

Center for Biomedical Imaging

Annual Report FY2020

(issued August 2020)

The Center for Biomedical Imaging provides resources for enabling basic and clinical scientists to collaborate to discover new insights into normal and disease processes and to apply this knowledge to clinically relevant research.



Introduction & Background

The Center for Biomedical Imaging (CBI) was established by the Board of Trustees in 2010 as a *University Designated Center* under the direction of the Provost for Research. This decision has enabled MUSC to remain competitive with other academic institutions and to establish the infrastructure and environment to support this crucial research area.

The CBI offices are located on the second floor of the Bioengineering Building at 68 President Street and in the 30 Bee Street Building. The CBI is a resource for basic and clinical scientists collaborating to discover new information about normal and disease processes and how to apply this knowledge to clinically relevant research. Central to the mission objectives of the CBI are 1) service to the MUSC imaging research community, 2) training and mentorship of graduate students and future leaders in biomedical imaging, 3) recruitment of outstanding senior and young investigators, 4) discovery of new clinical applications of imaging and their practice in the clinical arena and 5) promotion of basic research in medical imaging and related fields. The CBI's website can be found [here](#).

In fiscal year 2020, the CBI provided imaging support and resources for a total of 67 grants, 54 of which were federal grants to MUSC (Appendix III). The CBI also supports MUSC faculty by providing development time to be used for collaborations and the collection of pilot data. In fiscal year 2020, the CBI underwrote approximately \$125K of this development time for MUSC researchers.

Mission Statement:

The mission of the CBI is to provide the leadership and infrastructure in the imaging sciences necessary for basic and clinical scientists to collaborate, to discover new ways to study normal and disease processes, to develop and apply this knowledge to clinically relevant research, and to translate these advances to the patient community while providing a quality graduate education environment.

Vision Statement:

The vision of the CBI is to serve the MUSC community as an integrated and multidisciplinary center for biomedical imaging research with mutually supportive and valued interactions among basic science and clinical departments.

Administration

Leadership:

In FY2020, the leadership of the CBI consisted of:

Dr. Jens H. Jensen, Interim Director
Dr. Hesheng Liu, Associate Director
Dr. Truman R. Brown, Scientific Director

CBI Internal Advisory Committee:

The CBI's Internal Advisory Committee (IAC) comprises the CBI Directors as well as both early stage and senior researchers from across the University. Many of these individuals are experienced in participating in large research programs as well as in the management of shared facilities. The IAC advises the Director on the administrative operation of the CBI, coordinates resources, and ensures that the goals of the CBI reflect the overall priorities of MUSC.

Members of the IAC in FY2020 were:

| | |
|----------------------|---------------------------|
| Dr. Andreana Benitez | Dr. Peter Kalivas (Chair) |
| Mr. Joseph Bennett | Dr. Steven Kautz |
| Dr. Kathleen Brady | Dr. Hesheng Liu |
| Dr. Truman Brown | Dr. Lisa McTeague |
| Dr. Craig Crosson | Dr. Thomas Uhde |
| Dr. Jens Jensen | |

CBI leadership holds regular "Advisory Committee Meetings" as well as "Town Hall Meetings" in which all users are able to express their views and opinions. These meetings were held on:

CBI Advisory Committee

August 16, 2019
November 15, 2019
February 21, 2020
May 22, 2020

Town Hall

July 23, 2019
October 22, 2019
January 21, 2020
June 24, 2020

Business Management:

In FY20, business operations for the CBI were managed by Emily Clark under the supervision of Joseph Bennett, who is the administrative manager for the Department of Neuroscience.

Operations

Faculty & Staff:

The following faculty & staff were fully or partially supported by the CBI in FY2020:

| | |
|-------------------|--------------------------------|
| Bennett, Joseph | Administrative Manager |
| Brown, Truman | Professor, Scientific Director |
| Clark, Emily | Administrative Coordinator II |
| Coatsworth, James | 3T MRI Program Manager |
| Doose, Jayce | Biomedical Engineer |
| Falangola, Fatima | Assistant Professor |
| Fleury, Tom | Facilities/Information Manager |
| Henderson, Scott | 3T MRI Program Manager |
| Jensen, Jens | Professor, Interim Director |
| Nie, Xingju | 7T MRI Research Specialist |
| Roberts, Donna | Professor |
| Roth, Jennifer* | Administrative Assistant |
| Waddell, Zoe* | Administrative Assistant |

