



FACULTY EXCELLENCE

THE STATE UNIVERSITY of New York

University at Albany

Faculty members are the foundation of excellence on SUNY's 64 campuses. They are Nobel and Pulitzer Prize winners and have won the prestigious Fields and Dirac Medals and the National Medal of Science, along with Grammy, Emmy and Tony awards.

Faculty members are the life blood of the university, conducting research on the frontiers of leading-edge fields—such as nanotechnology and biotechnology – that are improving lives and the world. Most important, they are educating the next generation.

SUNY will continue to seek world-class faculty in innovative disciplines. They must be provided with support for research and lab space, as SUNY cultivates competitive academic programs that will attract the most talented students from New York state, the country and the world.

Our research universities are making their mark; they are poised to move to the next level of discovery and innovation leadership. World-class faculty members are key to that success—and to a brighter future for New York.



SCHOLARS, LEADERS & TEACHERS

SUNY takes pride in its diversity of leading teachers and scholars who advance the frontiers of knowledge, discovery and innovation. SUNY faculty members include Nobel Prize winners, Dirac and Fields medalists, winners of MacArthur "Genius" grants and the National Medal of Science, and members of the National Academies of Science, Engineering and Medicine. SUNY also has many Pulitzer Prize, Truman Scholars, and Grammy, Emmy and Tony winning faculty. SUNY faculty members are highly regarded experts in their fields and inspiring teachers who change lives.

Award Winning SUNY Faculty:

- Dr. CN Yang
1957 Nobel Prize in Physics (Stony Brook)
- Dr. Herbert A. Hauptman
1985 Nobel Prize in Chemistry (UB)
- Dr. Robert F. Furchgott
1998 Nobel Prize in Medicine
(Downstate Medical Center)
- Dr. Paul C. Lauterbur
2003 Nobel Prize in Medicine (Stony Brook)
- Dr. John Milnor
Fields Medalist (Mathematics) (Stony Brook)
- Peter van Nieuwenhuizen
Dirac Medal (Physics) (Stony Brook)
- Lydia Davis
2003 MacArthur Fellow, (U Albany)
- Carl Dennis
2003 Pulitzer Prize (poetry), (UB)

EMPIRE INNOVATION PROGRAM DRIVES DISCOVERY

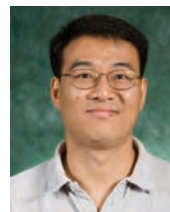
The Empire Innovation Program is bringing some of the country's most talented faculty researchers to SUNY campuses. Empire Innovation adds leading-edge intellectual talent to the research campuses, supporting increased innovation and more competitive professional and graduate education programs. Increasing important research at SUNY's university centers and doctoral campuses also boosts economic development in New York state.

These top-flight faculty researchers are driving 21st century innovation and discovery and raising SUNY's national—and international—profile. Continued investment in this forward-looking program will attract renowned researchers who will develop SUNY into a national research leader.



Esther Sans Takeuchi, professor in the University at Buffalo departments of Chemical and Biological Engineering and Electrical Engineering. Takeuchi is the renowned

inventor of the tiny batteries that have helped make implantable cardiac pacemakers, defibrillators and other medical devices a life-saving reality for millions of patients. She came to UB from Greatbatch, a leading manufacturer of high voltage, high energy ceramic capacitors, where she was chief scientist.



Howard Wang, associate professor at Binghamton University's Small Scale Systems Integration and Packaging Center of Excellence. Wang was recruited from the Michigan Techno-

logical University. He is a graduate of the University of Pennsylvania and holds a Career Award from the National Science Foundation and has been awarded more than \$4 million in NSF grants. Wang already has a company established at the Binghamton University Incubator – NanoMas, which specializes in nanotech research and development.



Alain Diebold, a globally recognized expert in metrology technology for nanoelectronics, has joined the College of Nanoscale Engineering Center on Nano-scale Metrology at

the University of Albany. He came to Albany from SEMATECH in Austin, Texas, an anchor partner at the NanoCollege's Albany NanoTech complex. His research area is in measurement technology for nanoelectronics. Diebold is author of 85 technical and 30 industry publications.



CLIMATE CHANGE EXPERTS CONTRIBUTE TO NOBEL-WINNING WORK

Three faculty members at Stony Brook University's School of Marine and Atmospheric Science were recognized for their contributions to the Intergovernmental Panel on Climate Change (IPCC), which was awarded the Nobel Peace Prize along with former Vice President Al Gore for efforts to control global warming.

Robert Cess, a Distinguished Professor, was the lead author on the first IPCC report, which focused on radiation and climate processes; Professor Minghua Zhang was a contributing author of the second IPCC report on climate models. Associate Professor Edmund Chang was a contributing author of the fourth report on observed climate variability, which was released in May 2007.

The report predicted that temperatures may increase by 3.2 to 7.2 degrees by 2100 and that sea levels will rise by seven to 23 inches. In addition to these three faculty members, Professor Prasad Varanasi contributed to the IPCC research on infrared spectroscopy measurements of the water vapor continuum and chlorofluorocarbons.

