

### **B1.1 Emory Department of Psychiatry and Behavioral Science ([www.psychiatry.emory.edu](http://www.psychiatry.emory.edu)).**

The Emory Department of Psychiatry and Behavioral Sciences consists of 105 regular faculty, 20 adjunct faculty and 60 clinical faculty. Among Departments of Psychiatry, Emory ranked 19<sup>th</sup> in NIH funding in 2012 with extramural research funding for the current fiscal year being ~\$15.7 million (YTD 2013)(~13.7M NIH), including over 15 active R01s, along with other project and program grants. The commitment of the department to research career development has been a consistent strength with 6 current NIH K Awards. The faculty has a strong record of training and mentoring basic and clinical neuroscientists, and numerous graduate students and postdoctoral fellows are trained in the department. As such, the Department of Psychiatry and Behavioral Sciences at Emory University represents an outstanding, generative environment for research training. Of note, trainees will also be poised to work in a number of other labs that are not directly within the Department of Psychiatry, with some of these additional opportunities outlined below.

### **B1.2 Emory University School of Medicine.**

Emory University received over \$480 million in total annual grant funding for biomedical research in 2012. The Emory University School of Medicine (SOM) has engineered infrastructure and faculty recruitment to accomplish an unprecedented growth in biomedical research funding over the last 10 years with approximately \$331 million in NIH research funding in 2012. In year 1 of the strategic plan to enhance research training and productivity, the SOM experienced the purchase of significant new research instruments (PET, MRI, mass spec), recruited new faculty across the SOM, added 3 new T32 training grants, initiated or completed the construction of new research buildings or space, created funds to assist in the development of program project and center grants, and provided significant new funding for the establishment and expansion of core research laboratories. This level of commitment to research and training and remarkable recent growth in biomedical research makes Emory SOM an excellent resource and environment for the research training activities of the proposed...

### **B1.3 Atlanta Clinical and Translational Science Institute (ACTSI).**

Emory University is the lead institution in a multi-institutional clinical and translational research alliance, including Morehouse School of Medicine and the Georgia Institute of Technology. The ACTSI was recently refunded by the NIH, and components that are available to enhance research training include:

- The Master's of Science in Clinical Research (MSCR) program described above
- The Certificate Program in Translational Research (CPTR) described above
- A successful KL2/TL1 program that supports mentored research training of post-doctoral fellows and junior faculty at Emory
- The multi-site Clinical Research Network (CRN), which, for residents engaged in patient-oriented research provides a clinical-research infrastructure at Emory University Hospital, Emory Midtown (formerly Crawford Long Hospital), Grady Memorial Hospital, the Ponce Infectious Diseases Clinic, the Hope Clinic, Wesley Woods Health Center, the Morehouse School of Medicine Clinical Research Center and Kaiser Permanente of Georgia.

**B1.4 The Office of Clinical Research (OCR).** The Office of Clinical Research is designed to assist investigators in managing various regulatory and ethical aspects of human subjects research; the OCR is leading the effort to develop a comprehensive electronic research record that integrates with Emory's current clinical electronic medical record system.

### **B1.5 Emory Center Grants involving Psychiatry and Behavioral Sciences faculty:**

The Center for Behavioral Neuroscience (CBN; <http://www.cbn-atl.org/>). The CBN is an award-winning, interdisciplinary NSF-funded research consortium consisting of interdisciplinary, multi-institutional programs integrating research, education and knowledge transfer. Founded by Dr. Tom Insel and now led by Drs. Elliot Albers and Stuart Zola, more than 100 neuroscientists, 50 graduate students and 20 postdoctoral researchers work toward the mission to conduct research, provide education, and improve knowledge transfer related to the neurobiology of social behavior.

Emory University Comprehensive Neuroscience Center (CNC). Seeking to leverage resources and enhance collaborations, Emory has established the CNC to integrate clinical care, research and education around several key neuroscience areas of excellence at the university including Alzheimer's and Other Dementias,

Stroke, Sleep, Neuromuscular Disorders, Epilepsy, Anxiety and Mood Disorders, and Movement Disorders. The CNC is a major component of the Emory Neurosciences Initiative.

The Center for Neurodegenerative Disease (CND). This broad consortium of researchers including Drs. Kerry Ressler, Gary Bassell, Allen Levey, James Lah, Jonathon Glass, and Steve Warren, is an interdisciplinary and interdepartmental center that fosters and integrates studies on the mechanisms of neurodegeneration, neuroprotection and brain repair. The CND provides an optimal environment for translational research bringing together in one place faculty with diverse basic and clinical expertise.

The Emory Alzheimer's Disease Research Center (ADRC). The ADRC, led by Dr. Allen Levey, is one of 29 Alzheimer's disease core research centers established at major medical centers and funded by the National Institute on Aging at the NIH. The ADRC funding provides core resources that serve as the foundation for the development of expanded multidisciplinary research activities in Alzheimer's disease and related dementias.

### **B1.6 Core Facilities available to Emory Neuroscience Researchers:**

Emory Neuroscience Graduate Program: The graduate program in Neuroscience at Emory University is a cross-departmental, interdisciplinary program that provides a collaborative atmosphere encouraging research excellence. It includes 115 faculty and more than 90 students that represent a broad scope of research interests within neuroscience, ranging from molecular to cellular to behavioral neuroscience. This program is one of eight Ph.D. programs that comprise the Emory Graduate Division of Biological and Biomedical Sciences (GDBBS), which includes over 260 faculty members in the Division, and graduate students of any program in the Division face no departmental barriers (e.g., course flexibility, multiple lab rotations).

