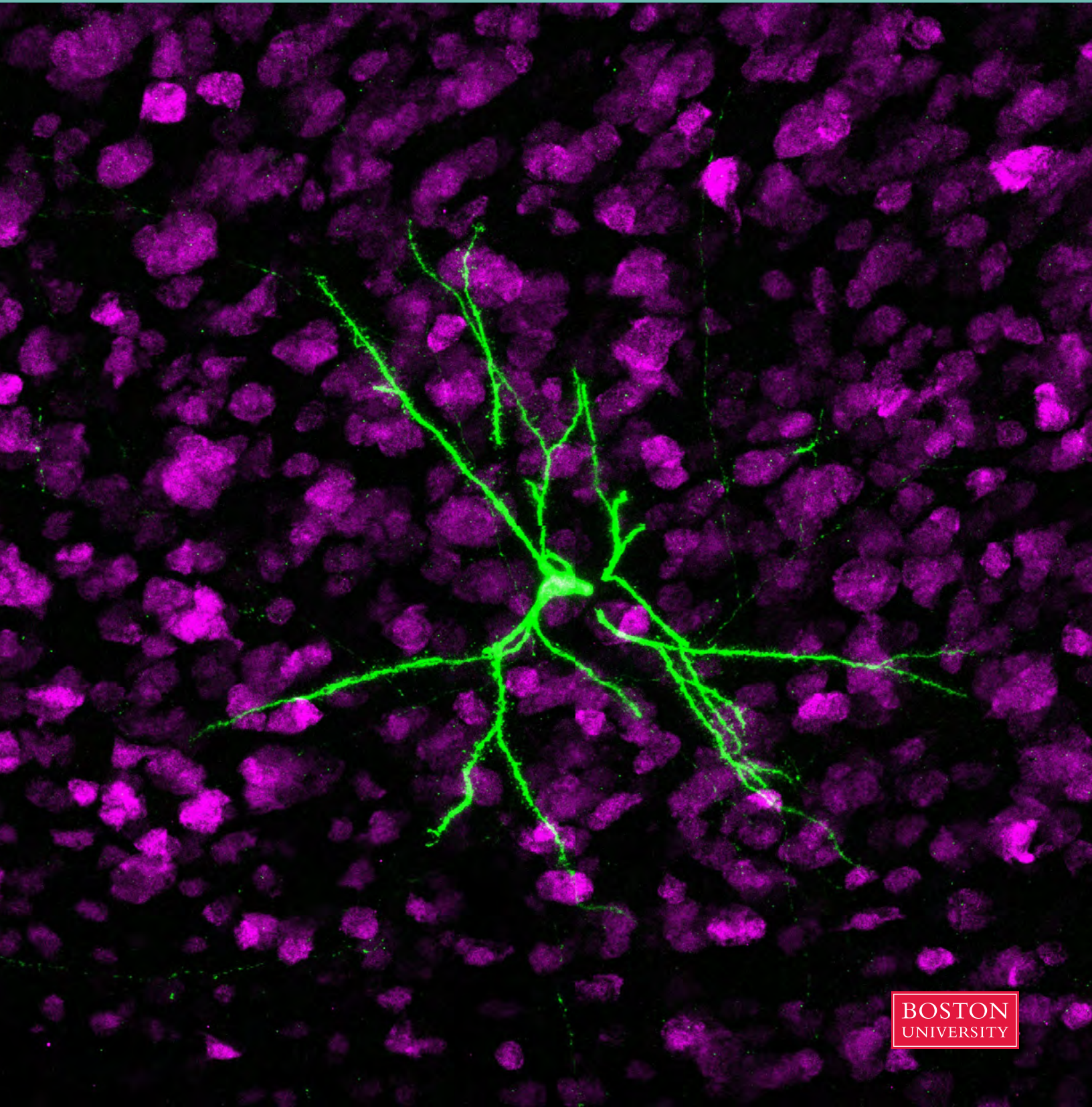


BOSTON UNIVERSITY CENTER FOR SYSTEMS NEUROSCIENCE

Annual Report | 2025



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LETTER FROM THE DIRECTOR

WELCOME TO THE ANNUAL REPORT of the Boston University Center for Systems Neuroscience (CSN). Our center brings together investigators from multiple colleges and departments at Boston University on both the Charles River Campus and the School of Medicine, facilitating discoveries in neuroscience based on innovative interdisciplinary interactions.

The center builds on important successes of systems neuroscience at Boston University to foster collaborations and enhance recruitment of new researchers. CSN has proposed a cluster hire in systems neuroscience and participated in hiring of many vibrant new faculty members and administrators. To support innovative new techniques at Boston University, the center’s executive committee selects CSN Distinguished post-doctoral fellows that work with a range of junior faculty.

CSN has played an active role in obtaining grant support including Office of Naval Research MURI awards for interdisciplinary projects with Prof. Yannis Paschalidis and ONR DURIP grants associated with those projects, as well as participating in many additional multi-investigator grant applications to NIH and NSF with CSN faculty including Profs. Chantal Stern, Joe McGuire, Xue Han, and Angela Ho.

The center has done extensive work to publicize neuroscience at Boston University with CSN accounts on social media that have over 1500 followers (@buCSNneuro) and a Center Director account with over 2700 followers (@HasselmoMichael).

CSN brings together researchers in numerous events described in detail in this annual report. These events include a lunchtime series of seminars that bring together 60-150 attendees for each seminar.

The information in this annual report illustrates the successes of the faculty affiliated with CSN. We appreciate the support of the Boston University administration, and in particular the support of Provost Gloria Waters and Vice President and Associate Provost for Research Tom Bifano.

Michael Hasselmo

Prof. Michael Hasselmo
Director
BU Center for Systems Neuroscience



Michael E. Hasselmo,
D.Phil

Professor of
Psychological and
Brain Sciences

Director, Center
for Systems
Neuroscience at
Boston University

FROM THE ASSOCIATE DIRECTORS

AS ASSOCIATE DIRECTOR, I FOCUSED on developing and submitting grant proposals in computational neuroscience.

I led two major submissions: an NIH R21 to implement and test a state-space estimation framework for real-time tracking and precise control of sleep brain rhythms, in collaboration with colleagues at MGH/Harvard Medical School (total funds requested: \$472,500); and an NIH R01 to characterize pathological and physiological hippocampal rhythms in epilepsy, with collaborators at MGH/Harvard Medical School and Columbia University (total funds requested: \$3,536,435).

We also received updates on two additional NIH R01 proposals. One was funded: a project examining the cellular and network mechanisms of epilepsy interictal biomarkers and the therapeutic effects of electrical stimulation using cellular voltage imaging and optogenetics, with Prof. Xue Han at BU and collaborators at MGH/Harvard (total funds: \$3,176,065). The other proposal was not funded: a project investigating the cellular mechanisms of direct cortical and indirect thalamic ultrahigh frequency stimulation in epilepsy, again with Prof. Han and MGH/Harvard collaborators (total funds: \$4,107,163).

I also focused on teaching computational neuroscience to students at Boston University. I continued to teach MA665/MA666 (Introduction to/Advanced Modeling and Data Analysis in Neuroscience), which provides students in the Graduate Program in Neuroscience with training in mathematics, statistics, data science, and programming. Given the limited computational course offerings in the Undergraduate Program in Neuroscience, I will introduce a new 500-level Topics in Computational Neuroscience course in AY 25–26.

Collectively, these efforts continue to strengthen Boston University’s leadership in computational neuroscience.



Prof. Mark Kramer
Associate Director
BU Center for Systems Neuroscience

AS AN ASSOCIATE DIRECTOR of the Center for Systems Neuroscience, I focused on the submission of grant applications in Systems and Computational Neuroscience and participated in a variety of service activities across Boston University. I collaborated with other CSN members on 4 NIH grant submissions to study:

1) Neural substrates of age- and Alzheimer’s disease associated working memory decline using empirical studies of the dorsolateral prefrontal cortex and multi-scale computational models of neurons, local circuits and large-scale models (with CSN members Drs. Medalla and Rockland, and collaborators at the Center for Mathematical Research, Barcelona and Franklin & Marshall College; Total Funds Requested: \$3,548,024).

2) The role of the RNA binding protein TIA1 in Alzheimer’s disease and related dementias and to determine whether modification of this protein modifies disease progression in these disorders (with CSN member Dr. Wolozin; Total Funds Requested: \$3,913,534).

3) How inhibitory and excitatory neurons of the monkey brain mediate cognition and motor control using novel viral strategies to “tag” inhibitory neurons combined with optical stimulation and electrophysiologically recording neurons in vivo in the behaving monkey (with CSN members Drs. Chandrasekaran and Medalla; Total Funds Requested: \$5,054,684).

4) How abnormal interactions between neurons, oligodendrocytes, and microglia contribute to impaired brain structure and function common to Down Syndrome- and Down Syndrome-Alzheimer’s Disease-related pathology (with CSN members Drs. Zeldich and Thunemann; Total Funds Requested: \$4,040,968).

These collaborative efforts enhance the depth and breadth of neuroscience research and training opportunities within CSN and Boston University at-large.



