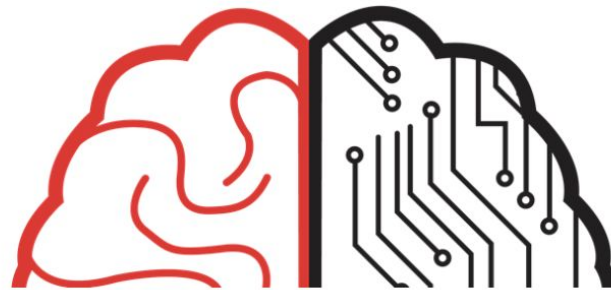
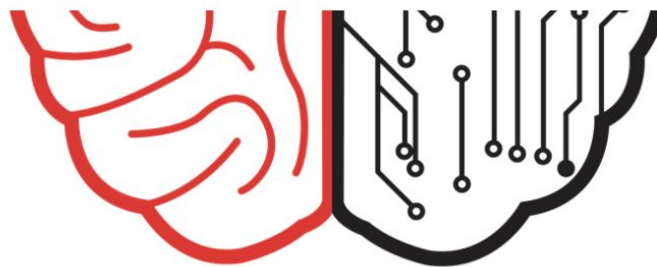


BUILDING ON DISTINCTION IN BRAIN SCIENCE



ACHIEVING THE VISION



Strategic plan for the Robert J. & Nancy D.
Carney Institute for Brain Science, 2019 - 2029

Brown University's Carney Institute is positioned to lead scientific discovery and innovation in brain science. By 2029, we aim to secure Carney's position among the top three brain science institutes worldwide with a global reputation as the epicenter for understanding human brain function in health and disease. As a top research institution, Carney will impact and influence the field through open dissemination of discoveries and tools, outstanding education and training, and expert opinion for policymakers, journalists and the public.

Brain and nervous system disease and injury cause profound suffering, and although complex, these are tractable problems given concerted effort, the best scientific minds, and an environment that fosters creativity and collaboration. The current research funding system is critical to support mature projects and ideas but it does little to promote the kind of creativity and innovation necessary for consistent breakthroughs. We have devised a strategic plan that focuses on overcoming the barriers and burdens that block academic scientists from pursuing truly innovative, meaningful work with real-world impact. Our plan puts us on a path to be one of the few institutions in the world to put together this winning combination of excellence, collaboration, and high-risk, high-reward science.

Three elements are critical for future research success: ***outstanding scientists, cross-disciplinary collaborations, and a structure that fosters and rewards risk-taking and innovation***. The best funded brain science institutes meet the first two of these three requirements, but few successfully achieve the third. Within the decade, the Carney Institute can distinguish itself by creating a structure that prioritizes high-impact discovery.

In addition to individual faculty and laboratories, we will invest in cross-disciplinary teams collaborating to solve unanswered questions about how the human brain functions in health and why it fails in disease. We will achieve economies of scale through shared equipment, staff scientists, and administrative support in centers of excellence. This foundational infrastructure will promote collaborations, reduce administrative burden on individual faculty, and catalyze novel projects with potential for major impact. These investments will dovetail with faculty recruitment. We will draw in scientists with proven track records of outstanding research through collaboration, who will both benefit from and contribute to this community model of innovation.

This 10-year strategic plan expresses our commitment to invest in three crucial areas — People, Innovation, and Community — that will take us to our ultimate goal. The plan is aligned with Brown's 10-year strategic plan, [*Building on Distinction: A New Plan for Brown*](#), and the University's [*Operational Plan for Building Brown's Excellence*](#), both of which outline focused investments in brain science. Quality of research and scholarship is central to reach our goals and this depends on engaging talented scientists from across academia and embracing their contributions in a fully inclusive community. Every aspect of our plan will incorporate this vision, fostering diversity and inclusion to ensure quality and impact of the research in Carney.

PEOPLE



Our goal is to enhance our research standing and strengthen our collaborative community by recruiting and retaining seven highly accomplished mid-career faculty into Carney Institute centers of excellence. We will recruit senior scientists who are not only individually successful, but have also demonstrated an ability to foster interaction, collaboration, and excellent science among the colleagues around them.

Carney faculty and students are highly creative. They have led the way in decoding human brain signals that control behavior, and they have applied this knowledge to build devices to help those with severe brain and spinal cord injuries. They have developed breakthrough technology such as trans-Tango, which can illuminate circuits in the brain that control specific behaviors, and they are creating new tools including bioluminescent molecules to locate and correct abnormal brain circuits that underlie epilepsy, Parkinson's disease, mood disorders, and addiction in humans. Furthermore, interest among Brown undergraduates in brain science is unprecedented. The Open Curriculum, the signature feature of the undergraduate experience at Brown, lays the foundation for students and faculty alike to explore the frontiers of current knowledge in order to address the most important problems, which rarely fit neatly into traditional academic disciplines.

