Research Development Fund – Spring 2019

Application Title: Acquisition of a 3T Whole Body MRI Scanner Dedicated for Human Neuroscience Research

Lead contact for RDF Application:

Name	Brian A. Anderson
Department	Psychological & Brain Sciences
Email address	brian.anderson@tamu.edu
Phone number	979-458-0168

Key Participating Units:

College of Liberal Arts	College of Education and Human Development	College of Nursing
College of Medicine	Texas A&M Institute for Preclinical Studies (TIPS)	College of Architecture
College of Engineering	College of Agriculture and Life Science	College of Science

Anticipated Request Amount ($): $2,956,890

Executive summary of this application to utilize Research Development Funds:

The development of noninvasive technology that measures human brain functioning, including structural and functional magnetic resonance imaging (fMRI), is revolutionizing how we understand and measure normal and disordered behavior. The interdisciplinary study of human neuroscience is targeted by multiple funding agencies and work in this area is reflected in the top scientific journals. We propose to use Research Development Funds to purchase the equipment and support necessary to place Texas A&M at the competitive edge of this research area, making it an attractive venue to recruit and retain faculty who use current neuroscience methodology.

Over the last several years, human neuroscience has emerged as an area of strength in the research representation of the faculty within Texas A&M. As with the discipline of neuroscience more broadly, this representation is truly interdisciplinary, cutting across departments and colleges. Currently, this broad research community shares access to a single fMRI scanner with preclinical studies, with scanner availability unable to keep up with increasing demand. This is detrimental to the progress of current research efforts. Furthermore, extramural financial resources secured to support human brain imaging will be underutilized with restrictive scheduling, and the opportunity for further expansion (e.g., hiring new faculty whose research program includes human neuroimaging, securing and implementing new extramural grants that would require substantial scanning hours) is unfeasible given the accessibility of existing resources. The opportunity cost associated with limited scanner access is substantial, and the success of currently active TAMU human neuroscientists in publishing and grant-seeking attests to the likelihood of a high rate of return on further investment in this area.

To more effectively leverage the opportunities offered by human neuroscience research at TAMU, we propose the purchase of a new 3 Tesla (3T) fMRI scanner devoted to human neuroscience research. The scanner would be housed at the Texas A&M Institute for Preclinical Studies (TIPS), utilizing space that was constructed for such a purpose but currently remains empty. Policies, procedures, and structural renovations (e.g., separate access, waiting rooms) have already been successfully implemented to support human neuroimaging at TIPS, which would seamlessly transfer to the use of this newly acquired scanner. This scanner we are requesting offers technology commensurate with scanning resources used to support human neuroimaging at several other universities within the state of Texas and is capable of running modern imaging sequences that the current 3T scanner at TIPS cannot support, ensuring that Texas A&M remains competitive as a research and education leader. With the demand for neuroscience training at an all-time high, as attested to by high enrollment in neuroscience majors across the country, as well as the newly-developed Neuroscience Major at TAMU, the proposed resource would also serve to increase opportunities for undergraduate and graduate students to learn and engage with the discipline of human neuroscience.