*part-year only

Human imaging Resources:

Human MRI studies take place at the CBI's 30 Bee St. facility, which houses a Siemens 3 Tesla (T) Prisma^{fit} MRI system, four interview rooms, office space, a mock scanner, and a waiting area for subjects. The Prisma^{fit} 3T scanner is one of only two human MRI systems in South Carolina that are fully dedicated to research. The mock scanner is a full-size replica of the 3T MRI, made from plywood and other building materials, designed to look and sound like the real MRI. It is available to be used for 'trial runs' with patients who are wary of undergoing the full scanning procedure and can be also booked for use as a training or demonstration tool.

In FY2017, the CBI upgraded a Siemens Trio 3T MRI system, purchased 10 years earlier, to the Prisma^{fit}, which is among the most advanced MRI scanners that are commercially available. This upgrade has significantly benefited a multitude of National Institutes of Health (NIH) funded researchers (as well as researchers funded from other sources) in the fields of substance abuse, addiction, aging, Alzheimer's disease, Parkinson's disease, attention-deficit hyperactivity disorder, stroke, and basic brain neuroscience.

Preclinical (Small Animal) Imaging Resources:

The Bruker BioSpec 70/30 MRI scanner is a multipurpose system for high-resolution MR spectroscopy and imaging of small animals. This system operates at a field level of 7T and is located on the second floor of the Bioengineering Building. The 7T MRI is ideal for 2D and/or 3D high-resolution anatomical imaging as well as diffusion, flow, cardiac, dynamic contrast,

functional, and chemical shift imaging. Adjacent to the scanner is a surgery room that is available to support imaging studies.

The 7T system is now 13 years old and no longer fully supported by the manufacturer. The cold head was upgraded in FY20, but the electronics are obsolete and would be difficult to repair. A major upgrade of the electronics may be needed within a few years in order to keep this system in operation. During the past year, 5 funded studies and several pilot projects utilized this resource.

Scheduling:

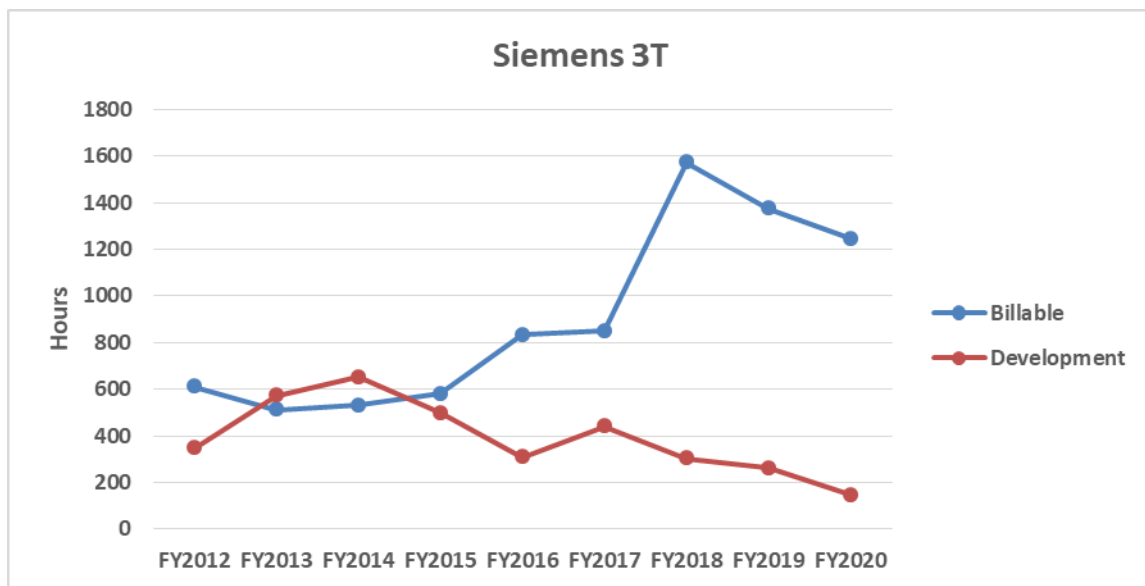
Scheduling of time on imaging systems is performed through a web-based system called Calpendo (<https://musccalpendo.com/>) that allows researchers with approved protocols to reserve time for using CBI resources.

