

Rutgers Brain Health Institute (BHI)

2024

The Brain Health Institute (BHI) at Rutgers, The State University of New Jersey, was established in 2014 to become an internationally recognized center for basic, translational, and clinical research into the biological bases of human brain function and dysfunction.

RUTGERS BRAIN HEALTH INSTITUTE



300+
independent laboratories

33
departments

14
schools



One of the highest concentrations of neuroscience labs in the world



900+
trainees: mentoring the next generation of neuroscientists

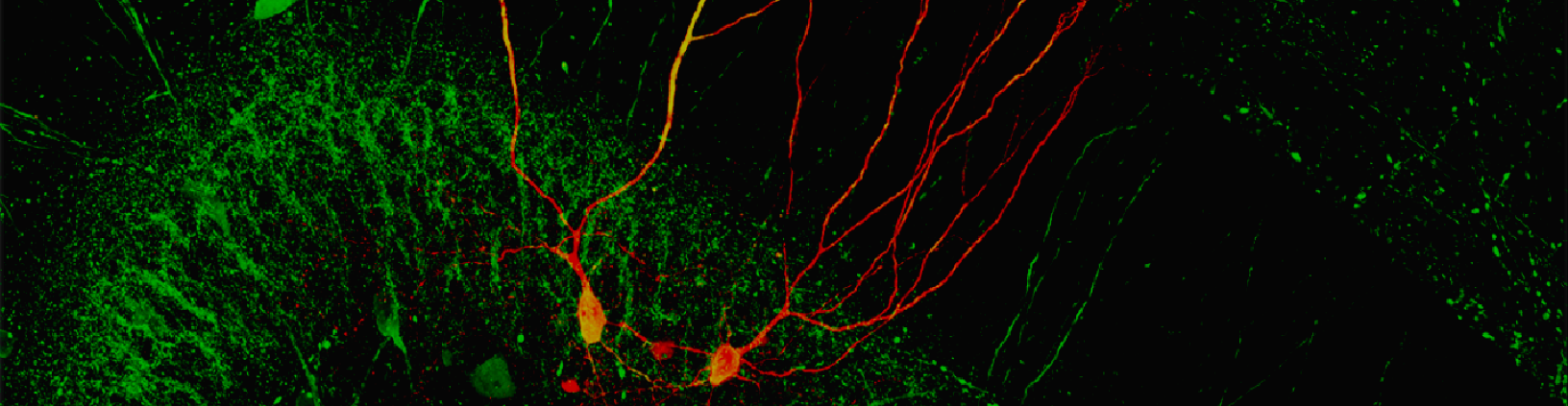


5 major centers conducting cutting-edge basic and translational brain research

10
YEARS

New tools are transforming neuroscience, and these afford an unprecedented opportunity to create novel treatments for central nervous system disorders. Neuroscience has been identified by Rutgers University as one of five signature areas for future focus and development.

The Brain Health Institute (BHI) is the home for the overall Rutgers neuroscience initiative and is a growing interdisciplinary institute consisting of more than 300 principal investigators with neuroscience laboratories across campuses of Rutgers University and Rutgers Health. Grant awards from the National Institutes of Health (NIH) to Rutgers neuroscientists have more than doubled since 2015. Through 2024, the 41 neuroscience faculty recruited by BHI have received more than \$80M in extramural grant awards.



MISSION

The mission of BHI is to advance brain health through pioneering research, training, and innovation at Rutgers by:

- Promoting multidisciplinary collaborative neuroscience and brain health research.
- Fostering innovative translational studies.
- Cultivating a supportive and inclusive training environment.
- Creating and linking multiple levels of research, from basic discovery through clinical trials.

VISION

Advancing brain health through cutting-edge research.

HISTORY

The BHI includes more than 300 faculty engaged in neuroscience and brain health-related research at Rutgers. The research programs span multiple disciplines with faculty across 33 departments and 14 schools of various campuses of Rutgers University and Rutgers Health (RH). BHI has staff offices in the RWJMS Research Building (School of Public Health Building), Busch campus, Piscataway, NJ.

DIRECTOR

In 2014, Dr. Gary Aston-Jones was recruited to Rutgers as the inaugural Director of the BHI and the Murray and Charlotte Strongwater Endowed Chair in Neuroscience and Brain Health. Dr. Aston- Jones is a Distinguished Professor of Psychiatry in the Robert Wood Johnson Medical School, reporting to both the Chancellor of Rutgers Health (RH) and the Chancellor of Rutgers-New Brunswick.



