

Message from the Director

As the Spring semester comes to an end, we welcome new members and we are glad to look back at the amazing accomplishments of all the students, postdoctoral fellows and faculty members of the Neuroscience Initiative and celebrate their success stories.

We celebrated Brain Awareness Week in March, with a series of live and online activities, and in collaboration with the Illumination Space, we have renewed our commitment to bringing awareness to mental health, to local schools (from K to 12 grade) and local communities.

We continued to fulfill our mission by promoting research on the effect of the environment on mental health, and, in partnership with the Center on Health and Environment Across the LifeSpan (HEALS) at the Icahn School of Medicine at Mount Sinai, we supported an inter-institutional initiative resulting in pilot grants to study the effect of climate change on health.

We are excited to see students and post-doctoral fellows move on to their next career opportunity, publish manuscripts, receive grants and awards. Congratulations to all the Faculty members whose commitment to student education and excellence in research is exemplary.

Let's keep a positive attitude, as we transition into the Summer months.

-Patrizia



In this issue...

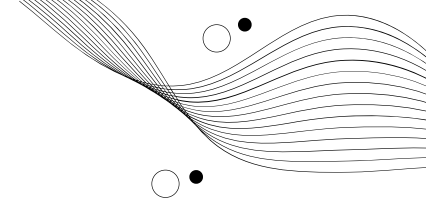
NEW INITIATIVE
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NEWS & UPDATES

NEW INITIATIVE MEMBERS



Jennifer Chou



Meet Jennifer, our new lab manager! A lifelong New Yorker, Jennifer earned her B.S. in Biology from City College. Jennifer's research experience includes working on a NASA-funded project where two *Drosophila melanogaster* strains and two parasitoid wasp species were sent to space to investigate the effects of space on the arms race between the host and parasite.

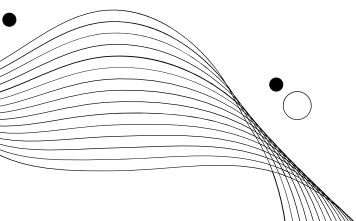
Jennifer has enjoyed drawing and painting since she was young and also likes to learn new languages. She is fluent in Cantonese, speaks conversational Japanese, and aims to be a polyglot. Welcome!

Shibo Liu

Shibo Liu is our new research assistant for the MALDI Imaging Core Facility. Originally from Beijing, China, Shibo received his masters degree in Biotechnology from the University of Pennsylvania. His research experience includes the study of somatosensory system functions, specifically the "itch" sensation in the Wenquin Luo Lab.

At the ASRC, he looks forward to using the advanced technology offered here, especially running MALDI experiments.

When he is not at the lab, Shibo enjoys traveling to Philadelphia to visit college buddies. Welcome!



INITIATIVE ACHIEVEMENTS

Congratulations to Faculty Grant Recipients!

Pinar Ayata, *Assistant Professor*, together with **Dr. Allison Lee** at Mt. Sinai is the recipient of a **CUNY/HEALS Climate Change Healthy Impact Interdisciplinary Research Initiative Program Grant** entitled "*The neuroimmune outcomes of prenatal exposures to air pollution and stress.*" The grant will fund pilot studies to examine the molecular mechanisms underlying the relationship between environmental & stress exposures during pregnancy and neurodevelopmental disorders through coordinated mouse (Dr. Ayata, CUNY) and human (Dr. Lee, Sinai) studies, aiming to discover biomarkers and drug targets for early intervention."

Patrizia Casaccia, *Professor and Director*, is the recipient together with **Dr. Sarah O'Neill** (CCNY) of a **CUNY Planning Grant** entitled "*Effects of music intervention on anxiety in CUNY student population and underlying mechanisms.*" The goal of this proposal is to create awareness and introduce stress and anxiety-mitigating strategies to CUNY's student body and surrounding communities, The Neuroscience Initiative, in collaboration with multiple CUNY colleges, is piloting a sound-mindfulness intervention program. The team will test the effectiveness of an 8-week intervention of weekly sessions of breathing exercises and live music with percussion instruments called Tibetan bowls, and daily practices on reducing the levels of anxiety in a CUNY student population. Electroencephalographic recordings, measurements of basal heart rate, blood pressure, DNA methylation of stress genes, and psychometric testing will be used to assess effectiveness, by comparing assessments conducted pre and post-intervention.

Ye He, *Research Associate Professor*, together with **Rinat Abzalimov**, *Research Associate Professor from SBI*, is the recipient of the **ASRC Core Facilities Personnel Grant Program (CGFP)**, which will support hiring a research assistant to facilitate MALDI imaging research and service at the MALDI Core Facility.