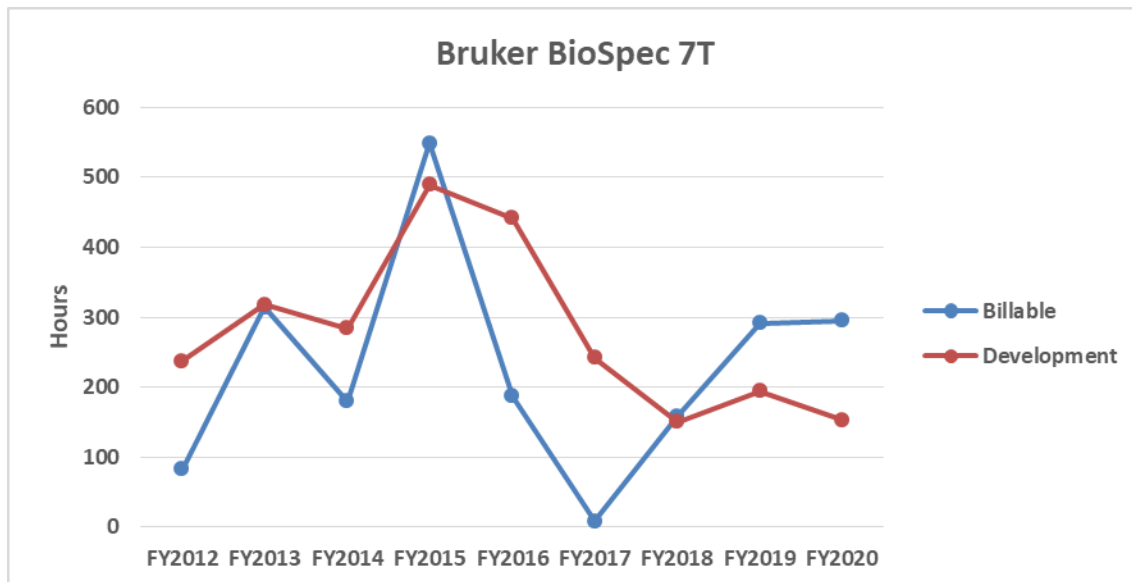
MRI Safety Training:

The CBI staff conducts regular safety training classes for researchers who use CBI resources. In FY20, these were held on 8/21/19, 9/18/19, 10/16/19, 11/13/19, 12/11/19, 1/22/20, 2/19/20, 3/13/20, 6/3/20, and 6/17/20.

Equipment Usage:

Shown in the figures below are the annual scanner hours used by researchers from FY2012 through FY2020 for the Siemens 3T and Bruker BioSpec 7T MRI systems. The blue lines show the number of billable hours, and the red lines indicate development time hours.





Impact and Response to COVID-19 Pandemic:

The COVID-19 pandemic had a profound impact on CBI operations in FY20, particularly for the human 3T MRI system. While the CBI continued to stay open and available to researchers throughout this crisis, most human imaging studies were suspended from mid-March until the end of the FY20. A small number of treatment studies continued without interruption. Beginning in mid-May, some additional human studies were able to resume scanning, which resulted in a modest but significant increase in the number of 3T scans for May and June. The financial impact of the reduced scan revenue was substantial, but fortunately was largely offset by an unusually high scan volume for the first 8 months of FY20. As a consequence, the CBI was able to complete FY20 with a small budget surplus (Appendix I). The preclinical 7T scanner was, in contrast, able to operate with only minor disruptions.

In response to the pandemic, the CBI developed comprehensive procedures for safe operations. These are detailed in a CBI COVID-19 Mitigation Policy (Appendix II) that all researchers using the human scanner have been required to follow during the crisis. The impact of COVID-19 on the CBI is expected to continue well into FY21 and constitutes a major administrative and financial challenge.

Faculty

The CBI is a multidisciplinary group of 27 faculty members and 8 staff representing various clinical and basic science departments at MUSC. Collaboration among faculty in the development of new and cross-disciplinary methodologies is strongly encouraged.