FOCUS AREAS

The BHI has identified four focus areas of outstanding strength within Rutgers that are primed for further development. BHI has created new Centers of Excellence to further grow basic, clinical, and translational research in each focus area.

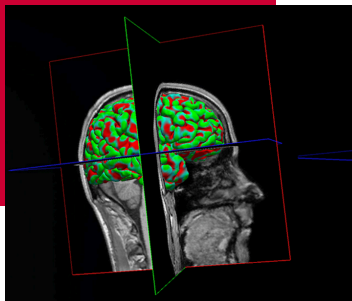
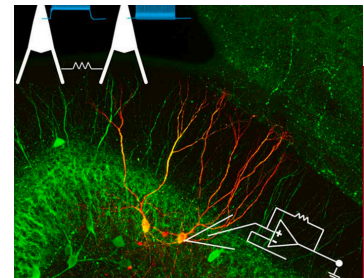


NEURODEVELOPMENT

Rutgers has multiple experts who study neurodevelopmental processes at the cellular, circuit, or behavioral levels. Researchers in the neurodevelopment focus area study neurodevelopmental disorders including autism, Tourette's, attention deficit-hyperactivity disorder, and schizophrenia. BHI developed the Rutgers University Center for Autism Research, Education and Services (RUCARES) to coordinate and grow research in autism-related disorders.

NEURODEGENERATION & INJURY

Exceptional strengths exist at Rutgers in neurodegeneration and injury, including numerous labs that study epilepsy, multiple sclerosis, Parkinson's disease, Alzheimer disease, and spinal and traumatic brain injury. BHI launched the Krieger-Klein Alzheimer Research Center to understand and develop new therapies for this devastating disease.

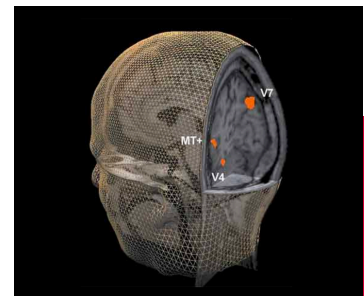


MOTIVATIONAL & AFFECTIVE NEUROSCIENCE

Rutgers has very strong basic and clinical research programs in addiction, substance use disorders, feeding disorders and obesity, and serious emotional disorders including depression and anxiety. To address such problems, BHI created the Rutgers Addiction Research Center (RARC).

COGNITIVE & SENSORY NEUROSCIENCE

World-renowned Rutgers scientists work on cellular and psychological aspects of cognition as well as on computational modeling of the neural processes underlying cognitive disorders. Sensory neuroscience is also an area of tremendous strength at Rutgers. Deficits in the cognitive and sensory systems are common in many neurological and neuropsychiatric disorders. The Computational Cognitive Neuropsychiatry Center (CCNP) and Center for Advanced Human Brain Imaging Research (CAHBIR) were developed by BHI to solve these complex problems in human behavior. BHI is now developing a new Rutgers Center for Pain Research, to extend such efforts to sensory processing and related disorders.



RUTGERS CENTER FOR AUTISM RESEARCH, EDUCATION, AND SERVICES (RUCARES)



Wayne Fisher, PhD

The BHI launched the RUCARES to coordinate and foster basic and clinical research focused on diagnosing and supporting individuals with autism spectrum disorder (ASD). The goal is to develop a world-class autism research center engaged in (i) cutting-edge basic research to identify mechanisms and biomarkers, (ii) developing novel interventional behavioral therapies, and (iii) creating new technologies and services to support both pediatric and adult ASD patient population. BHI recruited Dr. Wayne Fisher as the inaugural director of the center to coordinate, nurture, and grow autism-related research and clinical activities across Rutgers and New Jersey.

CSH-RUCARES

The CSH-RUCARES is a collaboration between RUCARES and Children's Specialized Hospital (CSH), focusing on diagnosing, treating, and supporting children and adults with ASD. The collaboration provides care and research for ASD individuals with significantly challenging behaviors throughout their lifespan. Dr. Fisher leads the NJ Autism Center of Excellence (NJACE) funded by the NJ Governor's Council for Medical Research and Treatment of Autism, which extends the RUCARES mission across the state.