Prof. Jennifer Luebke
Associate Director
BU Center for Systems Neuroscience

HIGHLIGHTS OF FY2025

- Preparation of reports and participation in meetings for ONR MURI grant N00014-19-1-2571 obtained by Center members Profs. Yannis Paschalidis, Michael Hasselmo, Chantal Stern, John Baillieu, and Roberto Tron, providing \$7.5 million for five years of research funding. The grant was supplemented with an additional DURIP award N00014-21-1-2844 for \$497,047. This grant built on previous ONR MURI grants obtained and supported by the center.
- Funding of five Center for Systems Neuroscience Distinguished Fellows: Dr. Ian More, Dr. Caitlin Lienkaemper, Dr. Florencia Fernandez-Chiappe, Dr. Adam Smoulder, and Dr. Sarah Shaykevich. CSN fellow Dr. Florencia Fernandez-Chiappe receives partial support from Pew Latin American Fellowship.
- Submission of multiple grant applications to NIH, NSF and Office of Naval Research with CSN faculty including Profs. Chantal Stern, Xue Han and Angela Ho. Active participation in training grant run by GPN director Prof. Shelley Russek.
- CSN developed a proposal for a cluster hire in systems neuroscience in the College of Arts and Sciences and participated in successful search and recruitment of administrators and new faculty including Prof. Yakeel Quiroz and Prof. Arthur Lee in the Dept. Psychological and Brain Sciences.
- Maintenance of Center webpage and X(Twitter) accounts with over 1,500 followers for the Center (@buCSNneuro) and 2,700 followers for the Center Director (@HasselmoMichael) with posting of notices on X (Twitter) and Facebook to publicize Center events and accomplishments of Center faculty. Further publicity via the role of Center Director Prof. Michael Hasselmo as Editor-in-Chief of the journal Hippocampus.
- Series of lunchtime seminars organized by the Center for Systems Neuroscience, often in conjunction with other neuroscience centers and programs.

CENTER FOR SYSTEMS NEUROSCIENCE AT A GLANCE

95
Faculty Members

5
Staff Members

151
Currently Funded R&D Projects

\$69.1M
Funding for R&D

5
CSN Distinguished Fellows

342
Peer-reviewed Publications

10
Center Events

MISSION STATEMENT & STRATEGIC PLAN

THE CENTER FOR SYSTEMS NEUROSCIENCE (CSN) at Boston University was established to provide a unifying collaborative and administrative structure designed to further enhance research, foster collaboration, and enhance recruitment of new researchers in multiple Colleges and Departments on both the Charles River Campus and Medical Campus in the field of systems neuroscience.

The Center is interdisciplinary and interdepartmental in nature and University-wide in scope. The mission of the Center is to advance research in Systems Neuroscience at Boston University with the following specific goals:

- **To enhance the profile and reputation of Boston University for research in Systems Neuroscience,** establishing an internationally recognized academic center of excellence that will attract talented young investigators for training in the experimental techniques and mathematical theories of systems neuroscience.
- **To foster collaborative research.** The Center will foster collaborations from different fields of research to make experimental and conceptual breakthroughs in our understanding of the function of brain circuits, including analysis of neural phenomena in experiments at the system level and testing of computational theories of neural function. This will include fostering collaborations between researchers in the College of Arts and Sciences, the College of Engineering, the College of Health and Rehabilitation Sciences: Sargent College, the School of Medicine and others as appropriate. The Center will be synergistic and will work collaboratively with other centers at Boston University including the Neurophotonics Center, the Photonics Center, the Center for Information and Systems Engineering, the Biological Design Center and the Cognitive Neuroimaging Center.
- **To support cutting-edge research.** The primary research goal of the Center is to examine how systems of interacting neurons mediate behavioral function. This includes investigating the brain systems underlying

functions such as perception and attention, learning and memory, speech and hearing, decision-making, movement and planning. The Center will support research including the study of neuronal populations within individual regions, as well as systems of interacting regions, spanning from recordings of single neurons within individual brain regions to functional imaging of large scale activity within interacting brain regions. Understanding brain systems is also relevant to furthering our understanding of the etiologies of neurological and psychiatric diseases and impairments.

- **To generate and provide access to technical innovations appropriate for enhancing understanding of neural systems.** The recent federal BRAIN initiative has highlighted the need for the generation of novel techniques for studying the brain. These techniques will include techniques for large-scale network recording capabilities, to observe the selective activity of individual neurons within large populations using voltage recording or voltage and calcium imaging. Techniques will also include elucidating the role of populations of neurons using circuit manipulations such as optogenetic interventions that increase or decrease neural activity in identified populations during behavior.
- **To link neural mechanisms to human behavior.** The Center for Systems Neuroscience will foster collaborative research linking human behavior to neural mechanisms by improving access to imaging techniques through a new Cognitive Neuroimaging Center. Work in the Center will enhance understanding of the large-scale macroscopic activity within human brain structures

associated with cognitive functions such as memory, spatial navigation, attention and perception, and speech and language, using state-of-the-art functional magnetic resonance imaging techniques.

- **To develop new computational models that account for current experimental data and generate predictions to guide new experiments.** The Center will build upon current strengths at Boston University in the development of theoretical and computational models as well as statistical techniques for data analysis to foster collaborations between experimentalists in departments such as Biology, Psychological & Brain Sciences, and Speech, Language and Hearing Sciences with faculty from Mathematics and Statistics, Biomedical Engineering, Physics and Computing and Data Sciences.

The CSN will promote interdisciplinary research in the field of Systems Neuroscience and play an active role in research training in this area. These activities will include:

1. Bringing together students, researchers and faculty in an open, interactive environment with the goal of developing new collaborations to address specific questions in systems neuroscience. These events may take the form

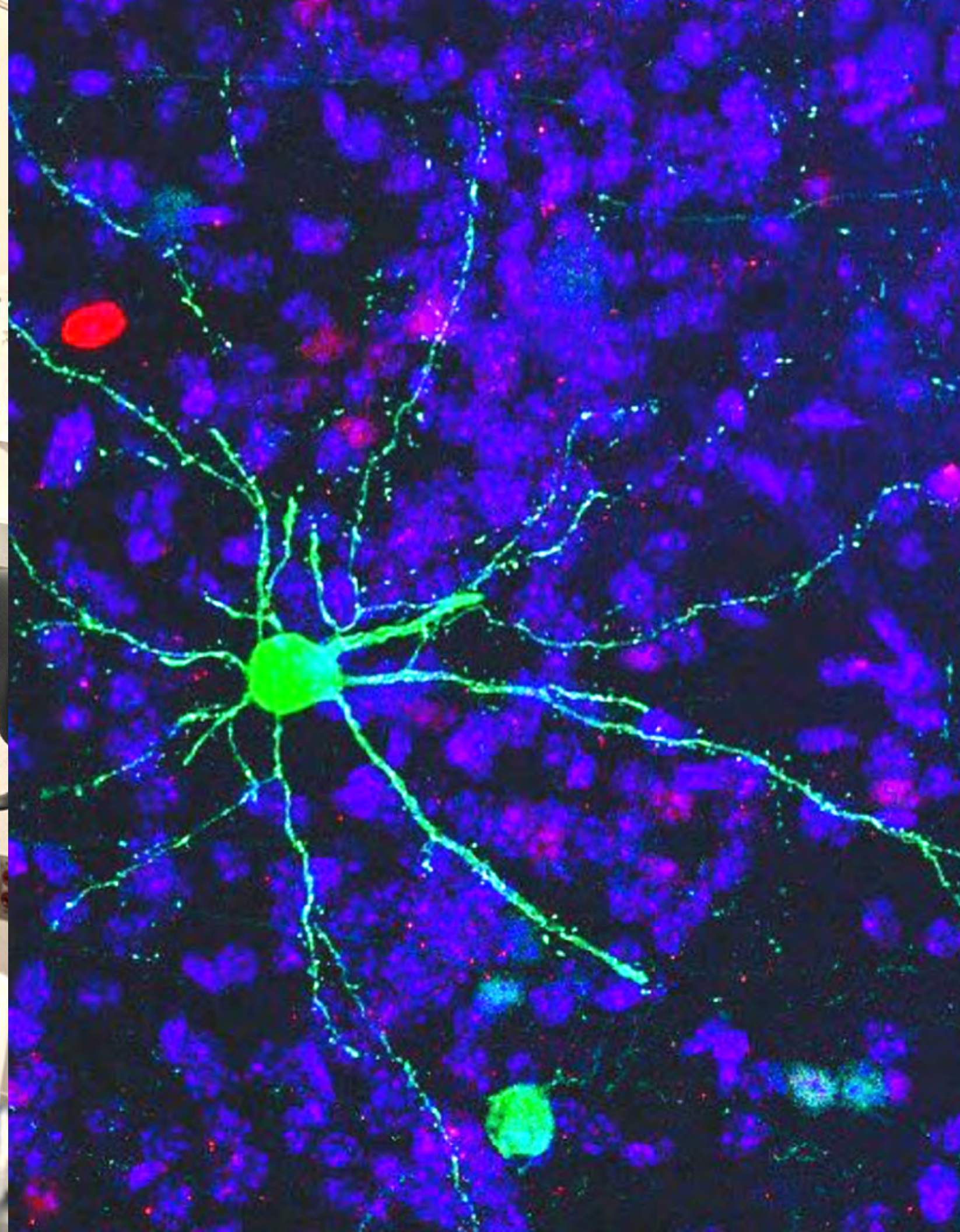
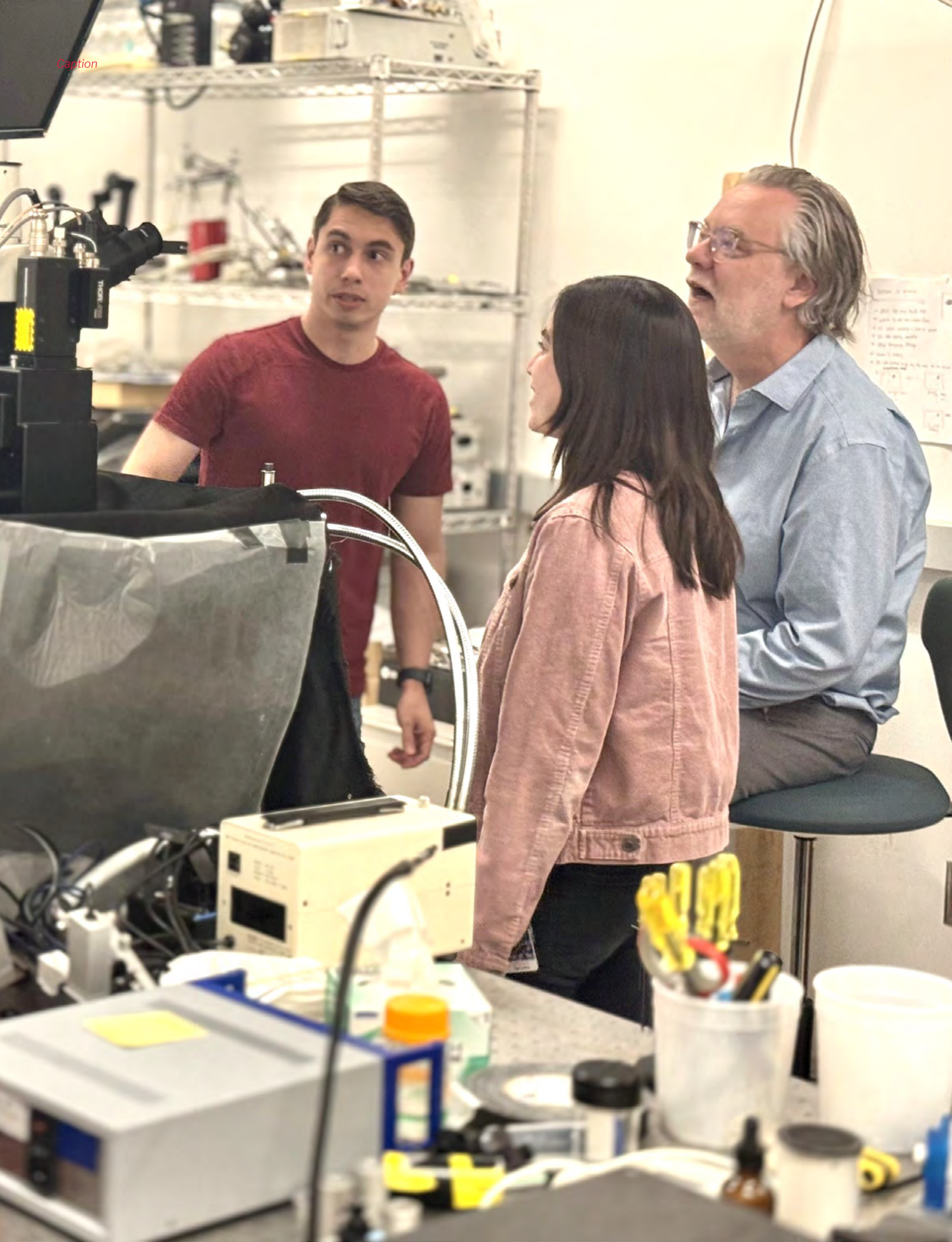
of weekly seminars, colloquia, external speaker series, mini-symposia, or more extensive conferences and workshops.

