

STONY BROOK UNIVERSITY DISCOVERY FUND FOR BASIC RESEARCH

Stony Brook University began only 56 years ago with a bold vision—to create a flagship university for the State University of New York system that would stand among the finest public universities in the nation. Since then, Stony Brook has established itself as one of America’s most dynamic public research universities and center of academic excellence.

As a young institution on a mission to achieve greatness, Stony Brook encouraged untethered pursuit of scientific discovery among its faculty. This philosophy attracted scholars like chemist Paul Lauterbur, who had a flash of insight in September 1971 that information from nuclear magnetic resonance signals could be recovered in image form. Enabled by 88 grants from the National Institutes of Health (NIH) over the next twenty years, his work led to the 2003 Nobel Prize for the development of magnetic resonance imaging.

C.N. Yang, 1957 Nobel Laureate in Physics, arrived at Stony Brook in 1966. His recruitment told the world that our nascent campus was serious about supporting scientific discovery. Dr. Yang’s pure intellectual curiosity about the origins of the universe shaped our Physics Department, which today is ranked 13th by phd.org based on National Research Council data, and which has a nuclear physics program ranked 4th in the U.S. The spirit of these two Nobel Laureates and their pursuit of fundamental scientific inquiry continue to inspire faculty and students alike and inform our mission.

Like our AAU peers, Stony Brook has been significantly impacted by the decline in federal and state funding for basic research, which is being further restricted by federal budget sequestration and the continuing national debate over allocation of federal funds. With this decline in federal and state funding unlikely to reverse itself, Stony Brook will not be able to achieve its goal of becoming a leading center for innovative fundamental scientific inquiry without making basic science research a priority for private philanthropic support.

In response, on December 12, 2013 the Stony Brook Foundation Board of Trustees established the Stony Brook University Discovery Fund (the Discovery Fund) with a lead gift of \$500,000. The aspirant funding goal for the Discovery Fund is \$100 million over a period of 10 years. This fund aims to inspire scientific discovery further shaping the dynamic academic vitality and culture of our campus.

The Overall Structure of the Discovery Fund

The Stony Brook University Discovery Fund is managed by the Stony Brook Foundation 501(c)(3). The funding goal for the fund is \$100 million over a period of 10 years. All funds will be held in a quasi-endowment allowing the Stony Brook Foundation to invest the funds and return investment income to grow the fund balance over time.

All traditional forms of gift will be accepted by the Discovery Fund including outright cash gifts, long-term pledges, realized bequest intentions, and appreciated securities designated to grow the Fund. The investment, management, and expenditure of all funds shall be in accordance with the Stony Brook Foundation policies and procedures. All funds will be managed in accordance with the Stony Brook Foundation's investment and spending rules.

Allocations from the Discovery Fund can be applied to personnel (including undergraduate and graduate assistants), materials and supplies, equipment, major instrumentation, travel and conferences, fees, publications and subcontractors. Other budgetary lines will be considered through explanation of need from the Project Investigator in the proposal.

Range of Research

The Stony Brook University Discovery Fund seeks to expand original high quality research and catalyze curiosity-driven inquiry in emerging fields. It supports high-quality basic research into the assumptions and questions about the origins of life and our Universe, the unforeseen potential of technology in engineering and the physical and life sciences. The range of research areas includes, but will not be limited to, biology and human evolutionary science, geosciences, cognitive neuroscience, nanoscience, mathematics, marine and atmospheric sciences, nuclear and computational astrophysics, theoretical physics, and computer and information sciences.

University Concept of What Constitutes Knowledge – Driven Basic Research

Stony Brook University believes that discovery driven research is the catalyst for innovative scientific advances, therefore, we encourage risk and innovation. We view high quality discovery driven research initiatives as the heart of any committed research university. We also recognize that this type of science, though unpredictable, enhances all aspects of campus culture creating an environment where the relentless pursuit of knowledge informs the classroom and the laboratory.

Investigators differentiate between hypothesis driven and discovery driven research. Hypothesis driven research operates on the premise that investigators can theorize about future results from a well-understood platform of past results. Results often have a high degree of statistical significance because the predictions are based on established knowledge. However, as the questions we face outgrow this traditional model, scientists turn to the discovery driven paradigm.

Discovery driven research calls for an investigator to envision what is unknown, uncertain and not obvious, often using huge data sets as a starting point. Because bold, risky assumptions about the unknown generally turn out to be inconclusive, these research models inevitably experience deviations from their original planned targets. Discovery driven research frequently requires fundamental redirection, a sometimes blind commitment, as new data are incorporated into the

evolving plan. This process may not result in immediate social or capital gain, but its long-term impact can be catalytic.

Early career faculty are particularly encouraged to take risks and challenge the status quo. The Stony Brook Discovery Fund will enable opportunistic funding for innovative thinking that will drive emerging research at the very early stages of a researcher's career. **Discovery-driven planning recognizes that planning for a new venture involves envisioning the unknown.**

Forms of Support the Discovery Fund Will Focus On

Given the current funding landscape, with support for basic research on the decline from both traditional governmental and non-governmental sources, the Discovery Fund will focus on seeding and strengthening high-quality scientific ideas to increase their chance of success in this ultra-competitive funding environment. The Discovery Fund will provide grants for ideas that are ambitious, creative, risky and possibly transformative but at their early stage generally unfundable via traditional sources such as NIH and NSF.