Susana Mingote, *Associate Professor*, together with **Dr. Jia Liu**, *Research Associate Professor*, and **Dr. Pinar Ayata**, *Assistant Professor*, received the **CUNY Research Office IRG Grant** entitled "*Mouse city: A Naturalistic Approach to Investigate the Effects of Urban Ecosystems on the Brain and Behavior.*" The grant also includes colleagues from Environmental Science and the aim of this proposal is to develop a first-of-a-kind Mouse City and investigate the effects of complex urban-like environments on brain functions and behavior

Orie Shafer, *Professor*, is the recipient of the **NIH R21 Grant** entitled "*Identification of Sleep Substances in the Brain Using Matrix Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry.*" This study proposes to investigate the molecules that accumulate in the brain to signal sleepiness as identification of such molecules would reveal targets for the improvement of sleep and provide important insights into its neural regulation

INITIATIVE ACHIEVEMENTS

Congratulations to CUNY Doctoral Student Research Grant Recipients!

The **DSRG Program** aims to foster a research-oriented academic culture among doctoral students at the CUNY Graduate Center by funding expenses such as conference and research travel, compensation for human subjects, and more.

Priyasha Deshpande, *Doctoral Student (Elbaum-Garfinkle and Casaccia Lab)* will be attending the *Biophysical Society's 68th Annual Meeting*, held in Philadelphia, PA from February 10, 2024, to February 14, 2024.

Jacquelyn Tomaio, *Doctoral Student (Mingote Lab)* will be attending the *Catecholamines Gordon Research Conference* held in Castelldefels, Spain August 13, 2023, to August 18, 2023.

Congratulations to...

Dvir Avnon-Klein, *(Undergraduate/Accelerated Master's Student, Ayata Lab)*
Who has been accepted into the *Graduate Program at Rockefeller University*

Ayesha Khan, *(Undergraduate/BD/MS Student, Ayata Lab)*
Who was honored with the *Truman Scholarship*, the premier graduate scholarship for aspiring public service leaders in the United States.

Cory Weng, *(Undergraduate Student, He Lab)*
Who was honored with the *Harold Scheraga Honorary Distinction Award*, a departmental honor recognizing excellence in scholarship for those majoring in Chemistry or Biochemistry.

He was also the recipient of a *Benjamin A. Gilman International Scholarship* which enables American students to gain proficiency in diverse languages and cultures, skills that are critically important to their academic and career development. Cory studied in Florence, Italy as part of the Lorenzo de Medici Institute

Tiffany Zhong, *(Undergraduate Student, He Lab)*
Who has been accepted to the *NIH Summer Internship Program*

INITIATIVE ACHIEVEMENTS

Congratulations to...

Matthew Ciolkowski, (*Lab Manager, Shafer Lab*)

Who has been accepted into *Dartmouth University's Ph.D. Program*

Charles Mc Donald, (*Doctoral Student, Casaccia Lab*)

Who defended his Thesis entitled "*Characterization of Pathological Tau Mutants*"

David Dansu, (*Doctoral Student, Casaccia Lab*)

Who has been selected for the *Regeneron Post-doctoral Training Program*, a multi-faceted program that integrates cutting-edge science with didactic training, discussion groups, and focused, multi-tiered mentoring at the leading biotechnology company

Sarah Sternbach, (*Postdoctoral fellow, Casaccia Lab*)

Who has accepted the position of *Director of Scientific Programs* for the *International Progressive Multiple Sclerosis Alliance*

Congratulations to CUNY Early Research Initiative Pre-Dissertation Science Research Award Recipients!

The **Early Research Initiative (ERI)** – overseen by the Provost's Office – offers Level II and III doctoral students the opportunity to articulate and clarify the aims of their research projects, cultivate their grant writing skills, and prepare for external award applications.

Leen Aljayousi, (*Doctoral Student, Ayata Lab*)

The title of Leen's project for which she won this award is "Elucidating the Impact of Early Life Stress on Microglial Function in Alzheimer's Disease."

Anna Flury, (*Doctoral Student, Ayata Lab*)

The title of Anna's project for which she won this award is "Neurotoxic Microglia in Alzheimer's Disease: Who are they and how do they arise?"

Abhilash Lakshman, (*Research Associate, Shafer Lab*) received the prestigious *Young Scientist Medal, Indian National Science Academy*, which is the highest recognition of promise, creativity, and excellence in a young scientist, and is made annually to those distinguished for these attributes as evidenced by their research work carried out in India.