2. Fostering collaboration among researchers via shared mentoring of graduate students and post-doctoral fellows.
3. Providing seed funding whose aim is to foster collaborations between different faculty members in the Center.
4. Developing and supporting large-scale collaborative projects that bring together researchers across schools and colleges to focus on problems in systems neuroscience with the goal of obtaining external funding.
5. Facilitating mentoring relationships between junior and senior faculty to support research and career development.
6. Outreach and Education. The Center will design and hold educational events focusing on the brain that are open to the larger community, including students and alumni. ■



Professor Swathi Kiran (far right) and team members (from left to right) Maria Varkanitsa, Erin Carpenter, and Danielle Rich prepare for an experiment using functional near infrared spectroscopy (fNIRS) to collect data during interpersonal interaction.

Caption



RESEARCH SPOTLIGHTS

BU Biologist Receives 2025 Sloan Research Fellowship

The prestigious award will support Lynne Chantranupong’s work investigating how brain cells remain healthy over a lifetime, and how neurodegenerative diseases disrupt them

IN SUPPORT OF HER QUEST to understand the inner workings of brain cells, Boston University molecular biologist Lynne Chantranupong has been named a 2025 Sloan Research Fellow. She is among the 126 scientists from the United States and Canada who received the highly competitive prize.

With the honor, the Alfred P. Sloan Foundation recognizes standout young scientists whose work is promising and innovative. The winners each receive \$75,000 over two years. To date, 60 faculty from BU have received a Sloan Research Fellowship.

Chantranupong joined BU’s faculty in January 2024 and established the Chantranupong Lab, where she’s launched multiple research projects to investigate cellular mechanisms in the brain.

“I’ve always been motivated to study signaling and metabolism of neurons, cells within the brain, that have many qualities that set them apart from other cells,” says Chantranupong, a College of Arts & Sciences assistant professor of biology. She is trying to answer fundamental questions about how brain cells remain healthy and what happens when things go wrong.

“One of the most impressive qualities of neurons is that they actually survive our entire lives. Unlike most other cells in our body, they have to stay healthy from birth until death,” she says. That means that neurons likely need to change their internal cellular pathways and signaling inside themselves to maintain their longevity—processes that are completely unique to brain cells.

“It’s impressive that the cells need to stay alive for so long, so our understanding of the inner workings of neurons is something I’m really driven to advance,” she says. The award from the Sloan Foundation will help keep the wheels of her new lab moving, and Chantranupong says she is grateful for the additional support.

“This award is a wonderful testament to the outstanding work being conducted by Lynne Chantranupong,” says Pamela Templer, CAS distinguished professor and chair of biology. “The support from this 2025 Sloan Research

Fellowship will advance her research and contribute to the strong program in neuroscience at Boston University.”

One focus for Chantranupong is elucidating how a specialized part of the cell, called the lysosome, gets rid of waste, and how this waste differs across neurons.

“It’s like a whole waste breakdown and recycling process that’s happening continuously in all your cells. But in neurons, this process needs to be efficient and adaptable to keep our brains healthy,” she says.

The “waste” that collects is a regular part of being alive; it can be proteins that have accumulated or old parts of a neuron that are damaged and need getting rid of. The lysosome breaks down the old molecules into basic components,

and returns the useful building blocks back to the cell. This process, especially in the brain, is something that’s important to understand in the context of identifying and treating

“I’ve always been motivated to study signaling and metabolism of neurons, cells within the brain, that have many qualities that set them apart from other cells. ”

- Lynn Chantranupong



Chantranupong joined BU’s faculty in January 2024 and established the Chantranupong Lab, where she’s launched multiple research projects to investigate cellular mechanisms in the brain.

diseases like Parkinson’s and Alzheimer’s, Chantranupong says.

“Many of the mutations that cause neurodegenerative diseases impact the lysosome specifically, so we need to understand how it works in a healthy state to then understand what happens in disease,” she says. “We hope to use a lot of tools to study the lysosome and characterize how it changes.”

Chantranupong recently started collaborating with Ji-Xin Cheng, a BU College of Engineering professor of biomedical engineering and of electrical and computer engineering, to image the contents of a single lysosome at higher resolutions. The Sloan Foundation award will support their collaboration and bolster Chantranupong’s ongoing research projects.

“We are thrilled that Professor Lynne Chantranupong has been named a 2025 Sloan

Research Fellow,” says Stan Sclaroff, dean of Arts & Sciences.

“Lynne’s research uses an innovative multidisciplinary approach to study how neuronal adaptations contribute to disease. The Sloan Fellowship recognizes her creative approach and the transformative potential of her research.”

This article, authored by Jessica Colarossi, originally appeared *The Brink* on February 18, 2025.

To read the original article visit: tinyurl.com/5b8h8w3w ■

“It’s like a whole waste breakdown and recycling process that’s happening continuously in all your cells. But in neurons, this process needs to be efficient and adaptable to keep our brains healthy.”

- Lynn Chantranupong

**Illuminating the Deep Neural Circuits
Driving Motivation and Learning**

*A conversation with Mark Howe, Ph.D.,
Assistant Professor of Psychological &
Brain Sciences*

THE HOWE LAB STUDIES HOW neural circuits motivate and direct actions to reach desired goals, and they have developed optical tools that allow them to study activity in a large structure located deep in the brain—called the striatum—which plays a critical role in such processes.

Professor Mark Howe (Center for Systems Neuroscience, Neurophotonics Center) talked about his research and its implications for treating conditions like Parkinson's Disease. He also reminisced about going on conservation field studies with his father and shared his fondness for cold-weather football and chili.

How would you describe your research and the goals of your lab?

Our main goal is to understand how neural circuits motivate us to action and direct our actions to reach desired goals. One aspect of this we investigate is how our brains use stimuli from the external world to guide our action through learned associations. For example, on my morning commute, my brain has learned associations between the landmarks that I encounter, like signs or buildings, and the appropriate direction and speed of travel that my car must go to reach my office. Having repeated the route hundreds of times, my brain can now efficiently direct my driving almost without me having to consciously think about it.

Another aspect we investigate is how the brain learns that actions taken in response to certain external stimuli are associated with positive outcomes. For example, you might learn that the logo of your favorite coffee shop predicts a delicious vanilla latte, and so seeing that logo might motivate you to enter the coffee shop in the future.

We want to understand the neural basis of these processes at the level of neural dynamics occurring within specific cell types and specific brain regions, across

timescales ranging from milliseconds to days or weeks. And we want to do this in the context of behavior.

How do you study the neural circuits responsible for this kind of learning and action?

The tools we use are primarily optical, meaning they detect and measure light in the brain. These light particles, known as photons, are emitted from proteins that scientists have genetically encoded to act as sensors in the brain. These sensors can target the activity of specific neurons and cell types, allowing researchers to monitor brain activity with great precision.

Our lab focuses almost entirely on a deep brain structure called the striatum, located within the basal ganglia, which plays a critical role in the kind of learning and action processes we investigate. Studying the striatum is challenging, however, because it's big and it's deep, so part of what we do is develop tools that are expansive enough to access photon activity across the whole structure yet also precise enough to target specific cell types within that structure.

