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## Postdoctoral Positions

The Cognitive Rhythms Collaborative is a group of Boston-based scientists who have begun to work together to advance our understanding of the brain dynamics underlying cognitive functions such as attention, sensation, motor planning, and memory. (Names are at the end of this posting). There is a growing consensus that dynamics are central to understanding how the brain works, but major gaps exist in what we know and in how we seek to understand more. The CRC has focused on the dynamical regime most strongly associated with cognition, rhythmic activity in the frequency range 1 - 200 Hz. Its central aims are to characterize the physiological origins and functions of such rhythms and to understand how pathologies in rhythmic dynamics are related to symptoms and mechanisms of neurological disease. Mathematical modeling, cutting-edge statistical techniques, and their implementation as computer algorithms will be critical to carrying out its scientific program. The CRC has recently been funded for five years by the National Science Foundation. The grant will support the CRC, concentrating on the application of the mathematical sciences to the investigation of brain dynamics and the potential for new mathematical, statistical and computational techniques driven by challenging scientific problems. This will include support of a technology core that will create new hardware/software platforms to support such techniques.

We are now starting recruitment for our first cohort of CRC Postdoctoral Associates, focusing on applicants with computational interests. CRC Postdocs will be housed at Boston University, MIT or MGH Martinos Center. They will have flexibility and freedom in projects, with mentoring and collaboration from multiple CRC investigators, likely at different institutions. Examples of projects that can be undertaken by a CRC postdoc include: development of new algorithms for understanding data about rhythms, including spike-field relationships; assimilation of different kinds of data, such as MEG, EEG, physiological data etc.; melding statistics and dynamics in models; creating biophysically based dynamical systems models of cognitively relevant circuits; finding new ways to understand data concerning functional connectivity across the cortex.

Interested candidates should have three letters of recommendation sent to:

Joan Butler  
 Department of Mathematics  
 Boston University  
 Boston MA 02215

Also include a CV and a statement of research interests. In the latter, please include a discussion of what kinds of projects you would like to do as a CRC Postdoc, and the investigators with whom you might want to work. There is no official deadline, but we will start considering applications on Nov. 15, 2010. Positions are available immediately, but will be filled over a period of time.

### Founding members

**Boston University:** Uri Eden, Howard Eichenbaum, Oded Ghitza, Xue Han,

Nancy Kopell, Mark Kramer, Jason Ritt, Kamal Sen, Barbara

Shinn-Cunningham

**MIT:** Ed Boyden, Emery Brown, Robert Desimone, Ann Graybiel, Earl

Miller, Chris Moore, Matt Wilson.

**MGH/Harvard Medical School/Martinos Imaging Center:** Seppo Ahlfors, Emery

Brown, Sydney Cash, Matti Hamalainen, Stephanie Jones, Steven

Stufflebeam,

**Brandeis:** Don Katz

**Tufts:** Christoph Borgers

**Harvard Medical School:** Bernat Kocsis

**Alpert Medical School, Brown University:** Ming Cheng

Among us, we have skills in electrophysiology (in vivo and in vitro), psychology, imaging, building new technology, data analysis, statistics and dynamical systems, and neurosurgery. Our interests range across topics such as attention, learning and recall, active sensing and motor control, as well as the basic science underlying effects of anesthesia and diseases including schizophrenia and Parkinson's disease.

The CBD is connected to many departments and other research centers at Boston University, providing a stimulating research environment. The senior faculty members of this group are from Mathematics (Uri Eden, Tasso Kaper, Eric Kolaczyk, Nancy Kopell (PI), and Gene Wayne) and Biomedical Engineering (Jim Collins (PI), Daniel Segrè, and Kamal Sen). Other associated senior faculty members are John Baillieul (Aerospace and Mechanical Engineering), Paul Barbone, Mike Hasselmo (Psychology), and Sidney Redner (Physics). For information about collaborative activities of this group, please see our [research page](#).

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