Labs SPOTLIGHT



Orié Shafer, *Shafer Lab, ASRC*

Dr. Orié Thomas Shaefer, III, of the Neuroscience Initiative's Shafer Lab, is a pioneering researcher studying the neurobiological basis of circadian timekeeping, the mechanism that times sleep and activity; and entrainment, the process by which circadian clocks are set to local time. His research employs genetic, physiological, imaging, and behavioral methods to understand how neural networks create a robust yet entrainable circadian rhythm, and he is particularly interested in how such networks operate when challenged by the unreliability of the modern light environment.

Originally from Lafayette, Indiana and raised in Monticello, Indiana, Orié fell in love with animals with simple brains during his undergraduate studies at Purdue University. After discovering circadian clocks in graduate school, he's been studying them ever since. "Having a simple brain that does something that human brains do is a wonderful way to learn how brains work in general," says Shafer, whose lab studies circadian rhythms by analyzing them in *Drosophila melanogaster* (the common fruit fly).

The lab has made important contributions to understanding how networks of neurons create a sense of time, including the discovery that there are no central principal clock neurons. Shafer says it was commonly thought that "the majority of clock neurons are just taking orders from one small group of neurons acting the principal clock, but it's much more complex than that." Other important contributions are the discovery of "specific neural connections in the clock network don't mediate, the ability to keep time, but rather support the resetting of the clock every day," and the recently published "first major detailed map of all the connections in the most important clock neurons in the fly brain." This research is important for its "implications for when and how much we sleep, particularly in the modern world where light cycles and social cues are so weird...I think that there is a direct path between the work we do in the fly and how to make people healthier."

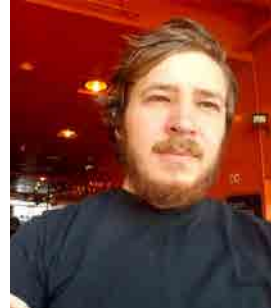
SPOTLIGHT ON...

Looking toward the future, the Shafer Lab anticipates more major contributions to circadian clock research. “We’re covering a lot of new ground when it comes to how to measure sleep rhythms in the fly and to investigate the clock control of sleep. That’s going to be a big part of what comes out of the lab over the next 5 years.” Shafer also looks forward to finding ways to make science more accessible to young people who might not know a career in science is an option for them. “I grew up in a very small town in Indiana, and didn’t know you could do [neuroscience research] for a living. This was obviously before the internet, but now...a kid who doesn’t have or know anybody who’s a scientist... can discover this as a vocation and get access to us, send us an email, watch a YouTube video, and if they’re really interested, they can pull our paper off PubMed. I think that we have a duty to let people know that this is an option for them, because it’s a great way of life.”

If you want to keep up with Orié and the Shafer Lab, you can follow him on [Twitter](#) and also check out the Shafer Lab website [here](#).

Charles "CJ" McDonald

Charles James “CJ” McDonald is a Graduate student in Biochemistry who recently defended his dissertation entitled "Characterization of Pathological Tau Mutants" on April 4, 2023. Tau is a protein which is implicated in devastating neurodegenerative diseases such as Frontal Temporal Dementia, Pick's disease, and Alzheimer's Disease. His thesis work investigated how cells respond to the expression of mutant form of tau. His results revealed enhanced tau secretion in cells expressing mutant tau, compared to cells expressing normal tau, thereby suggesting that the mutant forms of tau may contribute to disease propagation.



CJ is from Fort Collins, CO, and received his BS in biochemistry from Colorado State University. He joined the ASRC in January 2018 and has co-authored scientific papers featured in *Neurochemistry International* (2018), *Biochemical Society Transactions* (2018), and *Methods in Enzymology* (2018).

When not in the lab, CJ enjoys playing soccer with the ASRC and CDI recreational soccer players.

Initiative News & Updates

UPDATE: MSSM/CUNY Climate Change Health Impact Interdisciplinary Research Initiative

The Partnership between the City University of New York (CUNY) and the Center on Health and Environment Across the LifeSpan (HEALS) at the Icahn School of Medicine at Mount Sinai has announced the allocation of \$141,000 in pilot grant awards for the Climate Change Health Impact Interdisciplinary Research Initiative Program. The CUNY-HEALS Partnership's goal is to build collaboration between basic and environmental science and clinical research in this emerging and expanding area of study. Collaboratively, the two institutions funded these pilot grants to generate preliminary data and build research collaborations among investigators at the two participating institutions, by integrating complementary expertise and promoting interdisciplinary research in climate change and health.

The success of this call has helped introduce new faculty across the two institutions to the importance of integrating environmental health and exposomics into their research.