One tool we developed, in work led by our postdoctoral associate Mai-Anh Vu, is an optical fiber array implant that measures photon activity from the genetically encoded sensors I described. Compared to the larger, single fiber implants that have been used in the past, the fibers we use are tiny, and thus less invasive, allowing us to implant over a hundred individual fibers across the striatum. These fibers can remain implanted for weeks or even months, allowing us to track how neural dynamics change over the course of learning.

Can you give an example of a study that incorporates this tool?

Some of our studies involve the mice running on a spherical treadmill as they navigate a virtual reality environment displayed on screens in front of them. We can monitor their neural activity using the fiber array implant we developed as we simultaneously collect behavioral data related to their actions and decision-making while they navigate the course. In one such study, we found that the same visual landmark can serve to either increase or decrease a dopamine signal in the brain, depending on whether the animal has learned that the landmark indicates it's going in the correct direction (resulting in an increase in dopamine) or the incorrect direction (resulting in a decrease in dopamine).

What makes this research so important?

On one hand, we want to understand how these processes normally guide behavior in the healthy brain, but an equally important and parallel goal is to understand how neural circuit dysfunction is associated with disorders. For instance, in some studies we use a particular animal model of Parkinson's Disease, called the MitoPark mouse model, in which the dopamine neurons in a particular region of the brain die gradually over time beginning with the most vulnerable neurons, in a similar manner as they do in humans diagnosed with Parkinson's. We can track how the neural dynamics and circuits change over the course of several months as this disease model progresses. We want to better understand how and where natural dynamics in the striatum are disrupted so that we can eventually develop therapies to more precisely target and correct circuit dysfunctions and behavior—in the affected regions, at the appropriate times—without the debilitating, off-target side effects associated with current treatments.

When did you know you wanted to be a neuroscientist?

The first person to influence my journey as a scientist was my dad. He's an environmental scientist and conservation biologist, and he used to take me out on his field studies where we would look for birds and do various surveys. It was a unique experience that drove my love for exploring and solving scientific mysteries.

I first joined a neuroscience lab in my junior year of college. We frequently stayed till two or three in the morning, eating vending machine food and conducting these very complex experiments involving epilepsy in rats. It was an invigorating, intellectually stimulating experience that shaped my desire to pursue a PhD in neuroscience.

What advice would you give to students entering your field?

Graduate students in neuroscience are often encouraged to acquire a range of skills, like coding and statistics, and to develop and use new technologies. I agree this is important, but I would balance that advice by reminding students not to get so “methods drunk” that they lose sight of the underlying research questions. I get a lot of rotation students who are excited to work with technology like our fiber array or two-photon microscopy, but they are less clear about the foundational knowledge they want to gain from using such tools.

Can you share any hobbies or talents of yours outside the lab?

Like many people, I became very interested into cooking during the pandemic. I wish I'd had this level of interest when I was younger—as a grad student I had a horrible diet and ate 7-Eleven food. Now, from Green Bay, Wisconsin, and I go back for Packers games every year.

Not surprisingly, as a father I also tend to get interested in my son's and daughter's hobbies. Sometimes my son will get passionately into some activity, so I get really into it too, but then he'll just drop it and move on to other things, but I continue with it. Disc golf is one example—I'm still an avid disc golfer.!

This interview, conducted Tanvi Agrawal and edited by Jim Cooney, originally appeared on the BU Kilachand Center blog on March 4, 2025.

To read the original article and interview visit: tinyurl.com/3m6f85ra ■



This fiber array is used to record optical measurements of neural activity in the brain of a mouse, allowing scientists to study the neural circuits.

“Our main goal is to understand how neural circuits motivate us to action and direct our actions to reach desired goals.”

- Mark Howe

Disentangling Behavior: Cognition and Movement

A groundbreaking study explores the interplay of neural dynamics

ARE COGNITIVE PROCESSES, such as planning an errand or trying to recall a name, separable from related muscle movements, like blinking rapidly or scratching one's chin? In a groundbreaking study published as the cover story in Nature Neuroscience, a BU team has begun to disentangle cognitive and motor processes, with implications in the near term for the research community and in the long term for people with neurological conditions.

The team, led by Assistant Professor Michael Economo (BME) and including colleagues in BME and the BU Neurophotonics Center, has developed a way to both determine when correlated processes and movements are separable and, when they are, how to isolate them. "This capacity strikes at the heart of a conceptual question that is central to how neural data are interpreted in a broad sense," says Economo, and it has wide-ranging implications for both future and past research.

Systems neuroscientists have long sought to understand the neural underpinnings of cognitive processes that are highly correlated with specific, subtle movements. Like a poker player's "tell," says Economo, these movements may include changes in posture, facial expressions, or "fidgets" that are closely associated with processes like perceptual decisions, working memory, contextual encoding, reward prediction, and action planning. These subtle movements are, in turn, associated with strong neural activation across the brain.

The association between these cognitive processes and movements creates a distinct challenge for neuroscientists, since they cannot know whether the patterns of neural activation they observe are related to the particular process they wish to study or to the movements that just happen to be related to those processes.

"If you want to treat a disease, you really want to understand

the mechanisms involved," says BME doctoral student and study co-first author Munib Hasnain. "And to understand the mechanisms involved, you want to make sure that the neural activity or the neural correlates that you're picking up on are actually related to that disease, and not related to some correlated movements that a person is making when you're studying some behavior."

Rethinking results

As one example, the team re-examined seminal findings about the neural processes responsible for action planning. "We demonstrated that neural signatures long thought to be associated with the urgency of actions are, in fact, not related to urgency at all," says Economo. "In contrast, we demonstrated that other neural signals, for example those encoding perceptual decisions, do exist and are separable from related movements, but they have been misidentified in past work."

"It highlights within the field the importance of considering this relationship between cognitive processes and

movement," says doctoral student and study co-first author Jaclyn Birnbaum. "It's kind of prescriptive advice for people who are thinking about behavior. Other researchers might want to consider this going forward when interpreting their data."

By demonstrating how the separability of cognitive and motor processes can be assessed, and, when separable, how the neural dynamics associated with each component can be isolated, the study holds great promise for the field. "I expect that it will have a high impact for years to

come," says Economo. Understanding how the brain's neural mechanisms function and control cognitive processes in a healthy state has implications for future research, and in the longer term, for the development of potential treatments for neurological disease conditions or disabilities.

This article, authored by Lyn Markey, originally appeared on the BU Engineering blog on June 3, 2025.

To read the original article visit: tinyurl.com/mte92wak ■

"Neural signatures that have long been associated with the urgency of actions, are not related to urgency at all."

- Michael Economo

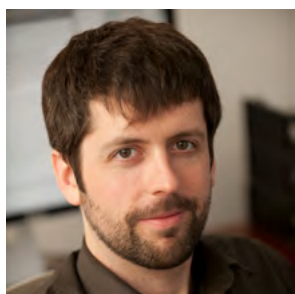


LEADERSHIP & STAFF



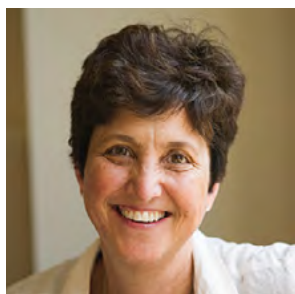
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THE CENTER FOR SYSTEMS NEUROSCIENCE has a small staff that includes partial support for the Center Director, Professor Michael Hasselmo, and the Associate Directors, Professors Mark Kramer and Jennifer Luebke, as well as part-time funding for the Center Manager, Dr. Jun Shen, and part-time funding for the Communications Manager, Jim Cooney.

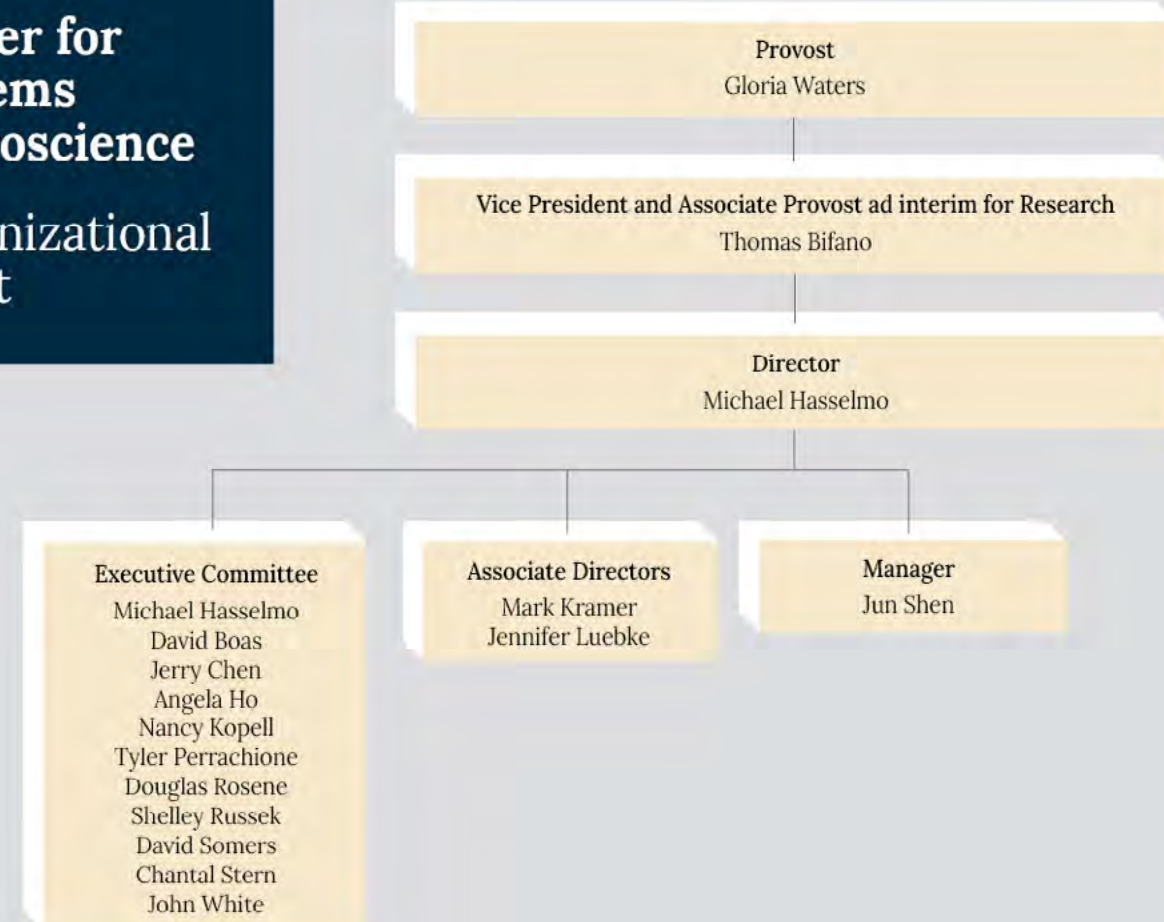
The director and associate directors oversee preparation of grant applications and presentations for grant reviews, participate in search committee meetings and seminars, and oversee pilot funds and Center seminars.

