

<p>Overview:</p>	<p>The Center for Applied Brain & Cognitive Sciences welcomes pilot and full program proposals aimed at fulfilling the Center’s objectives to advance the state-of-the-art in applied brain and cognitive sciences through interdisciplinary science and engineering. The Center provides an innovative environment for supporting and conducting collaborative applied research focused on measuring, predicting, and enhancing cognitive capabilities and human systems interactions for individuals and teams working in naturalistic high stakes environments. See www.centerforabcs.org for details.</p>														
<p>Award Types:</p>	<p>The Center aims to support two award types, Pilot and Full.</p> <p><i>Pilot programs</i> are 8 months in duration and are intended to support early idea development, protocol approvals, and pilot testing. The pilot program should preface full proposal development, including pilot data collection to inform feasibility and highlight potential contributions of the full proposal. Pilot program maximum budget is \$15,000, including a maximum \$500 travel stipend, and maximum \$6000 materials/equipment cost. Note that these limits are on direct costs not including fringe rates. You do not need to account for fringe rates on personnel spending or indirect costs in your proposed budget.</p> <p><i>Full programs</i> are 12 months in duration and are intended to support research and development efforts that make fundamental contributions to the Center’s stated objectives. Initial funding is 12 months, which may be renewed once pending successful year 1 execution, report submission, and panel review. Full program maximum annual budget is \$70,000, including a maximum \$3,000 annual travel stipend, and maximum \$4000 materials/equipment cost. Note that these limits are on direct costs not including fringe rates. You do not need to account for fringe rates on personnel spending or indirect costs in your proposed budget.</p>														
<p>Important Dates:</p> <p><i>(Dates subject to change. Please contact us for updated information.)</i></p>	<table border="1"> <thead> <tr> <th>Action Item</th> <th>Deadline</th> </tr> </thead> <tbody> <tr> <td>Proposal Submission</td> <td>February 1, 2018</td> </tr> <tr> <td>Award Notification</td> <td>March 1, 2018</td> </tr> <tr> <td>Award Funding Activation</td> <td>TBD, proposal specific</td> </tr> <tr> <td>Renewal Request</td> <td>February 1, 2018</td> </tr> <tr> <td>Award Funding End</td> <td>May 31, 2019</td> </tr> <tr> <td>Annual Report</td> <td>June 30, 2019</td> </tr> </tbody> </table>	Action Item	Deadline	Proposal Submission	February 1, 2018	Award Notification	March 1, 2018	Award Funding Activation	TBD, proposal specific	Renewal Request	February 1, 2018	Award Funding End	May 31, 2019	Annual Report	June 30, 2019
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<p>How to Apply:</p>	<p>The Center relies on strong collaboration between Tufts and NSRDEC Investigators. Before you begin preparing your application, please take some time to identify possible NSRDEC collaborators by viewing their descriptions at the Center website: http://www.centerforabcs.org/index.php/about/centerpeople.</p> <p>Once you’ve identified some possible collaborators, please e-mail centerforabcs@tufts.edu identifying the individuals that you feel may best enhance your proposed project, and a short description of the work you intend to undertake. The Center program coordinator or one of the NSRDEC collaborators will reach out to you to begin the proposal process. Please note that while the goal of connecting collaborators early in the proposal process is to ensure that proposals are well-aligned with the Center’s five topic areas, working with a collaborator does not guarantee funding.</p> <p>Application materials, including templates and instructions, can be downloaded from the Center’s website: http://www.centerforabcs.org, and questions should be sent to the Center’s email address: centerforabcs@tufts.edu</p> <p>The application must include the following two documents:</p> <ol style="list-style-type: none"> 1. A complete Pilot or Full program proposal. <ol style="list-style-type: none"> a. Note on budget preparation: please do not calculate fringe or indirect costs when submitting your budget. If you have questions about equipment availability or services available at no cost through the Center, please e-mail centerforabcs@tufts.edu. 2. Updated CVs for all involved faculty. 3. Copies of CITI completion reports for all Investigators. <p>Send application materials, via email, to centerforabcs@tufts.edu</p>														

