

A NEW ERA FOR SCIENTIFIC INQUIRY AT CUNY



CUNY
ADVANCED
SCIENCE
RESEARCH
CENTER

The CUNY
Advanced Science
Research Center
brings the
nation's largest
urban public
university to a
landmark moment
in its decade-long,
multibillion-dollar
expansion of
innovative science
research and
education.

VISIONARY SCIENCE WITH REAL-WORLD IMPACT

The new Advanced Science Research Center (ASRC) is a University-wide venture that elevates CUNY's legacy of scientific research and education through initiatives in five distinctive, but increasingly interconnected disciplines: **Nanoscience, Photonics, Structural Biology, Neuroscience and Environmental Sciences.**

The center is the nucleus of an integrated research network comprising top researchers from across the University. Together they are taking on challenges ranging from Alzheimer's disease to the future of the global water supply. Twenty new scientists are being recruited, including a director for each of the five flagship initiatives. They are the center's core faculty and each has a teaching appointment at one of the University's senior colleges. They are joined by current faculty who can use the center's facilities and opportunities for collaborative research to advance the scope and scale of their work.

Led by Dr. Gillian Small, vice chancellor for research and the ASRC's executive director, more than 50 scientists from throughout the University helped plan the center, a process that produced a building whose design is as inventive as the research to be pursued within it. What they have conceived is the DNA of a uniquely collaborative research culture. With its flowing floor plans and open central stairway, the building promotes intellectual cross-pollination and partnerships between labs—a **literal vertical integration of big ideas.** Researchers from all the initiatives work side by side in the ASRC's core facilities, sharing equipment that is among the most advanced available.

As a strategic part of New York State's multi-year commitment to science, innovation and economic development, the ASRC is strategically located on the south campus of City College of New York, a home of Gov. Andrew Cuomo's Start-Up New York business program. The center is adjacent to a new, state-of-the-art science facility at City College, the Center for Discovery and Innovation, as well as the New York Structural Biology Center. As the anchor to this research campus, the ASRC plays a key role in advancing CUNY's goal of becoming the kind of **entrepreneurial university that public institutions must be to flourish in the modern world.** The new center bolsters the University's ability to compete for public and private research dollars. It nurtures commercialization of faculty research, providing opportunities to leverage multiple sources of funding to translate scientific discoveries into tangible economic returns.

Cognizant of CUNY's role in public education, the ASRC provides new opportunities for graduate students and post-doctoral fellows to work on high-end research. And it is helping to inspire interest among undergraduates and even high school students at a time when too few young



'Building on the University's rich legacy of world-class science and Gov. Andrew Cuomo's commitment to economic development and investment in New York, the CUNY Advanced Science Research Center brings to New York City a new research enterprise, focusing on some of global science's most dynamic disciplines and important challenges and positioning the University at the vanguard of 21st-century exploration.'

— **Chancellor
James B. Milliken**



The Nanofabrication Facility operates one of the most advanced cleanrooms on the East Coast.

Americans are pursuing careers in STEM fields—science, technology, engineering and mathematics.

The ASRC is an innovative research center that opens its doors to the public: school groups and the general public will visit a ground floor Science Discovery and Education Center. The Advanced Science Research Center marks a landmark moment for science at CUNY and for the New York region and beyond.

A Science Building that Breaks Down Walls

The striking 200,000-square-foot ASRC building is a blueprint for how to create **innovative, collaborative science that is unprecedented in scope and concept**. A new wave of talented scientists joins top researchers from CUNY campuses across the city to create a University-wide science enterprise in which divergent disciplines converge, ideas flow freely and collaborations form organically. Each of the five initiatives occupies a floor of the center, but is linked with the others by open floor plans and a central stairway that encourage informal exchanges of ideas. The center draws from an outstanding legacy of academic excellence at CUNY that has produced 13 Nobel Laureates over the years. The legacy continues today with students across the university winning prestigious National Science Foundation awards each year.

State-of-the Art Instrumentation and Core Facilities

Researchers in the five initiatives from throughout CUNY have access to **facilities and instruments that are among the most sophisticated of their kind**. A Nanofabrication Facility, which includes a 5,000-square-foot cleanroom, welcomes students, faculty, scientists, government, and industrial members. The NanoFab is a collaborative research space with a team that mentors junior researchers and enables members to design, fabricate and characterize a wide range of micro and nano structures. The ASRC also features state-of-the-art nuclear magnetic resonance spectrometers, electron and fluorescent microscopes, a data analytic center which



'With state-of-the-art core facilities and a highly collaborative research culture, the ASRC is a center for visionary science with real-world impact.'