Together, the director and two administrators oversee the Center budget and annual reports, the organization of grant review materials, the organization of Center seminars and symposia, and numerous other administrative tasks.



Many researchers at the Center for Systems Neuroscience (CSN) collect neuroimaging data using the MRI scanner located at the Cognitive Neuroimaging Center (CNC), which is located below the CSN on the first floor of the Rajen Kilachand Center for Integrated Life Sciences & Engineering. CSN researcher and CNC Director Chantal Stern (center) stands in front of the scanner with CNC staffers Shruthi Chakrapani (left) and Stephanie McMains.

Center for Systems Neuroscience Organizational Chart



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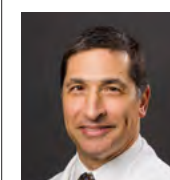
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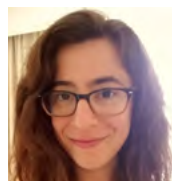
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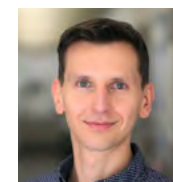
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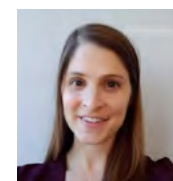
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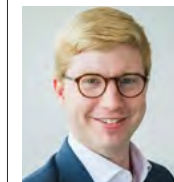
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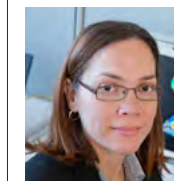
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FACULTY COMMITTEES

The Center charter states that the Director of CSN shall be advised by an Executive Committee and a Scientific Advisory Board. Membership in the **Executive Committee** is determined jointly by the Vice President for Research, the CSN Director, two Associate Directors, the chairs or representatives of associated Departments such as BME and PBS, the Director of the Cognitive Neuroimaging Center, and the Directors of cognate centers. The Committee advises the Director on strategic initiatives, scientific programs and operational activities and cognate Center affiliations. The Executive Committee has been formed and updated with the following members (including the Director and Associate Directors):

Professor Michael Hasselmo	Professor Nancy Kopell	Professor Shelley Russek
Professor David Boas	Professor Mark Kramer	Professor David Somers
Professor Jerry Chen	Professor Jennifer Luebke	Professor Chantal Stern
Professor Angela Ho	Professor Tyler Perrachione	Professor John White
	Professor Doug Rosene	

Members of the **Scientific Advisory Board** were chosen by the CSN Director and VP for Research in consultation with the Executive Committee. The Board advises the Director as needed on strategic planning and research programs and on initiatives to enhance national visibility of CSN and support multi-institutional initiatives. The Board is comprised of distinguished scientists and leaders of university or government organizations in systems neuroscience. Those who accepted board positions include:

Professor David Badre	(Brown University)
Professor Bradford Dickerson	(Harvard University)
Professor Ila Fiete	(MIT)
Professor Earl Miller	(MIT)

*We at CSN were saddened this year to lose our dear colleague, Professor Lucia Vaina, who passed away July 2025.

DISTINGUISHED FELLOWS

THE CENTER HAS A BUDGET for supporting potential pilot projects and innovative new techniques for research. On the recommendation of the Center executive committee, in FY25 these funds were used to support post-doctoral fellows with expertise in techniques that are central to development of new research areas and associated grant applications. These researchers were designated the Center for Systems Neuroscience Distinguished Fellows.

FY25 FELLOWS

Dr. Dr. Florencia Fernandez-Chiappe
(with Prof. Meg Younger)
Using whole-cell patch clamp electrophysiology to study mosquito olfactory circuits; awarded a Pew Latin American Fellowship in June 2024

Dr. Caitlin Lienkaemper
(with Prof. Gabriel Ocker)
Building a principled, biologically motivated random model for neural activity; awarded a Swartz fellowship with \$200K support for her ongoing research on structure and dynamics in neural systems

Dr. Alexander Ian More
(with Prof. Jenny Luebke, Chand Chandrasekaran, and Maya Medalla)
Using cutting-edge methods to study the role of parvalbumin-positive interneurons (PV) in the macaque dorsolateral prefrontal cortex (DLPFC)

Dr. Sarah Shaykevich
(with Profs. Mike Economo and Jerome Mertz)
Applying advanced optical tools and developing techniques to image and gain insight into patterns of neural and neuromodulatory activity; presenting the Introduction to Neurophotronics session for the Neurophotronics Center Bootcamp for early graduate students.

Dr. Adam Smoulder
(with Prof. Chandramouli Chandrasekaran)
Studying how things like motivation affect the control of movement, understanding how different types of movement-related information are shared across areas of the brain; a NINDS F32 fellowship that is currently pending administrative review.

PREVIOUS FELLOWS

Dr. Cristina Delgado Sallent
(with Profs. Steve Ramirez and Benjamin Scott)
Characterizing brain regions and cell populations essential to ketamine's therapeutic effects

Dr. Maria Victoria Moya
(with Prof. Michael Economo)
Developed new optical technology for measuring connections between brain cells; obtained an NIH NRSA F32 post-doctoral fellowship; awarded a 'BRAIN Initiative Advanced Postdoctoral Career Transition Award to Promote Diversity (K99/R00)', titled 'Uncovering the Molecular Determinants of Cell Type-Specific Connectivity'

Dr. Gary Kane
(with Prof. Benjamin Scott)
Used wide field imaging to analyze neural mechanisms underlying the optimization of decision-making

Dr. Brenna Fearey
(with Prof. Mark Howe)
Studied the rules of computation at single neurons across dendritic arbors in the direct and indirect pathways of striatum

Dr. Leah Bakst
(with Prof. Joseph McGuire)
Awarded both an NSF SPRF fellowship (SMA1809071; 7/1/18-6/30/19) and an NIH F32 fellowship (F32-EY029134)

Dr. Eric Lowet
(with Prof. Jerry Chen and Prof. Xue Han)
Co-authored a Neuron paper with Prof. Chen; published voltage-imaging research with Prof. Han; currently an assistant professor at Erasmus Medical university in Rotterdam, Netherlands, receiving a 1.5million euro grant from the European Research Council (ERC starter)

Dr. Joshua Foster
(with Prof. Sam Ling)
Co-authored paper in Journal of Neuroscience

Dr. Jianguang Ni
(with Prof. Jerry Chen)
Co-authored a Neuron paper with Prof. Jerry Chen; tenure-track associate professor/principal investigator at Fudan University in Shanghai, China, Institutes of Brain Science



ACHIEVEMENTS & AWARDS

CENTER FACULTY EARNED VARIOUS AWARDS and achievements over the course of the past fiscal year. These include:

David Boas, Professor, Biomedical Engineering

- Received the Kilachand Fund Award, along with CSN colleague Professor Emily Stephen (see below), to support their research investigating how understanding changes in neurovascular coupling over time can help us more accurately interpret neuroimaging data such as that produced by functional magnetic resonance imaging (fMRI)

Chandramouli Chandrasekaran, Assistant Professor, Psychological & Brain Sciences

- Co-chair for event Computational and Systems Neuroscience (COSYNE) 2025 in Montreal

Lynne Chantranupong, Assistant Professor, Biology

- Awarded a 2025 Sloan Research Fellowship which will support her investigations exploring how specialized structures in brain cells called lysosomes manage waste and maintain neural function, research which has the potential to inform the treatment of diseases like Parkinson's and Alzheimer's
- Won a 2025 Dean's Catalyst Award, along with CSN colleague Jerome Mertz (see below), for their project "Interferometric absorption microscopy for label-free imaging of neuronal health"

Jerry Chen, Associate Professor, Biology

- Received a grant from the National Institute of Neurological Disorders and Stroke for his project, "Local and long-range cortical circuits underlying tactile perception"
- NIH Blueprint and BRAIN Initiative D-SPAN Award received by Alanna Carey, who works in the lab of Professor Chen, for her research which utilizes a genetically diverse mouse model in an automated home-cage performing a goal-directed learning task to observe how genetic diversity influences learning capacity

Rachel Denison, Assistant Professor, Psychological & Brain Sciences

- Recognized as a "Rising Star" by the Cognitive Neuroscience Society
- Appointed to the editorial board of *Journal of Vision*

Brian DePasquale, Assistant Professor, Biomedical Engineering

- Won a 2025 Dean's Catalyst Award, along with CSN colleague Matthias Stangl (see below), for their project "Everyday stress and cognition in epilepsy: Leveraging machine learning for next-generation neurostimulation systems"

Anna Devor, Professor, Biomedical Engineering

- Received a new Binational Science Foundation grant, along with Research Assistant Professor Martin Thunemann, for a project (led by PhD students Daria Bogatova and Dora Balog) investigating the role of intrinsic neuromodulatory neurotransmission in information processing in local and large-scale cortical neuronal networks using mesoscale, light sheet, and multiphoton optical imaging

