

## Request for Applications (RFA) for Pilot Project Grants

2021-2022

### **Key Dates:**

Letter of Intent (LOI) Due:	Open (Rolling)
Invitation to Submit Full Application Sent:	1-month post receipt of LOI
Application Due Date:	1-month post invitation
Anticipated Award Date:	1-month post submission
Award Amount: up to \$15,000 per award	
Anticipated Number of Awards	5 (3 to involve MRI)

### **Overview**

The MU Cognitive Neuroscience Systems (CNS) Core Facility plans to fund up to **five** pilot grants for a 12-month period. Projects must include utilization of CNS core facility resources and among the five awards, **3** are designated for projects that will use the new Siemens 3T Prisma MRI scanner. Investigators interested in applying must submit a Letter of Intent (LOI) by the posted deadline. Only those applications that receive an Invitation to Submit a full proposal will be considered for funding.

This RFA is open to all areas of investigation – regardless of particular neural or behavioral processes or models of interest. Preference, however, will be given to translational research proposals that include multidisciplinary teams and present a clear rationale for how this pilot project, if successful, will bolster a competitive external grant application.

This pilot grant mechanism is intended for investigators of all stages to use the CNS core facility to generate novel data that are needed to develop a competitive NIH or NSF grant application. For junior investigators or clinical faculty new to research, it is expected that an experienced research faculty will be a member of the investigative team. The CNS Director is available for consultation if the applicant needs assistance identifying a suitably experienced faculty collaborator. Pilot funds are primarily to be used to pay for fees associated with using the CNS core facility. This pilot program does not provide salary support and is not intended to augment ongoing funded research projects.

### **Eligibility**

Principal Investigators are expected to have a PhD or MD, have a full-time appointment at MU and be eligible to submit an application to NIH/NSF.

### **Letter of Intent**

Applicants are required to submit a Letter of Intent (LOI) to [froeligerb@health.missouri.edu](mailto:froeligerb@health.missouri.edu). LOI's will be reviewed by an internal scientific advisory board and applicants will be notified whether they are invited to submit a full proposal. LOI's should include the following information:

- Descriptive title of research proposal
- Name and title of the PI, Co-I(s) and any other key personnel
- Brief summary (i.e. abstract) of the research proposal.

### **Components of a Full Proposal**

The full proposal should follow NIH formatting guidelines. See <https://grants.nih.gov/grants/how-to-apply-application-guide.html> for guidance.

The full proposal must include an Abstract, Specific Aims (1-page), Research Strategy (maximum 3 pages), Budget, Budget Justification and Biosketch for each investigator listed on the application. Lastly, proposals should include a 1-page “Future Grant Plans” section, which details how the resulting data will be leveraged towards securing more extensive external grant support. This section should include information regarding anticipated timeline for external proposal submission as well as specifics on potential funding agencies, mechanics, program announcements, etc,

## **Overview of Facilities**

**The Cognitive Neuroscience Systems (CNS) Core** facility provides laboratory space and instrumentation required for conducting translational cognitive neuroscience research. The goal of the CNS core is to support investigators that seek to advance our understanding of basic brain processes, neuropathophysiological conditions and evaluate the efficacy of novel treatments for improving human health and well-being. The University of Missouri established the CNS Core Facility in 2020, and it is under the direction of Dr. Brett Froeliger. The CNS Core Facility resides in 4,000 square feet of space within the Marx Building at 1416 Carrie Francke Drive; including a research-dedicated MRI suite with a Mock scanner, 6 experimental rooms dedicated to cognitive and psychophysiology testing, a clinical room for H&P and biospecimen collection, and ~1,200 square feet of office space available for faculty, staff, and students. Instrumentation available at the CNS core includes:

***Magnetic Resonance Imaging:*** Siemens 3T Prisma scanner. The CNS houses a research-dedicated Siemens 3T PRISMA MRI scanner that is covered by a master research agreement with Siemens Medical. The MRI suite also contains a Mock Scanner as well as participant evaluation and changing rooms. The MRI scanner includes a 32 and 64-channel head coils, body 60 coil, MRI-compatible physiological monitoring systems (Siemens Physio Monitors, BIOPAC) to provide continuous measurement of ECG, Pulse Oximetry, and respiration during neuroimaging. Visual stimuli are displayed via computer projector (Avotec SV6-6) and a screen within the scanner bore. Audio stimuli are presented using MR-compatible headphones (Optoacoustics OptoActive-II). Software presentation are administered through E-Prime or other experiment software. Subject responses are obtained from via MRI-compatible response button systems (BrainLogics, Current Design).

***Transcranial Magnetic Stimulation (TMS) Suite.*** The CNS houses a complete suite of equipment required for neuronavigation-guided TMS research. The equipment is located in laboratory space that allows for comprehensive neurocognitive testing within the same room and in close proximity (< 1 min. walk) to the MRI scanner suite. Equipment includes: *Magventure MagPro X100* (MagVenture Inc, USA distributor: Atlanta, GA). The MagPro X100 has 3 waveforms: Biphasic, Biphasic Burst and Monophasic, selectable current direction, stimulation rates up to 100 pulses per second and connects to external equipment via programmable input/output triggers (e.g. Brainsight, Rogue Research Inc©). It has a Cool B65 A/P coil, active integrated sham system and an external cooling system supporting Theta Burst Stimulation. *Brainsight 2 Neuronavigation system* (Rogue Research Inc, Montreal, Quebec). The system includes a Brainsight software license (2.2.7) and hardware (TMS chair, 27” Apple iMAC on Wheels, Interface Box, Polaris tracker and foot pod) necessary for neuronavigation. The Brainsight receives TTL pulses from the Magventure system, time stamping coordinates for each pulse delivered.

***Psychophysiological Recordings.*** The CNS facility houses a psychophysiology suite including an infrared eye tracking system, 6 BIOPAC systems equipped with heart-rate and respiratory amps, and computer systems for stimulus presentation and/or electronic questionnaire administration.

***Cognitive / Behavioral Testing.*** Each of 6 testing rooms are ventilated, allowing for smoking research, and equipped with network attached desktop computers. The computers run Win 10 and support E-Prime, other cognitive testing software platforms, and Redcap survey administration.

**Handheld Devices & Biospecimen Storage:** Smoking Research Equipment: 3 pocket CReSS smoke delivery devices to measure and quantify smoking topography, and 4 Bedfont piCO Breath CO monitoring devices. Biological Specimens: Biological specimens (blood, urine, saliva) may be collected on-site and temporarily stored in a -80 freezer until transportation to permanent storage.

### **Budget Information for Pilot Proposals.**

Each application Budget is limited to **\$15,000** and allows for up to \$3,000 of the total budget to be used for non-CNS related fees (e.g., participant compensation, study supplies). *This pilot mechanism does not allow for salary support.*

### **CNS Core Facility Pilot Protocol Hourly Rates**

<b>MRI:</b>	<b>\$350</b>
<b>TMS + Neuronavigation:</b>	<b>\$50</b>
<b>Cognitive Testing Room + Biopac:</b>	<b>\$25</b>

**Review Criteria:** Full proposal will undergo independent review and follow NIH Review Criteria for an R03 or R21 (<https://grants.nih.gov/grants/peer/critiques/rpg.htm>).

Questions regarding this RFA and submission process may be addressed to CNS Director Brett Froeliger ([froeligerb@health.missouri.edu](mailto:froeligerb@health.missouri.edu)).