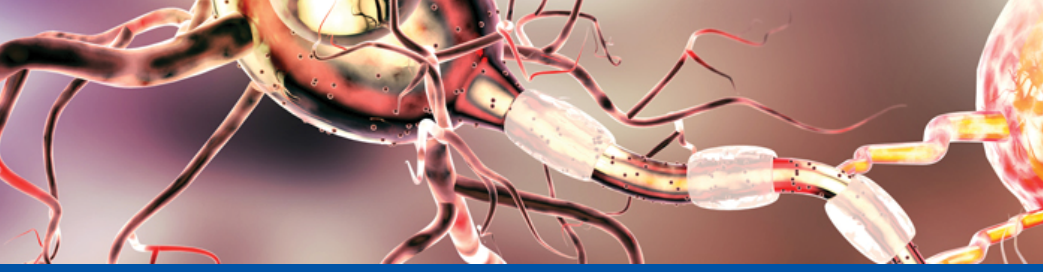


ADVANCED SCIENCE RESEARCH CENTER

NEUROSCIENCE INITIATIVE

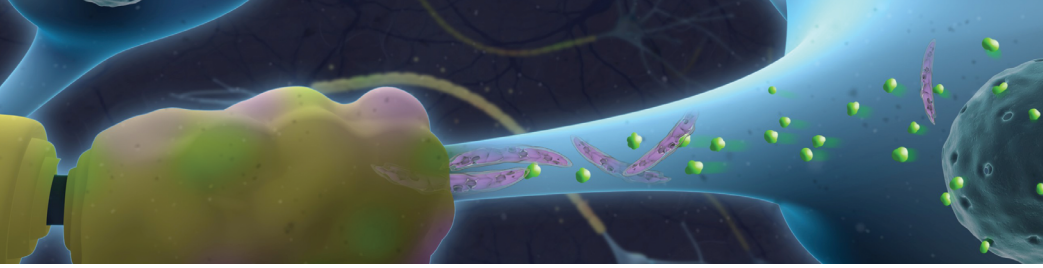
asrc.gc.cuny.edu/neuroscience

Mission

To conduct internationally recognized science in neurobiology with the goals of alleviating the societal burden of mental disorders, training students, and providing resources to CUNY and the local community in Harlem. The distinctive mission of the initiative is to study the impact of the environment on epigenetic regulation of gene expression and on the activity of neural networks in the brain, while creating innovative interdisciplinary solutions to diagnostic and therapeutic challenges.

Initiative Overview

The Neuroscience Initiative is engaged in interdisciplinary programs with other initiatives and other institutions to implement interdisciplinary approaches for the study of environmental influences on brain function and behavior and to develop transformative technologies and advanced platforms aimed at promoting mental health.



Laboratories

Casaccia Lab

Professor Patrizia Casaccia and her team use molecular and cellular techniques to understand how glial cells acquire their identity and respond to external stimuli. The team is interested in understanding how experiences (including social context and stress), dietary changes (metabolites and microbiota), and small changes in the brain microenvironment affect gene expression in the developing and adult brain. The methodologies used include molecular and robotic technologies for the study of human and rodent samples, dietary manipulations, study of metabolites, and behavioral assessment in models of neurological disorders. The team has a strong interest in defining mechanisms of neurodegeneration and brain tumors in order to develop novel therapeutics.

Ayata Lab

Professor Pinar Ayata and her team study the mechanistic relationship between the environment and neurodegeneration. They focus on the impact of the modern environment and lifestyle on the brain's main immune cells: microglia. They are particularly interested in understanding how environmental exposures can create long-lasting "memories" in microglia, and how these memories can transform protective microglia into harmful agents during aging. To study these exciting questions, they are developing molecular tools and mouse models that will allow analysis and manipulation of the brain's specific cell populations.

Mingote Lab

Professor Susana Mingote and her laboratory team research how the brain forms and updates memories of salient events to discriminate between harmful, rewarding, or neutral environments in both healthy and diseased conditions. Her group is particularly interested in how dopamine neuron projections to the lateral entorhinal cortex modulate memory of salient events, and how neuron-astrocyte interactions are involved in this memory process. The goal is to identify neuron and glial adaptations underlying aberrant salience processing, which has been associated with neuropsychiatric disorders such as schizophrenia.

Shafer Lab

Professor Orie Shafer and his research team focus on circadian timekeeping, the entrainment of circadian rhythms, and the neural mechanisms that support them. An understanding of the neural basis of circadian rhythm generation and the entrainment of circadian rhythms to environmental time cues is a central challenge and goal of chronobiology. Understanding how these processes operate within modern light and social environments is needed to address the widespread and negative consequences of the disruption of the circadian clock and sleep rhythms that accompany modern life.