Stephen Grossberg, Professor Emeritus, Mathematics and Psychology

- Oxford University Press accepted his book titled *Your Creative Brain and AI: How We Learn and Consciously Experience Art, Music, and Meaning* which is slated to be published in late 2025

Mark Howe, Assistant Professor, Psychological & Brain Sciences

- Along with his colleagues received a two-year grant extension, totaling \$6 million over two years, from the Aligning Science Across Parkinson's Disease Foundation to continue their multi-site research project mapping neuronal circuits that become dysfunctional in Parkinson's

Swathi Kiran, Professor, Speech, Language, & Hearing Sciences

- Awarded Honors of the Association—the highest honor bestowed by the American Speech-Language-Hearing Association—for her distinguished contributions to the discipline of communication sciences and disorders
- Joined the Advisory Council for the NIH National Institute on Deafness and Other Communication Disorders

Jerome Mertz, Professor, Biomedical Engineering

- Among the six inaugural recipients of the Dean's Research Infrastructure Awards bestowed by the BU College of Engineering to support innovative, high-impact research by enabling the upgrade, repair, or acquisition of critical equipment
- Won a 2025 Dean's Catalyst Award, along with CSN colleague Lynne Chantranupong (see above), for their project "Interferometric absorption microscopy for label-free imaging of neuronal health"

Tyler Perrachione, Associate Professor, Speech, Language & Hearing Sciences

- Awarded an Exploratory/Development Grant (R21) from the National Institute on Deafness and Other Communication Disorders to study how using noninvasive brain stimulation in conjunction with behavioral training can better enhance speech perception in complex auditory scenes among older listeners with hearing loss
- Ruth L. Kirschstein Predoctoral Individual National Research Service Award (F31) fellowship received by PhD student Becky Belisle, who works in the lab of Professor Perrachione, from the National Institute on Deafness and Other Communication Disorders for her project, "Structure-function correspondence in the cortical organization of language"

Siddharth Ramachandran, Professor, Electrical & Computer Engineering

- Named Editor-in-Chief of *Optics Express*

Steve Ramirez, Associate Professor, Psychological & Brain Sciences

- Serving as a subject matter expert and recurring presenter for *National Geographic's* "Nat Geo Live!"—a touring show delivered to live audiences in cities across the world
- Authored book *How to Change a Memory: One Neuroscientist's Quest to Alter the Past* accepted by Princeton University Press and due to be published in November 2025

Robert Reinhart, Associate Professor, Psychological & Brain Sciences

- Received a 2025-2028 philanthropic gift from donor Karen Bedrosian-Richardson (BU DGE 1966, BU CAS 1968)
- Received a 2024 Randolph Blake Early Career Award from Vanderbilt University

Kathleen Rockland, Research Professor, Anatomy & Neurobiology

- Served as Guest Editor, *Anatomical Science International* (Springer): "Neuroanatomy across scales: Methods for investigating the structural basis of brain functions from nano- to macro-scales"
- Served as Guest Editor, *Brain Structure and Function* (Springer): Collection "Rudolf Nieuwenhuys: Neurofascination"

Matthias Stangl, Assistant Professor, Biomedical Engineering

- Received an R00 grant from the National Institute of Neurological Disorders and Stroke for his project titled, "The neural mechanisms of spatial representations beyond the self"
- Invited by the NIH/National Institute of Neurological Disorders and Stroke to participate in a panel discussion and workshop at the 2025 Society for Neuroscience meeting
- Won a 2025 Dean's Catalyst Award, along with CSN colleague Brian DePasquale (see above), for their project "Everyday stress and cognition in epilepsy: Leveraging machine learning for next-generation neurostimulation systems"

Emily Stephen, Assistant Professor, Mathematics & Statistics

- Received the Kilachand Fund Award, along with CSN colleague Professor David Boas (see above), to support their research investigating how understanding changes in neurovascular coupling over time can help us more accurately interpret neuroimaging data such as that produced by functional magnetic resonance imaging (fMRI)

Chantal Stern, Professor, Psychological & Brain Sciences

- Served as Section Editor for *Hippocampus*
- Served as Consulting Editor for *Behavioral Neuroscience*

Robert Stern, Professor of Neurology, Neurosurgery, and Anatomy & Neurobiology

- Received the 2025 Leon Thal Prize for Research Excellence, (presented at the 2025 Leon Thal Summit in Las Vegas, NV) from the Cleveland Clinic Lou Ruvo Center for Brain Health

Helen Tager-Flusberg, Professor, Psychological & Brain Sciences

- Founded the Coalition of Autism Scientists to advocate for robust research on the disorder and to counter myths and misinformation

Meg Younger, Assistant Professor, Biology

- Won a 2025 Dean's Catalyst Award for her project "The influence of wicking and evaporation on mosquito host-seeking behavior and olfactory neural responses"
- Received the Wellcome Discovery

Award supporting her project to map the brain of the *Aedes aegypti* mosquito and visualize it on an interactive online platform

- 2025 Leading Edge Fellowship received by Florencia Fernandez, a postdoctoral fellow working in Professor Younger's lab
- A grant from the BU Center on Emerging Infectious Diseases was received by Garima Kohli, a PhD student working in the lab of Professor Younger, for her research on mosquitos and their preferences for children versus adults

Venetia Zachariou, Professor and Edward Avedisian Chair of Pharmacology, Physiology & Biophysics

- Received a Distinguished Investigator Award from the Brain & Behavior Research Foundation to support her research on "Targeting G protein pathways in the periaqueductal gray to optimize the actions of opioids"

Ella Zeldich, Assistant Professor, Anatomy & Neurobiology

- Awarded a new multi-PI R01 grant from the National Institute of Aging, along with Research Professor Martin Thunemann, for their project, "Understanding neuronal dysfunction in Down Syndrome using assembloids and xenotransplanted cortical organoids" ■



EVENTS

THE CENTER CONTINUED TO SUPPORT a series of talks featuring internal BU speakers and external speakers, as well as candidates for faculty positions in relevant departments. The seminars and symposia continued to bring together a strong audience of 60-150 researchers from a wide range of fields. The Center also cohosted monthly socials with the Neurophotonics Center (NPC) and the Graduate Program in Neuroscience (GPN). These talks were publicized to the BU community and to the public, and brought together researchers in departments including the CAS departments of Psychological & Brain Sciences, Biology, Physics, and Mathematics & Statistics; the Sargent School departments of Health Sciences and Speech, Language & Hearing Sciences; the School of Medicine departments of Anatomy & Neurobiology and Pharmacology, Physiology & Biophysics; and the School of Engineering departments of Biomedical Engineering and Electrical & Computer Engineering.

FALL 2024

September 12

Prof. Alex Kwan, Cornell University

- “What’s special about psychedelic-evoked neural plasticity?”
- An event hosted by Prof. Ben Scott
- Joint seminar with Brain, Behavior, and Cognition

September 25

Prof. Helen Scharfman, New York University

- “Early stages of Alzheimer’s disease: novel roles of acetylcholine and the dentate gyrus”
- An event hosted by Prof. Shelley Russek
- Co-organized with NPC

October 16

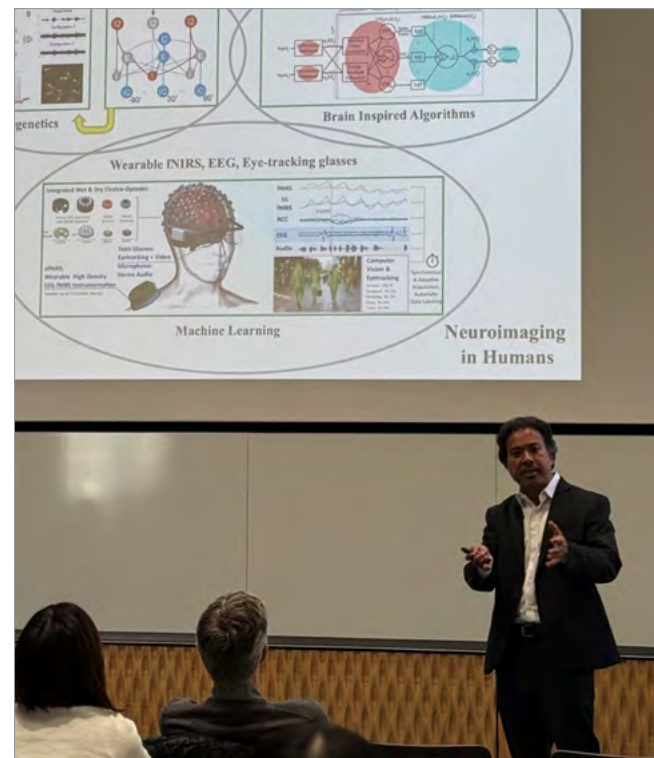
Prof. Ryan Raut, University of Washington

- “Unifying systems neuroscience through arousal dynamics”
- An event hosted by Prof. Emily Stephen
- Co-organized with NPC and Biomedical Engineering (BME)

October 23

Prof. Betty Hong, California Institute of Technology

- “Olfaction in Drosophila through the lens of natural odors”
- An event hosted by Hosted by Profs. Meg Younger and Brian DePasquale



Professor Kamal Sen, Boston University, presents on the cortical circuits underlying complex scene analysis.

November 8

Prof. Anne Collins, University of California, Berkeley

- “Deconstructing human reinforcement learning”
- Hosted by Prof. Joe McGuire

November 13

Prof. Josh Jacobs, Columbia University

- “Direct recordings of human place cells, grid cells, and traveling waves reveal mechanisms of episodic memory”
- An event hosted by Matthias Stangl

SPRING 2025

March 19

Prof. Mark Churchland, Columbia University

- “It contains multitudes? Motor cortex activity accords with modern conceptions of network computation”
- An event hosted by Prof. Michael Economo and Brian DePasquale

March 26

Prof. Stefan Mihalas, Allen Institute

- “Computing with complex components: How heterogeneous, nonstationary and noisy neurons and synapses contribute to the brain’s computational power”
- An event hosted by Prof. Emily Stephen
- Joint seminar with NPC

April 9

Prof. Kamal Sen, Boston University

- “Cortical Circuits Underlying Complex Scene Analysis”
- An event hosted by Prof. David Boas
- Joint seminar with NPC



Professor Stefan Mihalas, Allen Institute, presents on how heterogeneous, nonstationary and noisy neurons and synapses contribute to the brain’s computational power.