Congratulations to all winners:

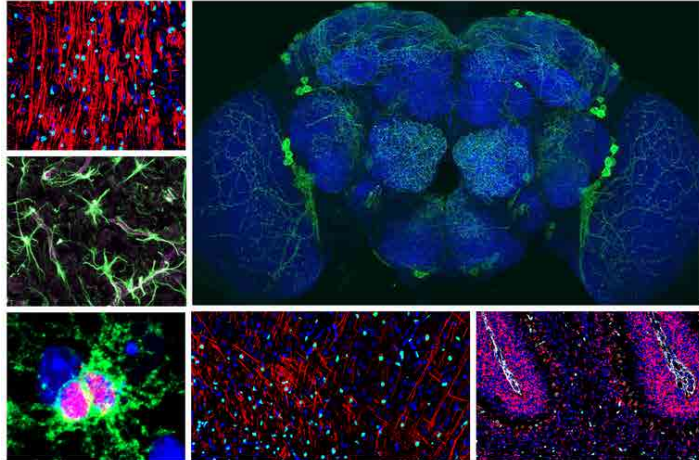
Pinar Ayata (ASRC) & Alison Lee (MSSM) *"The neuroimmune outcomes of prenatal exposures to air pollution and stress."* The pilot study will examine the molecular mechanisms underlying the relationship between prenatal air pollution & stress exposures and neurodevelopmental disorders, aiming to discover biomarkers and drug targets for early intervention against these disorders.

Nicholas Steiner (CCNY) & Nicholas DeFelice (MSSM) *"Environmental Disparities and the Risk of West Nile Virus in New York City."* The project aims to understand how meteorological and hydrological conditions in the urban environment promote West Nile virus amplification, with the goal of improving management decisions for mosquito abatement districts and public health interventions.

Brett Branco (Brooklyn College), Ilias Kavouras (SPH), Ismail Nabeel (MSSM) *"Use of the real-time and historical "Floodnet" data to determine the impact of flooding on the surge of acute respiratory illnesses in the specific densely populated flood-prone New York City communities in 1 year."* The team will use recent and historical databases of flooding to determine if the surge of acute respiratory illness in some densely populated communities in NYC is related to flooding events, and aim to build a predictive model to help design better interventions to protect vulnerable populations from this respiratory illness after flooding events.



Initiative News & Updates



Brain Awareness Week: March 13 - 19, 2023



The Neuroscience Initiative had another successful Brain Awareness Week with a mixture of both virtual and in-person events. Here's a recap!

Professor Pinar Ayata visited a local elementary school and taught children about the fascinating world of neuroscience to excite little minds.

Spectacular images of the brain and how it functions were posted on our social media platforms throughout the week. This provided great opportunities for everyone interested in learning more about the brain to engage with the neuroscience community.

The ASRC Illumination Space's STEM outreach and education manager Kendra Kruger facilitated a virtual lab tour, featuring Graduate student David Dansu, who provided an immersive and interactive virtual experience of the Neuroscience Initiative's labs to all participants.

Lastly, Biology students Anfal Abuhilal and Robert Veline hosted a trivia game focused on circadian rhythms at the ASRC's Science Café, a biweekly internal networking event. It was challenging even for the scientists at the ASRC, but it was also a fun-filled learning experience.

Initiative News & Updates



ILLUMINATIONSPACE

Work in Progress: Revamping of the Neuro Booth at the Illumination Space

Dr. Casaccia and Kendra Kruger are in the process of revamping the Neuroscience exhibit booth at the ASRC Illumination Space to attract young audiences and promote awareness on mental health in local communities. Thanks to a generous donation the group is currently in the process of acquiring EEG headsets to test their use as learning tools and accuracy as research tools. Over the summer, they will have the opportunity to beta-test the setup with student groups scheduled to visit the IlluminationSpace for field trips.

By the fall of 2023, they hope to have a complete prototype experience to be in display full-time at the Neuro Booth of the IlluminationSpace and to be included as a component of a mobile setup to be brought to local classrooms, in order to demonstrate how the electrical activity in the brain changes in response to external and internal stimuli. The overall goal is to build educational literacy around neuroscience, mindfulness, and mental health



SUMMER

FUN FACTS

Jackie enjoys spending her Summers on the beach and boardwalk of the Jersey Shore

Kevin takes a road trip every summer and his favorite so far is the trip to Acadia National Park

Orie has become quite the handball aficionado since moving to NYC

CJ & David enjoy pick-up games with the ASRC & CDI recreational soccer players group

Catherine's jump-starting her Summer with a Taylor Swift concert

Sabrina hikes several different Hudson River Valley Trails each Summer

Jordan will be attempting his 2nd degree black belt test this Summer