Faculty members contribute imaging-related seminar lectures, provide advice to the CBI leadership, and generally support the overall well-being of the CBI. They are expected to take part in regularly scheduled educational meetings, including the regular CBI seminars series, which provides a forum for researchers to have in-depth technical discussions. Each faculty member is asked to give a lecture on their research to the CBI community approximately every two to three years. The CBI faculty for FY20 are listed below.

| | | |
|--------------------------------|------------------------------------|---------------------------|
| Benitez, Andreana, Ph.D, | Assistant Professor | Neurology |
| Bonilha, Leonardo, M.D., Ph.D. | Professor | Neurology |
| Borckardt, Jeffrey, Ph.D. | Professor | Psychiatry |
| Broome, Ann-Marie, MBA, Ph.D. | Associate Professor | Cell & Mol. Pharmacology |
| Brown, Truman, Ph.D. | Professor, Scientific Director | Radiology |
| Eckert, Mark, Ph.D. | Professor | Otolaryngology |
| Falangola, Maria, M.D., Ph.D. | Assistant Professor | Neuroscience |
| Froeliger, Brett, Ph.D. | Associate Professor | Neuroscience |
| George, Mark, M.D. | Distinguished University Professor | Psychiatry |
| Hanlon, Colleen, Ph.D. | Professor | Psychiatry |
| Harris, Kelly, Ph.D. | Associate Professor | Otolaryngology |
| Helpern, Joseph, Ph.D. | Professor | Neuroscience |
| Jenkins, Dortha, M.D | Professor | Pediatrics |
| Jensen, Jens, Ph.D. | Professor, Interim Director | Neuroscience |
| Joseph, Jane, Ph.D. | Professor | Neuroscience |
| LaRue, Amanda, Ph.D | Professor | Pathology & Lab. Medicine |
| Li, Xingbao, M.D. | Assistant Professor | Psychiatry |
| Liu, Hesheng, Ph.D. | Professor, Associate Director | Neuroscience |
| McTeague, Lisa, Ph.D. | Assistant Professor | Psychiatry |
| Naselaris, Thomas, Ph.D. | Associate Professor | Neuroscience |
| Prisciandaro, James, Ph.D. | Associate Professor | Psychiatry |
| Roberts, Donna, M.D. | Professor | Psychiatry |
| Schacht, Joseph, Ph.D. | Associate Professor | Psychiatry |
| Spampinato, Vittoria, M.D. | Professor | Radiology |
| Squeglia, Lindsay, Ph.D. | Associate Professor | Psychiatry |
| Tipnis, Sameer, Ph.D. | Professor | Radiology |
| Yu, Xue-Zhong, M.D., M.S. | Professor | Microbiology |

Education

Biomedical Imaging PhD Program

Two students (Barbara Marebwa and Emilie McKinnon) completed their Ph.D. work in 2019 under the CBI's Biomedical Imaging PhD program. Two other students (Hunter Moss and Maggie Mae Mell) are still working on their dissertations. New students are not currently being accepted into this program due to a lack of faculty with the necessary expertise to support a full imaging-focused curriculum.

CBI Seminars

The CBI regularly hosts lectures given by both visiting speakers and CBI faculty. CBI seminars for FY20 are listed below:

| Date | Presenter | Title | University |
|-------------|------------------------|---|-----------------------------------|
| 6/19/19 | Jason Mattingley, PhD | Understanding the neural processes involved in integrated perceptual decisions | University of Queensland |
| 9/11/19 | Gregory Sahlem, PhD | Translating Transcranial Magnetic Stimulation: From Neuroimaging in Depression to a Potential Treatment for Cannabis Use Disorder | MUSC |
| 10/9/19 | Aicko Schumann, PhD | From Phase-Synchronization to Cross-Modulations in Physiological Time Series Data | MUSC |
| 11/13/19 | Peter Kalivas, PhD | Imaging cellular correlates of cue-induced drug relapse | MUSC |
| 1/8/20 | Chris Kroenke, PhD | Consequences of alcohol exposure on fetal growth determined by in utero MRI | Oregon Health Sciences University |
| 2/12/20 | Nathan Rowland, MD/PhD | Methodological approach to understanding effect of deep brain stimulation using MEG | MUSC |

| | | | |
|---------|-----------------------------------|--|-----------------------|
| 3/11/20 | Stephanie Fountain-Zaragoza, MA | Behavioral and Neural Correlates of Healthy Cognitive Aging | Ohio State University |
| 4/15/20 | Maggie Mae Mell, BA/PhD candidate | Investigating the Source and Structure of Unexplained Variance in Natural Scenes fMRI Data | MUSC |