Advanced Imaging Research (AIR) Center: Directed by Dr. Xiaoping Hu, the Center provides the organization and infrastructure for two operational units: The Emory Positron Emission Tomography (PET) Unit and the Magnetic Resonance Imaging (MRI) Research Unit/ Biomedical Imaging Technology Center (BITC), both located in the Emory University Hospital. The PET Unit houses two high resolution PET scanners, a cyclotron and laboratories for radioligand development and image analysis. The MRI Unit includes two Phillips 1.5 Tesla scanners capable of single shot echo-planar imaging. There are at least 15 PhD students in the graduate Neuroscience Program who actively use these MRI and PET imaging facilities for their thesis project. The Facility for Education and Research in Neuroscience (FERN) is also part of the core set of neuroscience training resources at Emory. The brand new facility houses a Siemens 3 Tesla TIM Trio scanner fully dedicated to research. The primary mission of the FERN is to provide training opportunities for those interested in pursuing a career in neuroscience. Trainees and faculty can apply for up to 20 hours of scanner time to collect pilot data for external grant submissions (e.g., K awards, NARSAD Young Investigator Awards).

Yerkes Functional Brain Imaging Center: A major recent development in neuroscience research at Emory is the opening of a new state-of-the-art brain imaging Core Facility in the Neuroscience research building at the Yerkes Primate Center. This facility houses two magnetic-resonance-imaging (MRI) labs (a 4.7T/40cm Bruker system and a 3T/90cm human-size scanner Siemens system), in addition to an abundance of other state-of-the-art, research -dedicated technology and computing resources.

The Electron Microscopy Core Facility: Directed by Dr. Hong Yi of the Department of Neurology, this facility provides expertise, service and training in transmission EM and EM immunocytochemistry. There are also hands-on workshops that enable investigators to learn techniques, such as immunogold labeling of specimens.

The Emory Integrated Genomics Core Facility: Directed by Dr. Michael Zwick, this facility provides all services necessary for functional genomics technology including production, use and analysis of cDNA microarrays.

The Yerkes Endocrine Core Facility: Directed by Dr. Mark Wilson, this facility provides immunoassay determinations of steroid and protein hormones or other biologically active compounds in biological fluids.

The Cellular Core Facility: Directed by Dr. Allan Levey, this facility provides services and resources for the preparation of viral vectors.

The Transgenic Mouse Core Facility: Directed by Dr. Helen Heju Zhang, this facility contains state-of-the-art equipment for the generation of transgenic animals and the production of animals containing targeted gene disruption and replacements in their genomes.

The Emory University School of Medicine Core Facility for Flow Cytometry: This core provides analysis and sorting services, as well as training and consultation.

The Winship Cancer Center's Flow Cytometry Facility: Directed by Dr. Edmund Waller, provides cell sorting and analysis for faculty and trainees. Flow cytometry equipment is also located in the laboratory of Dr. John Altman in the Rollins Research Center as an extension of this facility.

The Integrated Cellular Imaging (ICI) Core: Under the direction of Dr. Adam Marcus, this facility provides state-of-the-art light microscopy and image analysis technology. Developing new imaging techniques and acquiring new cutting-edge equipment are central to the mission of this facility, and they host a monthly data club to unite researchers across campus and share ideas and seminars on various imaging topics.

The Rodent Behavioral Core Facility: Directed by Drs. David Weinshenker and Jason Schroeder, this core provides planning, execution, and analysis of behavioral experiments examining activity, arousal, coordinated movement, learning and memory, anxiety, depression, seizure susceptibility, reward/reinforcement, and aggression in mice and rats.

The Emory Clinical Translational Research Laboratory (ECTRL): Under the direction of [Dr. James C. Ritchie, Ph.D.](#), and [Dr. Ross J. Molinaro, Ph.D.](#), this laboratory offers multiple clinical pathology services and specializes in the development of clinical based testing methods, clinical utility assessments, clinical trial testing, routine and special method development, and method validation (FDA).

The Psychiatric Genetics Core: Directed by Alicia Smith, Ph.D. (mentor in this proposal), this core provides specialized sample and data management, nucleic acid extraction and quality assessment, assay development, interrogation with a variety of rapidly-evolving technological platforms, data quality checks and statistical analysis.

Human Psychophysiology of Emotion Core This translational neuroscience laboratory, directed by Tanja Jovanovic, PhD and Seth Norrholm, PhD, is equipped with a psychophysiological suite that allows us to objectively assess the symptoms of mood and anxiety disorders using state-of-the-art technology.

Additional Institutional Resources: Rollins School for Public Health and the Centers for Disease Control: Located in Atlanta, the Rollins School of Public Health is situated in the "the public health capital of the world," as Atlanta is home to the Centers for Disease Control and Prevention, the national home office of the American Cancer Society, the Carter Center, numerous state and regional health agencies, and the clinical, teaching, and health-related research programs of Emory University's Woodruff Health Sciences Center. This setting is ideal for hands-on research, collaborations with the world's leading public health agencies, and interdisciplinary work with national and international organizations. The Emory Community Psychiatry Fellowship and the Rollins Masters in Public Health are two formalized mechanisms for Emory Resident Physicians to further their public health and epidemiology training. Furthermore, numerous researchers at these sites are also available for research mentorship within this proposed CSTP program.