The Discovery Fund will accept two types of proposals: “Starters” and “Discoverers”

Starters are small grants between \$10,000 and \$25,000 to collect focused pieces of data needed for a pilot proposal. The goal at this stage is to develop pilot-data and/or conduct preliminary discovery driven research that shows a high potential for attracting and maintaining support from external funding agencies. These funds can serve as an incentive for investigators to explore new areas of research that are likely to attract outside support.

Starters are one time, non-renewable grants to allow proof of evidence data to be collected to support a successful pilot application for support in the next round of competition.

Discoverers are larger grants between \$25,000 and \$100,000 to drive pilot data and research forward. The ultimate goal is to develop the research to a point whereby other funders will support the effort with external grants. The Discovery Fund will support those engaging in productive and innovative scholarship in areas where there are few traditional sources of support. Discoverer grants are renewable for up to 2 years for a maximum of \$200,000.

All beneficiaries of funding from the Stony Brook University Discovery Fund will be required to submit a six month progress report and present their findings, including posters, and a talk during an annual campus symposium every September/October. All awardees will file an end of year report to be considered for renewal. A researcher may only receive funding at the Discoverer level once. No restrictions will be given for Starter level funding to support good science and big ideas. Recipients will file a final progress report to the Discovery Fund Advisory Committee within 30 days after the end of the project support. An official record of all research findings will be assembled in the University Library for future researchers, unless research is restricted.

Special consideration will be given to interdisciplinary proposals.

Applicants

Applicants must be Stony Brook University faculty holding an academic rank of assistant professor or higher and only one application will be considered from each Principal Investigator per funding round.

Proposals should be succinct, limited to a one page proposal, describing the idea and outlining the science to be undertaken, answering the following questions:

- 1) What is your big idea?
- 2) What is the gap in scientific knowledge or issue that you are trying to address?
- 3) How is your research going to fill the gap/ move our knowledge base forward?
- 4) What is your experimental or novel approach to addressing this question?
- 5) Why can't your project be funded through traditional means?

As support for the Discovery Fund increases, the scope of projects and size of awards will expand.

The Governance Structure Including How Funds Will Be Allocated

The Stony Brook University Discovery Fund for Basic Research will be administered by the Office of the President. The University President will appoint the Discovery Fund Advisory Committee members, including the Provost and the Senior Vice President for Health Sciences and Dean of the School of Medicine, with the Vice President for Research serving as Chair. The Committee will review all applications and recommend awards from the Stony Brook Discovery Fund to the President. We believe that it is vitally important that the executive leadership of the University be directly involved in the implementation of this new initiative in order to ensure its success, to limit bias and to encourage competent management and accountability.

The Stony Brook University Discovery Fund Advisory Committee will be comprised of no more than 13 appointees. Members will represent a wide range of academic areas. Members will have distinguished themselves in their respective research fields of interest. Of the 13 Advisory Committee members up to 4 will be non-Stony Brook faculty.

Once constituted, the Discovery Fund Advisory Committee will develop guiding principles for the Committee's work. They will work with University administrators to develop a marketing plan to generate interest among potential applicants.

Will There Be An Internal Peer Review Process?

Grants below \$25,000 will be assessed by internal peer review only as a subset of the Discovery Fund Advisory Board.

Grants of \$25,000 and above being considered for renewal for a second year will be assessed by the internal peer review committee and also undergo external peer review by scholars with expertise in the field of the proposed project. All renewal grants will be assessed by external peer review.

The Balance Between Single Investigator Research and Larger Scale Cross Disciplinary Programs

Single investigators will be accepted to apply for Discovery Fund support. However, larger scale cross disciplinary pursuits will be encouraged for review with a designated Principal Investigator.

The Anticipated Balance Between Endowment and Short Term Expendable Funds

The Discovery Fund will be a quasi – endowment fund. Principal and income from the fund, with the exception of the 1% management fee, may be expended in support of basic research at Stony Brook University. Our goal is to award, on average, \$1 to 2 million in grants annually through this Fund.

In the event that Stony Brook University is fortunate enough to secure an eight or nine-figure commitment to grow the Discover Fund, the quasi-endowment may be converted into a traditional endowment at any time. Our goal is have an immediate impact on our campus. We believe that potential funders will be inspired to participate after seeing the dynamic cultural enhancement on campus as a result of the Discovery Fund and the research projects it funds.

The Extent of the Focus on Young Investigators; Will We Also Include Senior Investigators Making Radical Changes In Their Research Directions?

While the Discovery Fund Advisory Committee will make the final determination about the fund's granting focus, it is expected that support will be directed primarily toward early and mid – career faculty who may have limited resources. However, promising tenured and tenure track will not be denied access to the application process. We also anticipate that some proposal will successfully combine early and late stage faculty together to present compelling proposals for funding.

Mainstream Grand Challenges versus idiosyncratic, less fashionable research pursuits?

Both mainstream grand challenges and idiosyncratic, less fashionable research pursuits are essential to scientific progress. We are committed to the best ideas; therefore, both realms will be considered by the internal and external reviewers.