SEVERE BEHAVIOR PROGRAM

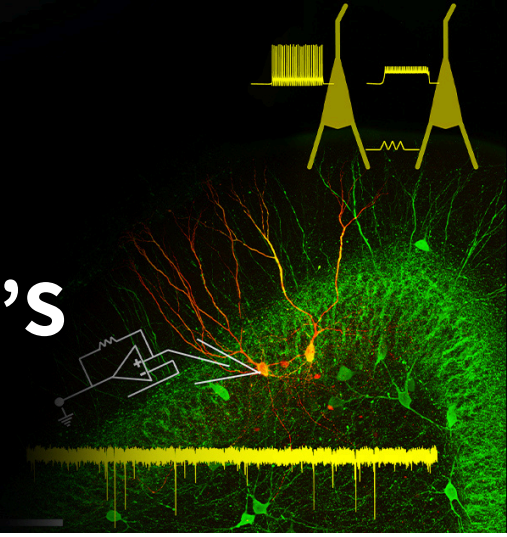
The Severe Behavior Program, a service line of CSH-RUCARES, is led by Director Brian Greer, PhD. This program provides intensive and highly specialized services to children and adolescents with ASD and other developmental disabilities who display dangerous behavior such as aggression, self-injury, property destruction and pica and pose a significant risk to self, others, or the environment and who cannot be safely managed or effectively treated in a less-intensive program.

The CSH-RUCARES Severe Behavior Program works to improve the quality of life for children with severe behavior disorders and their families and offers services including evaluation, outpatient, half-day, and full-treatment programs as well as parent training. The CSH-RUCARES treatment programs are located at 888 Easton Avenue in Somerset, NJ.



Brian Greer, PhD

HERBERT AND JACQUELINE KRIEGER KLEIN ALZHEIMER'S RESEARCH CENTER



Michal Schnaider Beeri, PhD

The BHI recruited Dr. Michal Schnaider Beeri as the inaugural director of the new Herbert and Jacqueline Krieger Klein Alzheimer Research Center (KKARC) in 2023. Hon. Herbert C. Klein, a Rutgers alumnus and former state and U.S. congressman, donated \$7.25M to BHI to help develop the center, establish two Endowed Chairs in Alzheimer's disease (AD) and neurodegeneration research held by Dr. Michal Beeri (BHI/RWJMS) and Dr. Luciano D'Adamio (BHI/NJMS). These gifts also supported the recruitment of Dr. Hyung Jin Ahn (BHI/NJMS) and several additional faculty in the near future. The mission of KKARC is to find treatments and interventions to prevent, identify, delay and treat AD. The focus is on the earliest signs of cognitive decline, long before AD manifests fully. The research includes basic animal as well as clinical research, and is grounded in a patient-oriented approach, where every research project is driven by the desire to improve the lives of individuals and their families facing the challenges of cognitive decline.

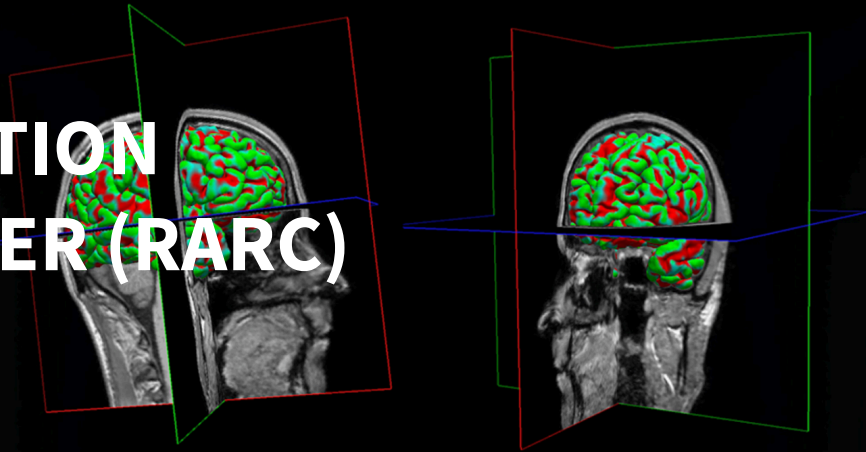
RESEARCH COMMUNITY

The goal is to cultivate a dynamic Alzheimer's disease and related dementias (ADRD) research community, providing a supportive framework for collaboration and advancement among Rutgers scientists. Through pilot grants, ongoing translational work in progress meetings integrating basic and clinical scientists, and annual prizes for young investigators, we aim to foster an environment where ideas thrive and lead to novel discoveries to prevent, treat and cure ADRD.

THREE-PILLAR STRATEGY

- **Epidemiology:** The center will assess the epidemiology, or the distribution and determinants of ADRD, in various populations and examine the early biomarkers of ADRD, using neuroimaging, blood analysis, and cognitive assessments, to better understand Alzheimer's pathology and the best interventions to target the progression of Alzheimer's symptoms.
- **Clinical Trials:** The center will develop clinical trials for novel medications and lifestyle interventions and evaluate the safety and efficacy of these interventions in diverse participant populations.
- **Translational Research:** The goal is to grow basic science research in ADRD using various preclinical model systems and optimize translation of mechanistic insights gained from the preclinical research into innovative therapies and interventions, accelerating their progression into human clinical trials.

