CENTER *for* NEUROENGINEERING

ReEngineering the Human Nervous System

2nd Annual Symposium

Friday, September 14, 2012

BioScience Research Collaborative, BRC 280

8:00 am **Check-in, Continental Breakfast and Poster Setup**

8:30 am **Welcome and Introduction**
Peter Saggau, Neuroscience, Baylor College of Medicine

8:45 am **Keynote Address 1**
Advanced implantable devices – applications in electrophysiology, bidirectional neural interfaces and metabolic studies
Florian Solzbacher
Professor, Electrical and Computer Engineering, University of Utah
Director, Utah Nanofabrication Laboratory, University of Utah
Co-director, Utah Nanotechnology Institute, University of Utah
President and Executive Chairman, Blackrock Microsystems, LLC

9:45 am – 10:00 am **Break**

10:00 am - 11:00 am **CNE Member Short Talks**
Chair: John Dani, Neuroscience, Baylor College of Medicine

10:00 am ***Reengineering Potassium Channel Assembly for Improved Biophysics & Drug Discovery***
Paul Pfaffinger, Neuroscience, Baylor College of Medicine

10:10 am ***Neuromechanics***
William Brownell, Otolaryngology, Baylor College of Medicine

10:20 am ***Genetically Mapping Circuit Formation in the Mouse Brain***
Benjamin Arenkiel, Molecular & Human Genetics, Baylor College of Medicine

10:30 am ***Modeling shape, space and attention and potential uses in brain-machine interfaces***
Anne Sereno, Neurobiology & Anatomy, University of Texas Health Science Center

10:40 am ***On-line and Off-line Processing of Sensory Stimuli in Sleep***
Bhavin Sheth, Electrical & Computer Engineering, University of Houston

10:50 am **Discussion**

11:00 am – 11:15 am **Break**

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11:15 am - 12:00 am **CNE Member Short Talks**
Chair: Behnaam Aazhang, Electrical & Computer Engineering, Rice University

11:15 am ***Nanodevices to interrogate neural circuits***
Jacob Robinson, Electrical & Computer Engineering, Rice University

11:25 am ***CMOS Chips for Wireless Neural Recording and Stimulation***
Aydin Babakhani, Electrical & Computer Engineering, Rice University

11:35 am ***Molecularly-specific optical imaging, sensing, and stimulation***
Wei-Chuan Shih, Electrical & Computer Engineering, University of Houston

11:45 am ***Integrated optrode for deep brain stimulation and recording***
John Wolfe, Electrical & Computer Engineering, University of Houston

11:55 am ***Modern integrated optical modalities for rapid signaling and diagnostic imaging***
Tomasz Tkaczyk, Bioengineering, Rice University

12:05 pm **Discussion**

12:15 am – 1:20 pm **Lunch and Posters**

1:20 pm - 2:30 pm **CNE Member Short Talks**
Chair: Steve Cox, Computational & Applied Mathematics, Rice University

1:20 pm ***Statistical Learning for Neuroimaging***
Genevera Allen, Statistics, Rice University, Neurological Research Institute, Baylor College of Medicine

1:30 pm ***Identification of Functional Subnetworks in Traumatic Brain Injury***
Yin Liu, Neurosurgery, University of Texas Health Science Center

1:40 pm ***State Transitions to Seizures***
Giridhar Kalamangalam, Neurology, University of Texas Health Science Center

1:50 pm ***Auditory Information Processing***
Ben Jansen, Electrical & Computer Engineering, University of Houston

2:00 pm ***Multicellular Organization of the Neurovasculature***
Amina Qutub, Bioengineering, Rice University

2:10 pm ***Modeling Complex Neural Components***
Herbert Levine, BioEngineering, Center Theoretical Biological Physics, Rice University

2:20 pm **Discussion**

2:30 pm -2:45 pm **Break**

2:45 pm -3:45 pm **Industry Guest Short Talks**
Chair: Anthony Elam, Rice University

2:45 pm ***MicroTransponder: Out of the UT-Dallas lab and into the clinic - Pairing vagus nerve stimulation (VNS) with tones for tinnitus and with rehabilitation movement for stroke***

Brent Tarver, VP Clinical Affairs, Microtransponder, Dallas, TX

2:55 pm ***Real-time MRI-guided laser neurosurgery: It's not just for tumors anymore***
Roger McNichols, Founder, Chief Technology Officer, Visualase, Inc., Houston, TX

3:05 pm ***Graphical System Design in NeuroEngineering Education and Research***
Igor Alvarado, BDM-Academic Research, National Instruments, Austin, TX

3:15 pm ***Transforming the Medical Device User Interface***
William Buras, Life Sciences Director, Tietronix Software, Houston TX

3:25 pm ***Cyberonics Inc. R&D, Translating Technologies into Medical Products***
Steve Maschino, Sr. Director R&D, Cyberonics, Houston, TX

3:35 pm **Discussion**

3:45 pm – 4:00 pm **Break**

4:00 pm **Keynote Address 2 (BRC Auditorium, 1st Floor)**
Generalized Brain-Machine-Interfacing for Neuromodulation
Tim Denison
Technical Fellow
Director of NeuroEngineering
Medtronic, Minneapolis, MN

5:00 pm **Reception**