Appendix I: Budget

| | Budget vs Actual FY20 | | | | % of |
|--------------------------------------|-----------------------|-------------------|--------------------|-------------------|-------------|
| | ADMIN | 3T | 7T | TOTAL | |
| | 44750 | 49751 | 49752 | | |
| Revenue | | | | | |
| Scan Revenue | | \$ 845,046 | \$ 67,019 | \$ 912,065 | 100.00% |
| Revenue Total | \$ - | \$ 845,046 | \$ 67,019 | \$ 912,065 | 100% |
| Expenses | | | | | |
| Payroll | | | | | |
| Total Payroll | \$ 77,582 | \$ 353,212 | \$ 120,629 | \$ 551,424 | 100% |
| Direct Costs | | | | | |
| Service Contracts* | | \$ 161,051 | \$ 95,669 | \$ 256,720 | 92.25% |
| Equipment | | \$ 3,464 | \$ 11 | \$ 3,475 | 1.25% |
| Shipping & Postage | | \$ 135 | | \$ 135 | 0.05% |
| Calpendo License | | \$ 6,180 | | \$ 6,180 | 2.22% |
| Additional Software Licenses | \$ 210 | \$ 453 | | \$ 663 | 0.24% |
| Office Supplies | \$ 688 | \$ 609 | | \$ 1,297 | 0.47% |
| Med/Sci/Lab Supplies | \$ 352 | \$ 5,734 | \$ 615 | \$ 6,702 | 2.41% |
| Travel | \$ 1,065 | | | \$ 1,065 | 0.38% |
| Internal Service Charges, Regi | \$ 1,975 | | \$ 84 | \$ 2,058 | 0.74% |
| Total Direct Costs | \$ 4,289 | \$ 177,627 | \$ 96,379 | \$ 278,295 | 100% |
| Indirect Costs | | | | | |
| 30 Bee Street Lease | | \$ 29,354 | | \$ 29,354 | 57.93% |
| 30 Bee Street Security System | | | | \$ - | 0.00% |
| Utilities | | \$ 10,271 | | \$ 10,271 | 20.27% |
| Commercial Insurance | | \$ 6,231 | | \$ 6,231 | 12.30% |
| General Repairs | | \$ 2,857 | | \$ 2,857 | 5.64% |
| Environmental Sanitation (Steritech) | | | | \$ - | 0.00% |
| Telephone (Centrex) | \$ 1,085 | \$ 737 | \$ 135 | \$ 1,957 | 3.86% |
| Building Maintenance (CBI/CAIR) | | | | \$ - | 0.00% |
| Hazard & Flood Insurance | | | | \$ - | 0.00% |
| Total Indirect Costs | \$ 1,085 | \$ 49,450 | \$ 135 | \$ 50,671 | 100% |
| Total Expenses | \$ 82,957 | \$ 580,290 | \$ 217,143 | \$ 880,390 | |
| Total Revenue less Total | \$ (82,957) | \$ 264,756 | \$(150,124) | \$ 31,675 | |
| Institutional Support up to 150k | \$ - | \$ - | \$ - | \$ - | |

Appendix II: COVID-19 Mitigation Policy

Safety Guidelines and Procedures During the COVID-19 Pandemic for the CBI 3T MRI Facility at 30 Bee Street

To mitigate the spread of COVID-19, the following safety guidelines and procedures are in effect until further notice for the CBI 3T MRI Facility at 30 Bee Street.