RUTGERS ADDICTION RESEARCH CENTER (RARC)



Danielle Dick, PhD

The BHI recruited Dr. Danielle Dick in 2022 as the inaugural director of the RARC. The RARC, the country's largest comprehensive addiction research center, is a multidisciplinary home for addiction-related activities across Rutgers, bringing together researchers, clinicians, and community members dedicated to tackling addiction. Its research spans basic science, prevention and intervention, treatment and recovery, and public policy, encompassing substance use disorders, gambling, social media, and gaming, eating disorders, and more.

MISSION

The RARC brings together faculty, students, and staff from across Rutgers to create a collaborative community that strives to reduce the burden of addiction and improve lives by:

- **Advancing Scientific Discovery** through multi-disciplinary research
- **Translating Basic Research** into tailored and effective prevention, intervention, treatment, and policy
- **Training and Diversifying** the next generation of researchers
- **Engaging the Community** and bringing research to the public in empowering ways that raise awareness and decrease stigma

RESEARCH

With over 150 faculty, and more than \$170 million in funding from NIH, SAMHSA, the state of New Jersey, and private foundations, RARC researchers are working across the translational spectrum to help individuals, families, and communities struggling with addiction.

TRAINING

Through the coursework, training programs and research opportunities for students, postdoctoral associates and faculty, as well as continuing education programs for clinicians and other professionals, RARC is leading the way in training and diversifying the next generation of addiction researchers, clinicians, and practitioners.

CLINICAL SERVICES

Through a variety of programs and collaborations across the state, Rutgers provides many options for treatment and recovery support. The RARC also helps researchers connect with clinical programs to create bench to bedside collaborations.



CAHBIR

CENTER FOR ADVANCED HUMAN
BRAIN IMAGING RESEARCH

RUTGERS

Brain Health Institute



David Zald, PhD

The Center for Advanced Human Brain Imaging Research (CAHBIR) the BHI is dedicated to achieving high-quality brain research using state-of-the-art human neuroimaging techniques. CAHBIR's mission is to apply the latest brain scanning and neuromodulation methods so that researchers can push the boundaries of exploration about how the human brain functions in health and disease. Dr. David Zald was recruited by BHI in 2020 as the inaugural director of CAHBIR and Henry Rutgers Professor of Psychiatry.

INITIATIVES AND GOALS

- Build an internationally recognized community of neuroimaging researchers studying brain structure and function.
- Develop studies exploring a wide range of human brain disorders ranging from addiction psychiatry to Alzheimer's disease to better understand mechanistic processes that contribute to illness.
- Use neuroimaging to develop diagnostic tools and biomarkers capable of improving prognosis, clinical decision-making and treatment outcomes.
- Integrate neuromodulation of the human brain with measures of brain activity to determine the causal effects of noninvasive brain stimulation on mood, cognition and behavior.

RESEARCH & FACILITIES

Research at the center aims to expand the integration of human brain neuroimaging with the clinical research being conducted by other centers at Rutgers to better understand the neural signatures related to neurological and psychiatric disorders. Specific ongoing projects focus on aging and dementia, Parkinson's disease, substance use disorders, depression and schizophrenia. An additional focus is the integration of machine learning/AI techniques to improve the ability to predict clinical characteristics based on multi-modal neuroimaging data. CAHBIR has a state-of-the-art 3 Tesla Prisma MRI. In 2024, CAHBIR added new EEG and transcranial magnetic stimulation (TMS) core facilities that can be used for both investigational and interventional human brain research studies.

RUTGERS-PRINCETON CENTER FOR COMPUTATIONAL COGNITIVE NEURO-PSYCHIATRY (CCNP)



Anna Konova, PhD

The BHI and Princeton partnered to establish the CCNP in 2015 as one of a first-of-its-kind centers dedicated to computational psychiatry. The partnership leverages the unique strengths of each institution in neuroscience, clinical science, computational modeling, and data science, creating a collaborative effort with the potential to achieve greater outcomes for our understanding of mental health and well-being. Dr. Anna Konova from Rutgers and Dr. Yael Niv from Princeton are the Co-Directors of the center.