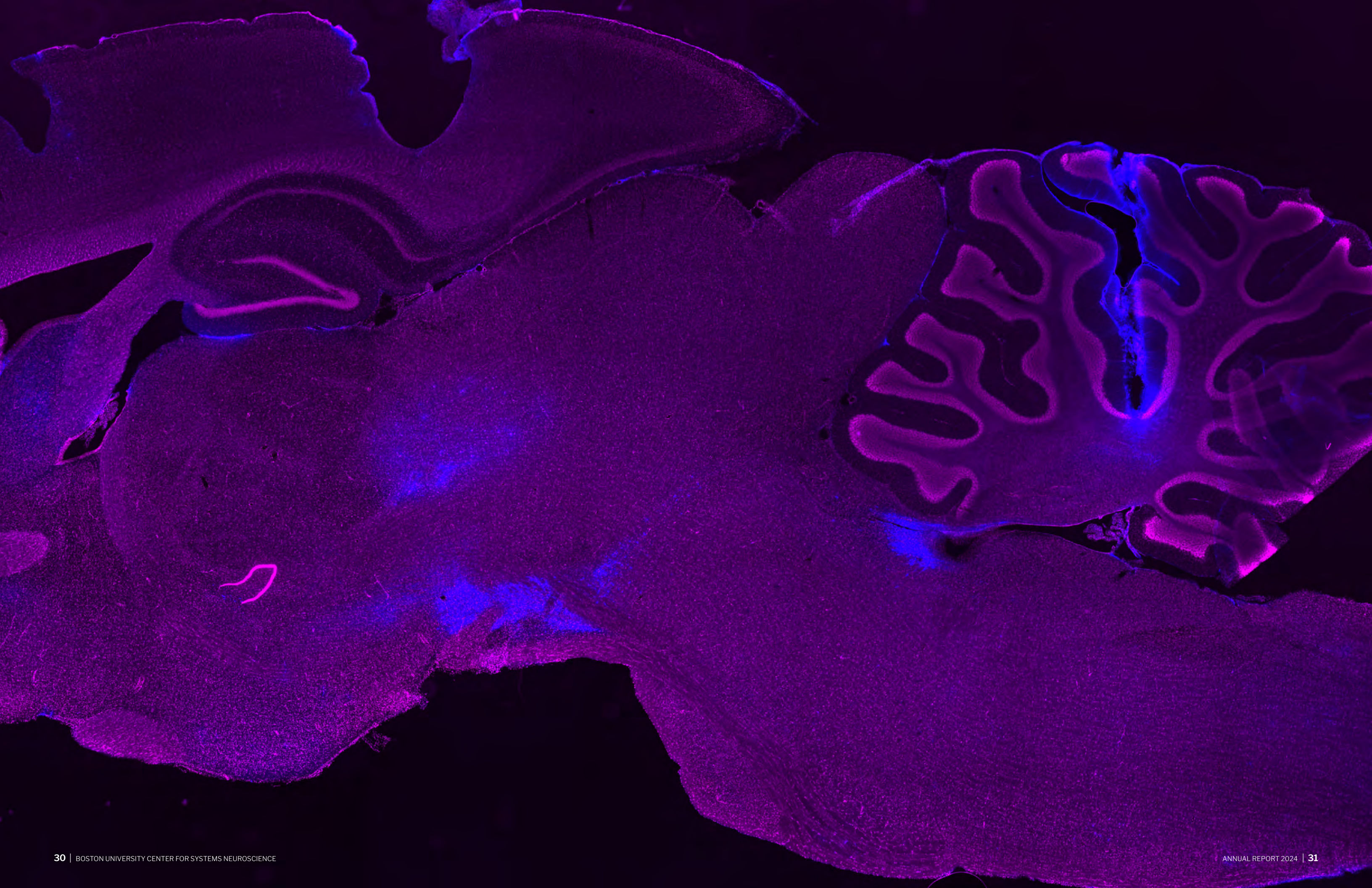
June 5

Prof. Peter Petersen, University of Copenhagen

- “BrainSTEM - A Collaborative Notebook for Neuroscience”
- An event hosted by Prof. Ben Scott
- Joint seminar with BBC



Professor Mark Churchland, Columbia University, presents on how motor cortex activity accords with modern conceptions of network computation.



RESEARCH PROJECTS



THE FACULTY CONDUCT RESEARCH in a number of different areas. These include:

1. Attention & Perception
2. Computational Neuroscience
3. Decision Making & Action Selection
4. Developmental Neuroscience
5. Diseases of the Nervous System
6. Learning & Memory
7. Molecular & Cellular Mechanisms
8. Neuroanatomy & Circuit Mapping
9. Neurophotronics
10. Speech & Hearing

There are numerous research projects within these areas that are described in the publications listed in this annual report and funded by an extensive range of research grants. This annual report will not provide details about all of the research projects, focusing instead on the projects directly related to funds from the Center for Systems Neuroscience.

List of Previous Grants and Pending Applications

The Center for Systems Neuroscience was directly involved in obtaining multiple grants over the past several years: 1) an Office of Naval Research Multi-disciplinary University Research Initiative (ONR MURI) grant worth \$7.5 Million to Prof. Michael Hasselmo, 2) an ONR DURIP grant associated with the ONR MURI worth \$557,580 to Prof. Chantal Stern, 3) an NSF MRI grant worth \$1,582,077 to Prof. Chantal Stern, 4) a second ONR MURI grant obtained by Prof. Yannis Paschalidis with assistance from Profs. Michael Hasselmo and Chantal Stern worth \$7.5 Million, and 5) an ONR DURIP grant obtained in 2021 as a supplement to this second MURI grant. In addition, as listed in the supplemental spreadsheet, faculty affiliated with the Center for Systems Neuroscience have obtained numerous grants, including a number of additional grants obtained by faculty who received support from start-up funds or post-doctoral fellowships provided by the Center.

ONR MURI Grant 2016–2022, \$7,500,000. Center Director Michael Hasselmo was the principal investigator on an Office of Naval Research MURI grant that was awarded in 2016 entitled: Neural Circuits Underlying Symbolic

Processing in Primate Cortex and Basal Ganglia (PI: Michael Hasselmo, Program officer: Tom McKenna) – 07/01/16–05/31/21, with no-cost extension to Nov. 30, 2022, ONR MURI N00014-16-1-2832.

ONR DURIP Grant, \$557,580. In affiliation with this ONR MURI grant, Prof. Chantal Stern applied for an Office of Naval Research DURIP grant that was awarded in 2017: ONR Defense University Research Instrumentation Program (DURIP) grant: High-performance computing cluster for cognitive neuroscience analysis and modeling. (PI: Chantal Stern, PO: Tom McKenna) 6/01/2017–6/30/2018. ONR DURIP N00014-17-1-2304.

NSF MRI Grant, \$1,582,077. The director of the Cognitive Neuroimaging Center Chantal Stern was awarded a grant that supports neuroimaging work that is an integral part of systems neuroscience research at Boston University. She obtained an NSF Major Research Instrumentation grant (PI: Chantal Stern, Program officer: John Yellen) Title: MRI: Acquisition of a 3-Tesla Magnetic Resonance Imaging (MRI) Scanner for Cognitive and Systems Neuroscience 9/1/2017–8/31/2018, NSF BCS 1625552. This grant provided \$1,582,077 for 70% of the purchase of a Siemens fMRI scanner that was installed in the Kilachand Center.

ONR MURI Grant 2019–2024, \$7,500,000. The CSN director Prof. Michael Hasselmo worked with Profs. Yannis Paschalidis, John Baillieul and Chantal Stern to organize a research team based on multiple discussions with ONR program officer Dr. Marc Steinberg. This grant was selected for funding and started in the fall of 2019. We organized a research team that included Yannis Paschalidis as PI, Michael Hasselmo, John Baillieul, Chantal Stern, Margrit Betke and Roberto Tron from Boston University, and John Leonard and Nick Roy from MIT. Four members were previously members of an earlier MURI run by Michael Hasselmo. This ONR MURI award is entitled: Neuro–Autonomy: Neuroscience-inspired perception, navigation, and spatial awareness for autonomous robots. This provides \$7,500,000 over five years to the 2 researchers at MIT and the 6 researchers at BU. This grant involved monthly meetings of MURI researchers in full team meetings or in sub-group meetings. Team members provided materials for a final annual report in October, 2024.

ONR DURIP Grant 2021, \$497,047. The BU members of the 2019 MURI N00014-19-1-2571 (Profs. Tron, Paschalidis, Baillieul, Stern, Betke and Hasselmo) participated in an application for an additional ONR DURIP award to supplement this research. This grant was awarded in 2021 as DURIP N00014-21-1-2844 for \$497,047 headed by principal investigator Prof. Roberto Tron to support researchers at Boston University affiliated with the ONR MURI grant.

NSF Training Grant in Neurophotronics. Center Director Michael Hasselmo participated as an executive committee member for a grant obtained by Principal Investigator Prof. Thomas Bifano for an NSF Research Traineeship (NRT) grant entitled: “NRT: Neurophotronics.” The Center Director participated on the Executive committee for this grant to select trainees. This grant provided training in neurophotronics for graduate students in multiple programs.

