for Vision Scientists
11:00-11:30	Alice Tarantal, PhD: <i>Primate Center</i>
11:30-12:00	Kent Lloyd, DVM, PhD: <i>Mouse Biology Program</i>
12:00-1:00	Catered Lunch
1:00-2:00	NEI Training Grant Trainee Presentations
1:00- 1:30	Zac Davis (HJ Cheng Lab) <i>Abnormal Spontaneous Retinal Activity Disrupts the Development of Geniculate Receptive Fields.</i>
1:35-2:05	Chris Fortenbach (Burns Lab) <i>Rod Recovery and the Temporal Resolution of the Visual System</i>
2:05 -2:20	Coffee Break
2:25- 3:25	Sara Thomasy, DVM, PhD UCD Vet Med <i>Stiffness matters: Corneal biomechanics and wound healing</i>
3:25-3:35	Keynote Speaker, Keltner Lectureship Introduction Ed Pugh, Jr, PhD, Mark Mannis, MD

3:35-4:45

The John Keltner, MD Lectureship in Ophthalmology

“New methods for measuring activity, connections and tissue properties in the living human brain”

Brian A. Wandell, PhD
Director, Stanford’s Center for Neurobiological Imaging
Stanford University

There has been extraordinary progress in our ability to measure tissue, structure, and function in the living human brain. I will explain several magnetic resonance imaging methods that quantify properties of the living human brain – both cortex and white matter - in individual subjects. The ability to make these measures in individual subjects and patients significantly enhances the value of these techniques for clinical applications.

First, I will discuss how functional magnetic resonance is used to measure the size, position, and stimulus selectivity of cortical maps in individual subjects. I will discuss a subject born without an optic chiasm, and how these maps are transformed. Next, I will describe how diffusion-weighted imaging is used to identify the major white matter tracts. The tissue properties within certain pathways are predictive of specific cognitive skills, including reading, demonstrating the importance of white matter tissue development for cognitive function. Finally, I will describe quantitative measurements of key MR parameters, including proton density and T1. Quantification of these parameters, coupled with biophysical models, enables us to measure new properties of tissue density and chemistry that clarify changes across the lifespan and in neurodegenerative disease.

Relevant publications

- [Visual Field Maps in Human Cortex](#)
Wandell, Dumoulin and Brewer (2007). **Neuron**, vol. 56, p. 366-383
- [Plasticity and stability of the visual system in human achiasma](#)
Hoffman, Kaule, Levin, Masuda, Kumar, Gottlob, Horiguchi, Dougherty, Stadler, Wylnski, Speck, Kanowski, Liao, Wandell, Dumoulin (2012). **Neuron** August 2012 vol. 75 pp. 393-401
- [Learning to see words](#)
Wandell, Rauschecker and Yeatman (2012). **Annual Review of Psychology** Vol. 63, pp.31-53.
- [Quantifying the local tissue volume and composition in individual brains with magnetic resonance imaging.](#)
Mezer, Yeatman, Stikov, Kay, Cho, Dougherty, Perry, Parvizi, Hua, Butts-Pauly & Wandell (2013). **Nature Medicine**

5:00-6:00

Reception

The Department of Ophthalmology and Vision Science is pleased to present:

JOHN L. KELTNER, M.D. Lectureship in Ophthalmology and Vision Science

John Keltner, a native of Akron Ohio, received the B.A. from Ohio Wesleyan University in 1961. He was awarded the M.D. from Case Western Reserve University Medical School in 1965, and conducted an internship at New York Hospital, Cornell Medical Center. From 1967-1969 he served in the United States Army as a Major in the Medical Corps. He completed a residency in Neurology at Bowman Gray Medical School, then a residency in Ophthalmology and a Research Fellowship in Neuro-Ophthalmology at Washington University. After a Fellowship in Pediatric Ophthalmology at Children's Hospital, in Washington, D.C., Dr. Keltner joined the faculty at Yale University School of Medicine as Assistant Professor of Ophthalmology, and Section Chief, Neuro- Ophthalmology and Pediatric Ophthalmology.

In 1976 Dr. Keltner joined the faculty at UC Davis School of Medicine as Assistant Professor of Ophthalmology, Neurology and Neurological Surgery. He was appointed Chair of the Dept. of Ophthalmology in 1978, a position he held until 2003. He currently serves as the Director of Research for the Dept. of Ophthalmology and Vision Science at the UC Davis School of Medicine.

Dr. Keltner is an author on almost 200 research publications, in addition to contributions to the literature as a member of the Study Groups in Optic Neuritis Treatment, Ocular Hypertension, and the Pediatric Eye Disease Investigative Group. His work has been supported by several private foundations, and more than 30 years of funding from the National Eye Institute.

Dr. Keltner was a co-founder of the Vision Science Research Group at UC Davis, which has grown into the Center for Visual Science. His limitless energy and enthusiasm have helped shepherd Vision Research at UCD into one of the strongest Vision Science Research Centers in the nation, now consisting of almost 50 faculty.

In 2012, Dr. Keltner's lifetime of achievements as a University of California faculty member was recognized by his appointment as Distinguished Professor of Ophthalmology.