ADVANCES IN THEORETICAL, COGNITIVE, AND COMPUTATIONAL NEURO-PSYCHIATRY:

Connecting neuropsychiatric conditions to their underlying biological mechanism presents a significant challenge due to the brain's complexity and the difficulty of linking brain structure and functioning to mental experiences. The mission of the CCNP is to bridge the gap between basic neuroscience research and clinical psychiatry by developing explanatory and predictive models of cognitive and emotional processes in a variety of neuropsychiatric conditions. The aim is to foster collaboration between researchers, clinicians, and data scientists to push the boundaries of how mental health conditions are diagnosed, treated, and prevented.

- **Bring together experts from diverse fields**—basic scientists, computational modelers, and clinical neuroscientists—to collaborate on understanding and treating mental health challenges.
- Use techniques like cognitive modeling and machine learning that integrate behavioral, cognitive, and brain data to provide a **quantitative and precise** understanding of human brain function.
- Develop **objective predictors of mental processes** like perception, memory, decision-making, and executive control.
- Develop **personalized approaches** to improve the diagnosis, prognosis, and treatment of anxiety, depression, psychotic, and addiction disorders.
- Foster the development of the **next generation of scientists and clinicians** by providing an environment that encourages innovation, collaboration, and a deep commitment to mental health advocacy.

The CCNP has a **human behavior testing core facility** on the Rutgers Busch Campus in Piscataway. The core facility allows for researcher-friendly and rapid collection of data from human participants across the psychiatric spectrum using cutting-edge cognitive neuroscience-based methods. Faculty from CAHBIR and CCNP were recently awarded a five-year, \$16 Million Silvio O. Conte Center for Translational Mental Health Research P50 grant from the National Institute of Mental Health.



BUILDING A STRONGER, COLLABORATIVE RUTGERS NEUROSCIENCE COMMUNITY

The BHI serves as the pan-Rutgers organization to support neuroscience research activities. BHI supports the Rutgers neuroscience community by creating key core facilities, developing new research centers that leverage strengths to foster collaborative groups focused on common research themes, recruiting faculty to fill institutional gaps in expertise, and by facilitating communication among Rutgers neuroscientists. At the BHI, we:

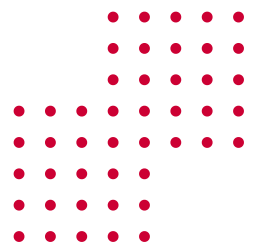
- Create centers of research excellence that focus efforts of collaborating scientists to tackle important problems in brain health. BHI has created five centers to date, and others are in development.
- Partner with Rutgers Schools and Departments to recruit highly qualified faculty to complement and strengthen brain research in our four focus areas. To date, BHI has recruited more than 40 new tenured or tenure-track faculty to Rutgers.
- Support PhD and postdoctoral trainee programs to provide travel to scientific meetings, trainee recruitment, and educational opportunities.
- Host Postdoc Recruitment Events for PhD or MD/PhD students and current post-docs looking for postdoctoral training in basic, translational, or clinical research in neuroscience and connect them with Rutgers faculty.
- Provide Pilot grant funding for novel projects that have principal investigators from different Rutgers campuses and schools to foster interdisciplinary collaborations and help investigators convert pilot grant projects to larger projects funded by extramural awards.
- Formed six working groups across the four focus areas as well as for junior faculty and trainees in order to engage and empower Rutgers neuroscience faculty and trainees to develop new initiatives to grow neuroscience and brain health research.
- Organize focus area workshops that bring together neuroscientists across Rutgers to share their work and seek collaborations.
- Hold an Annual Symposium that brings together faculty, post-docs, students, and staff from neuroscience labs at Rutgers and neighboring institutions.
- Host a Plenary Seminar series that brings prominent neuroscientists from other institutions to speak at various Rutgers campuses.
- Maintain a comprehensive website that is kept current with information and resources including a searchable faculty expertise directory, funding opportunities, upcoming neuroscience events, etc., and announce events and achievements on social media, and via a monthly newsletter.



SUPPORT US

Donor support plays an essential role in enabling BHI scientists make new biomedical and health related discoveries. Our scientists rely on external funding support from the government, state, corporations, and private philanthropic investors who understand the value and importance of basic, clinical, and translational neuroscience research.

With your support, we can help facilitate neuroscience research at Rutgers that will lead to novel therapies and cures for neurological and neuropsychiatric disorders. Your support also helps us train the next generation of highly skilled neuroscientists and physicians. You can visit our [website](#) to learn more about how you can support BHI and its centers. To discuss ways that you can help support the Rutgers Brain Health Institute, please contact BHI at 732.235.6074 or bhi@bhi.rutgers.edu. You can also contact Hailey Lemasters, Associate Director of Development, Corporate Foundation Relations at Rutgers, at 908.645.3471 or hailey.lemasters@rutgersfoundation.org



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