Carney continues to foster this creative, innovative community by recruiting and retaining the leading researchers and scholars in brain science and nucleating centers of excellence. Within five years, we aim to recruit three mid-career faculty who are on steep upward trajectories and have the ability to foster collaborative science. Within 10 years, our goal is to recruit an additional four faculty with international reputations to reach critical mass in key areas. These recruits will join newly formed and planned research centers of excellence in neurobiology of cells and circuits, translational neuroscience, computation in brain and mind, and neurotechnology.

INNOVATION



Our goal is to advance novel research ideas and discoveries to address need and to improve society. We will continue and expand the Zimmerman Fund for Scientific Innovation Awards in Brain Science, and we will launch the Carney Accelerator and Fellows Program to leverage the complementary strengths of academia and industry. Our focus areas will include computational neuroscience, computational psychiatry and neurology, and neurotechnology.

We urgently need new therapeutics to treat or prevent disorders of the brain and nervous system. New therapeutics depend on discoveries and technologies emanating from academic research. Carney faculty members feel an urgent drive to see their discoveries have impacts in areas of global need. Carney will pursue a two-pronged approach to ensure that we are

pursuing the most innovative and relevant science: investing in creative discovery science and creating a framework for moving discoveries toward clinical, commercial, and societal application.

The Carney Institute's Zimmerman Fund for Scientific Innovation Awards in Brain Science has demonstrated that Carney faculty are brimming with innovative research ideas and that strategic investment in the most promising ideas can take them from inception to long-term, established projects that attract additional support. Based on that initial success, this program will continue with an eye towards funding the most innovative early discovery.

In addition to these investments in early stage discovery, we will establish faculty-focused infrastructure to advance ideas toward therapies and devices. Through the Carney Accelerator Program, we will encourage innovation by building an ecosystem of entrepreneurial brain scientists. We will provide incentive and support for real-world application of knowledge in order to bridge the short term, profit driven model of industry with the academic model that encourages long-term investigation and discovery. We will recruit Carney Fellows for two- to five-year term appointments to pursue high-risk, high-gain projects with strong potential for tangible impact and conversion to biotech startups, licensing deals, or co-development with corporate partners. Within five years, we aim to grow the Carney Accelerator Program into a center of excellence to ensure maximum impact of research across all areas of the Institute. The Carney Accelerator will benefit from and contribute to the growing innovation ecosystem in Rhode Island: our academic, government and private sector leaders are united in pursuit of economic development, and the academic research, particularly in brain science, is a promising engine for this effort.

COMMUNITY



Our goal is to make an already collaborative community even stronger through common research space with shared administrative and scientific support. We aim to open a new research building dedicated to brain science in five years that will create a unique research environment at Brown to catalyze innovation and creativity regardless of department affiliation.

Carney thrives in Brown's unique environment and our collaborative approach will be essential to tackling the greatest unmet needs in brain science in the next decade. Neuroscientists with expertise from genes to cognition, neuroengineers, data scientists, clinical researchers, and mathematicians collaborate at Brown to a degree that is unmatched at most if not all other institutions. Carney's power comes not simply from the breadth of individual expertise, but from interactions among those individuals. Our research space in 164 Angell St. has lowered the energy barrier for faculty and students to collaborate across disciplines, stimulating novel and creative research. Carney has become a brainstorming hub, hosting workshops, hackathons, and data science challenges that enrich the intellectual environment for students and faculty. An

expanded scope of shared research space in a dedicated research building for a multidisciplinary group of Carney faculty members and their laboratories is the missing glue in brain science at Brown. Imagine the game-changing research that we could accomplish with infrastructure that capitalizes on our unique strengths.

Recruiting and retaining outstanding scientists is prerequisite to excellence in research, but it is not sufficient. A unique and distinguishing feature of the Carney Institute will be an organization where researchers can reach the peak of their output in an intellectually rich environment. In concert with physical space, we will develop a funding model at Carney that fosters risk-taking and supports research teams within centers of excellence that, in turn, stimulates new collaborations.

In addition to support for specific innovative projects, we will infuse stable funding into centers of excellence for shared equipment, technical expertise, and administrative support. By funding the infrastructure necessary to build research teams and communities, we will foster collaborations, and we will benefit from economies of scale. Only five or six institutes in the country provide an equivalent level of commitment. We aim to be unique among these rare organizations by building on our strength in fostering collaborations across disciplines and emphasizing the support of teams of faculty in centers of excellence over the individual.

Federal funding, while critical, tends to be conservative—a backward looking, trailing indicator of previous success, rather than a recognition of novel ideas with massive potential for future impact. Simultaneously, the administrative demands associated with preparation, submission and management of federal funding further hinders creativity. Our model of shared support will relieve the administrative burden on faculty, and shift the primary goal from amassing federal funding to making breakthrough discoveries. An increase in federal funding will result from our success, but impactful research for a better society will be our primary driver.

CONCLUSION

Building on Distinction in Brain Science: Achieving the Vision was developed to guide the Carney Institute to becoming one of the top three global institutes by 2029, and an epicenter for understanding human brain function in health and disease. If we are successful, faculty and other scientists in the Carney community will be more collaborative and more productive, and Carney will establish a strong public identity as a cutting-edge research, innovation, discovery, and learning institute.