- 1) **Compliance with MUSC Research Guidelines:** All studies utilizing CBI resources must comply with the relevant MUSC research guidelines including [specific directives related to COVID-19](#).
- 2) **In-Person Study Plan Approval:** An [In-person Study Visit Plan](#) must be approved by MUSC research leadership prior to scheduling subjects on Calpendo. This should be certified by completing an additional brief [CBI REDCap form](#). Failure to complete this certification may result in bookings being cancelled.
- 3) **Screening for COVID-19:** All subjects must be verbally screened in advance to assess their risk of COVID-19 infection. Under no circumstances should a subject or researcher with [COVID-19 symptoms](#) enter the CBI MRI Facility (e.g., cough or temperature > 99.5 °F).
- 4) **Face Masks Required:** All subjects and researchers must follow MUSC social distancing guidelines. Given the difficulty of maintaining a 6-foot distance inside the CBI MRI Facility, face masks must be worn by all subjects and researchers while in this space. The research teams are responsible for providing face masks for their subjects. If needed, the MR Technologist will supply MRI-compatible face masks at the time of the scan.
- 5) **Researchers Expected to Use Screening Rooms:** All researchers should use Calpendo to book in advance a screening room for their scan. This will be used as both a waiting area and a place to conduct interviews. To limit contact with other occupants, researchers and subjects are expected to wait in their screening room until their scheduled scan time, unless directed otherwise by the MR technologist. Each room will have a cleaning log book that must be signed by the researcher at the beginning and end of each session.

Note: If you're new to scheduling a screening room on the [Calpendo website](#) go to the "Resources" dropdown on left side, highlight "Select bookmark" and select the "Default" option. You should then be able to select different screening rooms from the "Resources" panel. A refresh of the browser website page might be necessary for these settings to take effect.

- 6) **Checking Screening Rooms Prior to Use:** Prior to escorting subjects into the CBI MRI Facility, researchers are responsible for checking the cleaning log to confirm that their reserved screening room has been disinfected. If not, researchers should disinfect the room before allowing subjects to enter. Promptly notify the CBI staff if a screening room was not disinfected after the previous use.

Note: Environmental Services will clean the CBI MRI Facility each night.

- 7) **Arrival of Subject to CBI MRI Facility:** Since the front door to the CBI MRI Facility at 30 Bee Street will remain locked at all times, subjects must be met outside the building by a member of the

research team and accompanied inside. It is recommended that subjects be instructed to wait in their car, if possible, until the researcher meets them. The researcher should be on-site well in advance of the scheduled time for the subject's appointment to properly conduct the procedures described in this document.

- 8) **Social Distancing in CBI Lobby:** Subjects should be brought directly to the screening room after entering the CBI MRI Facility. If necessary, companions may wait in the lobby, but to support social distancing, the number of people in the lobby should always be kept to an absolute minimum. Only those essential for the study should be allowed into the CBI MRI Facility. If the lobby is utilized by a study, the research team will also be responsible for disinfecting this area at the end of their visit.
- 9) **Subject Belongings and Lockers:** Subjects should put their belongings into a disposable plastic bag that will be provided. They may then put this bag into a locker. Do not put anything in the lockers that are not in a personal belonging bag. Do NOT use the CBI break room which is for MUSC staff ONLY. The CBI break room will no longer be used as a staging area; this creates a bottleneck and increases the chance of contamination. Please wait in the screening room until your scheduled start time or until called by the MR technologist.
- 10) **Researcher Belongings:** Researchers using the CBI MRI Facility must be always mindful of minimizing potential contamination. Researchers may put their belongings into the provided plastic bags and store them in designated areas. Researcher belongings should NEVER be placed on CBI staff desks and work areas.
- 11) **Researchers Required to Disinfect:** After each use, researchers must disinfect their screening room by using approved disinfectant materials, which will be provided. All surfaces (including tabletops, doorknobs, chairs, keyboard, and mouse) potentially contaminated by the researcher and subject must be cleaned. This must be documented in the cleaning log book. Failure to properly clean screening rooms may result in suspension of scanning privileges.

Note: Researchers will also be responsible for disinfecting other rooms or equipment (lobby chairs, mock scanner equipment, wet lab, etc.) if used by researchers, subjects, or subjects' companions while at the CBI MRI Facility. The MR technologist will disinfect the MRI scanner room and MRI console room.

- 12) **Extra Scheduling Time for Disinfection:** There will be at least a 30-minute gap between the scheduled times for all scans so that the scanner, console, and locker areas can be properly disinfected. Do not bring your subject into these areas prior to the scheduled start time unless directed to by the MR technologist.