**— Gillian Small,
Vice Chancellor
for Research
and ASRC
Executive
Director**



Charles Vörösmarty (Environmental Sciences), Kevin Gardner (Structural Biology), and Rein Ulijn (Nanoscience) head three of the ASRC's flagship initiatives.

includes a wall of screens for visualization, and a rooftop observatory where advanced environmental-sensing equipment collects and analyzes earth and atmospheric data from satellites.

Opening Doors to Science Education and Literacy

The ASRC expands opportunities for students, elevating science education at all academic levels. In addition, **the center is dedicated to science in the public interest**, opening its doors to the community through its ground-floor Science Discovery and Education Center. The center is designed to promote science literacy to middle and high school students and the general public, featuring dazzling interactive media and hands-on displays showcasing the ASRC's five initiatives.

The adjacent seminar room and the center's auditorium provide opportunities for researchers to present informal science talks for the public and host scientific conferences.



The Discovery and Education Center brings ASRC science to school groups and the public.



FIVE STRATEGIC INITIATIVES

The ASRC focuses CUNY initiatives in five carefully selected, specialized disciplines that position the University at the vanguard of 21st Century global science. They are areas that are compelling in their promise, important to the nation's science strategy, and build on the strengths the University has developed over the past decade.

NANOSCIENCE. Science on the tiniest scale, using biological building blocks to create new materials and devices that advance fields ranging from biomedicine to energy production.

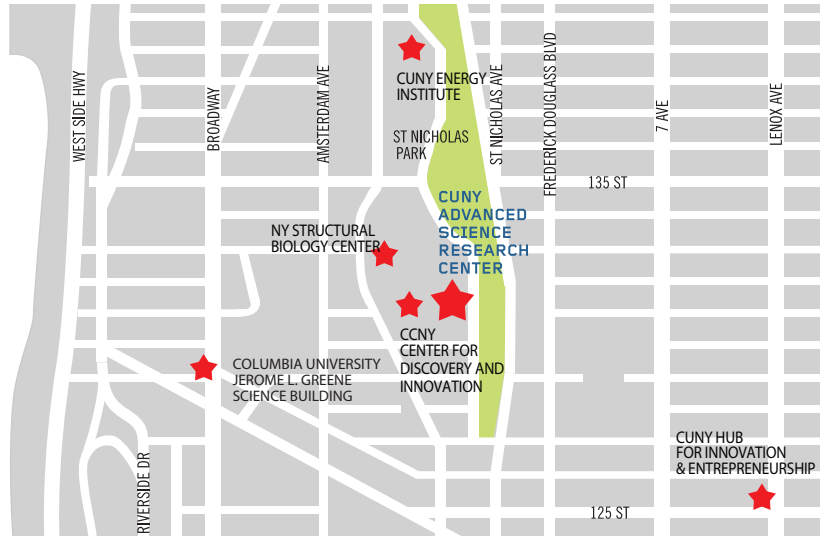
PHOTONICS. The technology of generating and using light and other forms of radiant energy with a broad range of applications—from super-fast optical computers to diagnostic instruments that could make surgical biopsies virtually obsolete.

STRUCTURAL BIOLOGY. Where biology, chemistry, physics and engineering come together at the frontier of applied life sciences research.

NEUROSCIENCE. Mapping the brain's biochemical circuitry to find treatments for some of the toughest biomedical challenges—from Alzheimer's to spinal cord injury.

ENVIRONMENTAL SCIENCES. Bringing together scientists, technology experts, engineers, and policymakers to solve global environmental challenges.

The ASRC anchors an emerging research corridor in Upper Manhattan



Why CUNY? Why Science?

The ASRC invigorates **CUNY's commitment to science in the public interest**, focusing on research that yields practical benefits to society—scientific as well as economic. It is helping the nation's largest urban public university recruit and retain an accomplished, prestigious faculty and talented graduate students. And it offers them unprecedented new resources and opportunities for research as well as education.

The ASRC enhances CUNY's ability to compete for research dollars and nurture the commercialization of faculty discoveries—generating revenue that helps **sustain and grow University programs and boosts the city and state economies**. ASRC scientists will find collaboration and support at the CUNY Hub for Innovation and Entrepreneurship just a few blocks away.

Because the center was constructed and equipped from CUNY's capital budget, the ASRC offers a unique opportunity for private philanthropy that directly supports scientific research that benefits society. With 80 percent of CUNY graduates remaining in New York, private donations will inspire the next generation of New Yorkers to pursue the sciences through educational programs created for them and for the broader community.



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