CSN Associate Director Prof. Mark Kramer developed and submitted an NIH T90/R90 training grant (Total Funds Requested: \$3,181,801) designed to support 6 graduate students and 6 undergraduate students pursuing research in computational neuroscience. Prof. Kramer served as the lead program director with co-directors Profs. Mike Hasselmo and Uri Eden. The proposed training faculty included 18 other CSN members, from multiple departments across the University (Mathematics & Statistics, PBS, BME, Biology, Sargent College, and the School of Medicine). This grant was not funded.

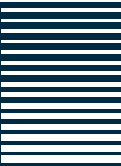
The Center also participated in training grant applications by Neurophotronics Center director Prof. David Boas, as well as providing materials in support of the successful training grant application by GPN director Prof. Shelley Russek.

NIH R01 Grants. During the period of running the CSN, the Center Director was also principal investigator on NIH R01 grants including NIMH R01 MH060013 and MH061492 and MH052090. In fall 2019, the Center Director also successfully obtained new funding for another R01 grant MH120073 for five years of support, and the applications for renewal of this grant were submitted in November, 2023 and November, 2024. In addition, two applications for a new R01 grant were submitted in February, 2023 and March 2024, as well as an NSF CRCNS grant and an R61/R33 grant with Angela Ho, and an R01 grant with Prof. Xue Han. These were not funded. These grant applications were administered through individual departments.

The Center also obtained and administered support to a Kilachand Type A/B Project awarded by the Office of the Vice President for Research. The CSN director Prof. Michael Hasselmo worked with Profs. Chantal Stern, Xue Han, Yannis Paschalidis, David Boas, Joseph McGuire, Jerry Chen, and Marc Howard to organize a research team, and prepare a proposal that was selected for funding in October 2022. This team focuses on understanding circuit mechanisms in the neocortex underlying general cognitive function, with the aim of developing innovative approaches to computational modeling of neural circuits and new experimental voltage and calcium techniques to analyze circuit dynamics. The Kilachand Fund group led to the organization of a number of white paper applications to ONR program officers. A white paper application was submitted on April 14, 2024 to program officers Marc Steinberg and Tom McKenna with a research project focusing on animal and human imaging and computational modeling. Another white paper on a focused research project concerning trajectory planning was submitted to these program officers on Aug. 1, 2024. An earlier extensive white paper by Prof. Michael Hasselmo was submitted to the ONR on FedConnect in May 2023 for a potential ONR MURI grant including Prof. Michael Hasselmo along with Profs. Yannis Paschalidis, Prof. John Baillieul, Prof. Chantal Stern and Prof. Roberto Tron along with faculty at MIT. Unfortunately, this preliminary proposal was not selected for further rounds of review. The Kilachand Fund Award also led to submission of an NSF CRCNS grant by Profs. Hasselmo and Stern and an NIH R01 collaborative grant by Prof. Hasselmo and Prof. Xue Han proposing the use of voltage imaging techniques to analyze circuit dynamics relevant to the coding of trajectories in problem solving as described in the Kilachand Fund grant.

Affiliated Faculty. The Center for Systems Neuroscience faculty have a number of ongoing research grants. For quantifying the overall support of neuroscience researchers affiliated with the Center, the expenditure and grant figures have been obtained from OSP and edited to avoid overlap with other centers such as the Photonics center. This grant information is provided in the internal annual report.

PUBLICATIONS



CSN Faculty published the following articles in peer-reviewed journals. Articles published by two or more Center-affiliated faculty are indicated by an asterisk “*”.

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FACILITIES & EQUIPMENT

THE CENTER HOUSES FACULTY in various locations on the Charles River Campus and the School of Medicine Campus. The Rajen Kilachand Center building provides a central location for meetings and Center administration, as well as research facilities for some Center faculty.

Rajen Kilachand Center Building

A number of CSN members are housed on the 7th, 8th and 9th floors of the Rajen Kilachand Center for Integrated Life Sciences and Engineering building at Boston University. Administrative offices for the Center are also housed on the 7th floor of this building. The building includes space for social gatherings, seminars, and laboratory meetings. The first floor also houses facilities for the Cognitive Neuroimaging Center, as well as testing rooms for behavioral studies. The building provides research space for several CSN faculty performing research using systems neuroscience techniques in animals or functional imaging in human subjects. This is the primary new space available at Boston University for these techniques. Space allocation for the centers housed in the Rajen Kilachand building is controlled by the Provost, and the Vice President and Associate Provost for Research. Allocation of space takes into consideration the research productivity and external research funding of the investigators and research teams.

Core resources provided by university

Housing for animals used in systems neuroscience research:

- Laboratory Animal Care Facility (LACF)

Shared resources for microscopy used in systems neuroscience research:

- Proteomics and Imaging Core Facility

Existing laboratories

Multiple laboratories support systems neuroscience research:

The Atema Lab – Jelle Atema

Intelligent Mechatronics Laboratory – John Baillieul

Neural Systems Laboratory – Helen Barbas

Artificial Intelligence and Emerging Media Group – Margrit Betke

Bifano Laboratory – Thomas Bifano

Bio Optical & Acoustic Spectroscopy Lab – David Boas

Neural Dynamics of Cognition Laboratory – Chandramouli Chandrasekaran

Chantranupong Lab – Lynne Chantranupong

Chen Lab – Jerry Chen

Binaural Hearing Laboratory – H. Steven Colburn

Vision & Cognition Laboratory – Alice Cronin-Golomb

Davison Lab – Ian Davison

Denison Lab – Rachel Denison

DePasquale Lab - Brian DePasquale

Neurovascular Imaging Laboratory – Anna Devor

Economo Laboratory – Michael Economo

Laboratory of Molecular Neurobiology – David H. Farb

BU Molecular Genetics Core Facility – Lindsay Farrer

Gabel Lab – Christopher V. Gabel

Laboratory for Learned Neural Dynamics and Cortical Prediction - Jeffrey Gavornik

Cortical & Computational Decoding of Speech Lab – Oded Ghitza

Motor Development Lab – Simone Gill

The Guenther Lab – Frank Guenther

Han Lab – Xue Han

Harris Lab – David A. Harris

Laboratory for Computational Neurophysiology – Michael Hasselmo

Haydar Lab – Tarik Haydar

Ho/Beffert Lab – Angela Ho

Theoretical Cognitive Neuroscience Laboratory – Marc Howard

Howe Lab - Mark Howe

Keck Laboratory for Network Physiology – Plamen Ivanov

Laboratory of Behavioral Neuroscience – Kathleen M. Kantak

Developing Minds Lab – Mellisa Kibbe

Aphasia Research Laboratory – Swathi Kiran

Decoding Lab – Arthur Lee

Lin Laboratory – Jen-Wei Lin

The Ling Lab – Sam Ling

The Laboratory of Cellular Neurobiology – Jennifer Luebke

Man Lab – Heng-Ye Man

Cognitive & Decision Laboratory – Joseph McGuire

McKee Lab – Ann McKee

Neural Circuits and Ultrastructure – Maria Medalla

Biomicroscopy Laboratory – Jerome Mertz

Mews Lab – Philipp Mews

Meyer Lab – Heidi Meyer

Laboratory of Cognitive Neurobiology – Tara Moore; Douglas Rosene

Computation, Learning, & Development Lab – Kate Nussenbaum

Glia Engineering Lab – Tim O'Shea

Network Optimization & Control Laboratory – Yannis Paschalidis

Communication Neuroscience Research Laboratory – Tyler Perrachione

Familial Dementia Neuroimaging Lab – Yakeel Quiroz

Nanostructured Fibers and Nonlinear Optics Laboratory – Siddharth Ramachandran

Ramirez Group - Steve Ramirez

Cognitive and Clinical Neuroscience Laboratory – Robert M. G. Reinhart

Laboratory for Cortical Organization & Architectures – Kathleen Rockland

The Roussarie Lab – Jean-Pierre Roussarie

Spinal Neuromechanics Laboratory – Travis Rotterman

Laboratory of Translational Epilepsy – Shelley J. Russek

Laboratory of Addictive Disorders – Valentina Sabino

Brain Plasticity and Neuroimaging Laboratory – Karin Schon

Laboratory of Comparative Cognition Lab – Benjamin Scott

Natural Sounds and Neural Coding Lab – Kamal Sen

Laboratory of Cellular Biology of the Basal Ganglia – Jean-Jacques Soghomonian

Neuroimaging, Perception, and Attention Laboratory – David Somers

Stangl Lab – Matthias Stangl

Cognitive Neuroimaging Laboratory – Chantal Stern

Center for Autism Research Excellence – Helen Tager-Flusberg

Brain and Early Experiences Laboratory – Amanda Tarullo

Tay Lab – Tuan Leng Tay

The Laboratory of Human Induced Pluripotent Stem Cell Therapeutics – Julia TCW

Brain & Vision Laboratory – Lucia Vaina

Wallace Lab – Michael Wallace

Neuronal Dynamics Lab – John White

Laboratory of Neurodegeneration – Benjamin Wolozin

Computational Neuroscience & Vision Laboratory – Arash Yazdanbakhsh

Younger Lab – Meg Younger

Laboratory of Intellectual Disorders – Ella Zeldich

Human Systems Neuroscience Laboratory – Basilis Zikopoulos

Communication and Neurodevelopment Lab – Jennifer Zuk

Molecular Mechanisms of Chronic Pain – Venetia Zachariou ■



A view down the hallway of the Center for Systems Neuroscience administrative space, located in the top floors of the Rajen Kilachand Center for Integrated Life Sciences & Engineering.



ENGAGE WITH US

The offices of the director and the administrators for the Center for Systems Neuroscience are located at 610 Commonwealth Ave. on the 7th floor.

The seminars for the Center for Systems Neuroscience typically take place in the Eichenbaum Colloquium Room on the 1st floor of the Rajen Kilachand Center for Integrated Life Sciences & Engineering, 610 Commonwealth Avenue, Boston, MA.

STAY CONNECTED TO THE CENTER

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Back cover photo: Faculty and staff pausing during a CSN retreat for a photo break outside the Rajen Kilachand Center for Integrated Life Sciences & Engineering



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