Appendix III: Grants Supported by CBI for FY20

| PI | Funding Source | Grant Title |
|---------------------------------|---|--|
| Raymond Anton | Laboratorio Farmaceutico CT | Effect of GET73 on MRS Measures of Central Glutamate and GABA in Individuals With Alcohol Use Disorder |
| Andrew Atz | NHLBI | Single ventricle reconstruction iii: brain connectome and neurodevelopmental outcomes |
| Sudie Back | VA | Doxazosin in the Treatment of Co-Occurring PTSD and Alcohol Use Disorders |
| Sudie Back | DOD | Glial regulators for testing comorbid posttraumatic stress disorder and substance use Disorders |
| Sudie Back | NIAAA | Clinical trial for alcohol use disorder and post traumatic stress disorder (PTSD) |
| Bashar Badran | NIH COBRE | Optimization of Closed-loop Transcutaneous Auricular Vagus Nerve Stimulation (taVNS) as a Neurorehabilitation Tool |
| Andreana Benitez | NIA | White Matter Tract Integrity Biomarkers of Neurodegeneration in Aging and MCI |
| Andreana Benitez | Rare Disease Foundation | Imaging resilience in a rare brain disease |
| Andreana Benitez/Joseph Helpert | NIA | Quantitative Neuroimaging Assessment of White Matter Integrity in the Context of Aging and AD |
| Leonardo Bonilha | AHA | Wide Spectrum Investigation of Stroke Outcome Disparities on Multiple Levels (WISSDOM) |
| Leonardo Bonilha | NIDCD | Center for the Study of Aphasia Recovery: (C-STAR) |
| Jeffrey Borckardt | NIDA | RCT of TDCS-Augmented CBT for Veterans with Pain and Opioid Misuse |
| Truman Brown | NIMH | EEG/fMRI Controlled TMS Real-Time Neural Feedback in Anti-Depressive Treatment |
| Christine Cooper | NIH/SCTR and MUSC Foundation's Charles and Dianne Barmore Fund for Parkinson's research | Brain circuitry changes in vascular Parkinsonism |
| Christine Cooper | SCTR | Investigation of small vessel disease in Parkinson's disease motor symptoms |
| Marian Livingston Dale | Biogen | Study of BIIB092 in Participants With Progressive Supranuclear Palsy (PASSPORT) |
| Carla Kmett Danielson | NIMH | Threat-related negative valence systems, child victimization, and anxiety |
| Carla Kmett Danielson | NIH | Impact of Race-related violence exposure |
| Adviye Ergul | VA | Cerebral arteriole structure and function in diabetic ischemic stroke |
| Wayne Feng | Microtransponder, Inc. | A Pivotal Randomized Study Assessing Vagus Nerve Stimulation (VNS) During Rehabilitation for Improved Upper Limb Motor Function After Stroke (VNS-REHAB) |
| Julianne Flanagan | NIAAA | Oxytocin to enhance alcohol behavioral couple therapy |
| Brett Froeliger | NIDA | Translational neuropsychopharmacology research of nicotine addiction |