<p>Unique Requirements:</p>	<p>All applications must conform to the following pre-award and post-award requirements:</p> <p><i>Pre-Award</i></p> <ol style="list-style-type: none"> Proposals must be directed at fulfilling the Center’s objectives and fit clearly into one of the Center’s topic areas. Proposals must formally involve at least two Tufts faculty members, from at least two departments (e.g., Computer Science and Psychology, Biomedical Engineering and Nutrition School, Mechanical Engineering and Computer Science, etc.). Proposals must indicate a primary NSRDEC scientific collaborator. <p><i>Post-Award</i></p> <ol style="list-style-type: none"> All funded human use experimentation must be approved by the Tufts University Institutional Review Board (IRB), and then the U.S. Army Human Research Protections Office (AHRPO). Expect this latter process to take 2-4 weeks. Post-award instructions will be provided. Award recipients may be required to attend and present a poster of their work at the Center’s annual Open House. This is a great opportunity for graduate students and scholars, though faculty members are also welcome to present. Each award recipient is required to submit an annual report (see Annual Report Template), and renewal request if invited (see Renewal Request Template), to centerforabcs@tufts.edu. See Important Dates, above.
<p>Topic Areas:</p>	<p>Each year, the Center for Applied Brain & Cognitive Sciences will issue formal topic areas to guide and constrain proposed efforts. For 2018, each proposal must be explicitly linked to at least one of the below topic areas:</p> <p>Topic A: <i>Biosensing Individual and Small Team Status.</i> Projects falling under this topic will focus on identifying, testing, evaluating, and validating innovative multi-modal (physiological, neurophysiological, behavioral, hormonal) sensor technologies and associated metrics. Sensor technologies can be laboratory- or consumer-grade, and be used for monitoring and characterizing cognitive and non-cognitive states such as frustration, mental workload, stress, readiness for problem solving, fear, uncertainty, adaptability, agility, and fatigue (cognitive and/or physical). Special emphasis will be placed on monitoring tools and techniques with validity for understanding cognition at the level of individuals and teams, and sensitivity, specificity, and reliability under conditions of ambulation and immersion in virtual reality.</p> <p>Topic B: <i>Neuromodulation for Performance Enhancement.</i> Projects falling under this topic will focus on characterizing the impact of emerging neuromodulation technologies on perceptual, cognitive, and motor performance. Technologies include but are not limited to transcranial magnetic stimulation (TMS), transcranial direct current stimulation (tDCS), transcranial alternating current stimulation (tACS), and transcranial random noise stimulation (tRNS). Special emphasis will be placed on characterizing the influence of laboratory- and consumer-grade neuromodulation technologies on promoting knowledge and skill acquisition, adaptive decision-making, teamwork, and sustained performance under stress.</p> <p>Topic C: <i>Reality Augmentation for Performance Enhancement.</i> Projects falling under this topic will focus on the influence of innovative technologies, such as augmented and mixed reality, on comprehension, learning, sustained performance under stress, and memory. Special emphasis will be placed on using augmented and/or mixed reality for visualizing complex information (e.g., multidimensional data, 3D terrain), accelerating knowledge and skill acquisition through virtual practice, methods for providing operators with actionable data without burdening primary task performance, and evaluations of individual- and team-level impacts of system characteristics.</p>
<p>Resource Availability:</p>	<p>The Center is prepared to provide facilities and equipment access to faculty and students for supporting the execution of research and development awards. The Center houses the following primary capabilities:</p>

Head-Mounted Virtual Reality: Three head-mounted virtual reality displays (Oculus Rift) and large-screen LCD displays, to simulate real-world experiences and measure behavioral and physiological outcomes. This capability is ideal for both individual and small team (up to 3 individuals) experimentation.

Ambulatory CAVE-based Virtual Reality: Three large-scale immersive virtual reality systems with realistic environments and scenarios, multimodal participant inputs, embedded data logging, and wireless physiological and neurophysiological measures. This capability is ideal for both individual and small team (up to 3 individuals) experimentation.

Brain Monitoring and Stimulation: Whole-head functional near-infrared spectroscopy and high density electroencephalography (EEG) are available for brain monitoring applications. Targeted low current transcranial direct and alternating current stimulation (tDCS/tACS) are available for targeting neural mechanisms underlying task performance.

Exercise, Physiology, and Neurophysiology: Treadmill and ergometer equipment are available for introducing physical exertion demands, with the possibility of monitoring physiological demands (heart rate, respiration rate, electromyography) and neurophysiological outcomes using electroencephalography (EEG) or functional near-infrared spectroscopy (fNIRS).

See the "Center Capabilities and Resources" page at www.centerforabcs.org for more detail on the resources available through the Center.