| | | |
|-------------------------------------|---------------------------------|--|
| Brett Froeliger | NIDA | Examination of theta burst stimulation on corticothalamic mediated inhibitory control and smoking relapse vulnerability |
| Brett Froeliger | NIDA | Neural mechanisms mediating appetitive regulation and smoking in nicotine addiction |
| Mark George | Other | Focal Electrically-Administered Seizure Therapy (FEAST) |
| Mark George | Tiny Blue Dot Foundation | Low Intensity Focused Ultrasound Pulses (LIFUP) to Modulate Pain |
| Evan Graboyes | Hollings Cancer Center | Evaluating the association of connectivity... |
| Colleen Hanlon | NIDA | 10 Days of MPFC theta burst to improve clinical outcomes in treatment-engaged cocaine users |
| Colleen Hanlon | NIAA | Charleston ARC Clinical Project 4-Cortical rTMS as a tool to change craving and brain reactivity to alcohol cues |
| Colleen Hanlon | NIDA | QuitFast: Evaluating transcranial magnetic stimulation as a tool to reduce smoking directly following a quit attempt |
| Colleen Hanlon | NIDA | Developing brain stimulation as a treatment for chronic pain in opiate dependent individuals |
| Kelly Harris | NIDCD | Neural determinants of sound encoding in the aging ear and brain |
| Vanessa Hinson | Biogen | Evaluating the safety, pharmacokinetics, and pharmacodynamics of biib054 in participants with parkinson's disease (SPARK) |
| Dorothea Jenkins | COBRE | COBRE discovery pilot |
| Jens Jensen/Fatima Falangola | NIA | Assessing brain microstructure in alzheimer's disease with advanced diffusion MRI |
| Jane Joseph | NIA | Using connectomics to characterize risk for Alzheimer's Disease |
| Jane Joseph | DOD | Connectome biomarkers for predicting Alzheimer's risk in traumatic brain injury |
| Steven Kautz | VA | The effects of impaired post-stroke coordination and motor pathway integrity on mobility performance |
| Mushfiquddin Khan | VA | Targeting neuronal NOS/peroxynitrite/calpain |
| Hesheng Liu | NINDS | Translating the Individualized Functional Connectome to Surgical Planning |
| Hesheng Liu | NIDCD | Mapping the intrinsic functional organization of auditory cortex in individual subjects using 7T MRI |
| Hesheng Liu | NIMH | Cerebro-cerebellar circuitry in the pathophysiology of auditory hallucinations: dysmetria of auditory perceptual processing? |
| Louis Luttrell | NIDDK | Epidemiology of diabetes interventions and complications study (EDIC) |
| Aimee McRae-Clark | NIDA | Neural substrates of emotion: Impact of cocaine dependence |
| Lisa McTeague | NIMH | Remediating emotion deficits in PTSD: probing and modulating neurocircuits |
| William Mellick | NIAA | Preliminary Validation of a Novel Natural Rewards fMRI Paradigm: Comparing Relative Brain Activation to Natural Rewards versus Alcohol Cues in Individuals with Alcohol Use Disorder and Social Drinkers |

| | | |
|---------------------------|------------------------|---|
| William Mellick | NIDA | Gabapentin for bipolar & cannabis use disorders |
| Nicholas Milano | Biogen | 221AD301 Phase 3 Study of Aducanumab (BIIB037) in Early Alzheimer's Disease (ENGAGE) |
| Nicholas Milano | Industry/Roche | A phase iii, multicenter, randomized, double-blind, placebo-controlled, parallel-group, efficacy, and safety study of gantenerumab in patients with early (prodromal to mild) Alzheimer's disease |
| Jacobo Mintzer | NIA | Memory Improvement Through Nicotine Dosing (MIND) Study (MIND) |
| Jacobo Mintzer | VA | Effects of traumatic brain injury and posttraumatic stress disorder on development of Alzheimer's disease in Vietnam Veterans using the Alzheimer's Disease Neuroimaging Initiative: |
| Jacobo Mintzer | NIA | Anti-amyloid treatment in asymptomatic Alzheimer's Disease (A4) |
| Jacobo Mintzer | NIA | Alzheimer's Disease Neuroimaging Initiative 3 (ADNI 3) |
| James Prisciandaro | NIAAA | Imaging Framework for Testing GABAergic/glutamatergic Drugs in Bipolar Alcoholics |
| James Prisciandaro | NIDA | Gabapentin for bipolar & cannabis use disorders |
| Gonzalo Revuelta | Other | Effects of Neuromodulation and Rehabilitation of the Locomotor Network in Freezing of Gait (TMS/FOG) |
| Gregory Sahlem | NIDA | A Preliminary Investigation of Pre-Frontal repetitive Transcranial Magnetic Stimulation (rTMS) for the Treatment of Cannabis Use Disorder. |
| Michael Saladin | NIDA | Behavioral & Integrative treatment development program |
| Joseph Schacht | NIAAA | Effects of cortical dopamine regulation on drinking, craving, and cognitive control |
| Na Jin Seo | NIGMS | Brain functional connectivity & sensory stimulation-enhanced therapy post stroke |
| Lindsay Squeglia | NIAA | Neuroscience-informed treatment development for adolescent alcohol use |
| Lindsay Squeglia | NIDA | The Adolescent Brain Cognitive Development (ABCD) Study |
| Stephan Tomlinson | NINDS | Role of complement in TBI |
| Tanya Turan | Mayo Clinic | Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial (CREST-2) Trial |
| Kenneth Vaden | NIDCD | Understanding cognitive and neurobiological factors of age-related speech recognition declines |
| Yongren Wu | NIH/subcontract | Improvement of animal models for stem cell-based TMJ regeneration |



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