FACULTY MEMBER SPEARHEADS BIOTECH RESEARCH ENTERPRISE

Eva Brown Cramer has had a profound impact on SUNY Downstate Medical Center and its surrounding community. Through her efforts, the distinguished service professor of anatomy & cell biology and vice president for biotechnology and scientific affairs has helped to establish SUNY as a leader in New York City's emerging biotechnology industry.

Cramer raised more than \$40 million to build an Advanced Biotechnology Incubator and Park adjacent to Downstate's campus and to develop biotechnology manufacturing at the Brooklyn Army Terminal (BAT). When fully completed, the Biotechnology Incubator will provide 50,000 square feet of affordable wet laboratory space. The commercial synthetic chemistry facility provides an additional 13,000 square feet. BAT is planned to provide an additional 486,000 square feet.

Cramer expects Downstate's Biotechnology Initiative to create more than 1,000 new jobs in a growing high-technology industry. She also anticipates the growth of new positions in support services and biotechnology-related fields. Biotechnology is reported to have a 15x multiplier in the creation of supporting and secondary jobs.



UB'S PRASAD NAMED ONE OF SCIENTIFIC AMERICAN'S 50

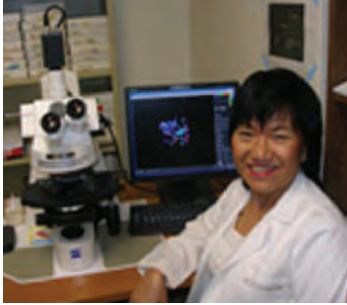
Paras N. Prasad, SUNY Distinguished Professor in the Department of Chemistry at the University at Buffalo, has been named one of the Scientific American 50, the presti-

gious magazine's annual list of "outstanding acts of leadership in science and technology from the past year."

Prasad was selected for his research using customized nanoparticles developed by him and his colleagues to achieve gene therapy, avoiding the need to rely on potentially toxic viruses as vectors.

Executive director of UB's multidisciplinary Institute for Lasers, Photonics and Biophotonics, he is a faculty member in the Department of Chemistry in UB's College of Arts and Sciences.

Selected by the magazine's board of editors and outside experts, the Scientific American 50 recognizes research, business and policy leaders.



\$1.4 MILLION NASA GRANT TO STONY BROOK

Stony Brook University Medical Center researcher **Kanokporn (Noy) Rithidech**, Associate Professor of Research Pathology, received a four-year \$1.4 million grant from the

National Aeronautics and Space Administration (NASA) to conduct research that is designed to gain a better understanding about the possible cancer risks encountered by astronauts when they are exposed to space radiation. Rithidech uses a novel method to map genetic changes in laboratory animals after exposure to protons and analyzes the dose-rate effect of protons and their link to cancer. The study runs through fall 2011.

THE DAWN OF THE 'NANO-BIO' PLASTIC AGE

Imagine nano-viruses that can find and combat cancer: Molecular-sized sensors that will detect chemicals and toxins in the air and tiny cooling chips that can replace compressors in cars, refrigerators and air conditioners.

Nanotechnology experts claim the scientific know-how to construct devices such as these will be known in as little as 10 years. But in order for them to have the widespread adoption needed to truly revolutionize lives, they have to be made affordably.



Anand Gadre, assistant professor of nanobioscience at the College of Nanoscale Science and Engineering of the University at Albany, is a highly regarded expert in polymeric bio-MEMS, or micro-electro-mechanical systems, made of plastic materials for biological applications. Gadre came to Albany

from Georgetown University, where he was Managing Scientist at the Georgetown Advanced Electronics Laboratory

Gadre's current research focuses on the fabrication of polymeric biofluidic-transdermal microsystems, or tiny systems that can give out immediate biological readings simply by placing a small patch on the top of the skin. Gadre and his colleagues already have developed and modified this technology to read a person's glucose and lactate levels using enzymatic detection techniques within seconds and without breaking skin. Future applications may include cancer detection.

"Besides low cost, there are a lot of advantages to polymeric bio-MEMS," Gadre said. "The prototype glucose monitoring

*The Centers of Excellence
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technology landscape for the
21st century.*

device can already measure glucose content non-invasively. But in the future, these systems may also be able to be used for nanoscale transdermal drug delivery, sensing biomolecules such as glucose and dispensing insulin as needed, particularly for diabetic applications. The result is similar to recreating the pancreas using systems that are many, many times smaller than a speck of dust."

RESEARCH CENTERS: ADVANCING SCIENTIFIC EXCELLENCE

The Centers of Excellence are catalysts in shaping New York state's science and technology landscape for the 21st century. New York has provided unprecedented support for high-tech development over the last several years to establish the centers, four of which are based on SUNY campuses. The SUNY-based Centers of Excellence in nanoelectronics, photonics, bioinformatics and information technology and environmental systems represent a comprehensive and integrated nanotechnology commercialization powerhouse. With government, business and industrial partners, SUNY faculty researchers advance knowledge, discovery and innovation that will translate into solutions to today's challenges in health care, manufacturing, safety and security and information technology.

The basic science, ideas and innovations that flow from research and development at the centers will eventually deliver new economic opportunities and business and community prosperity.



Steven Gill was recruited to UB from The Institute for Genomics Research in Rockville, Maryland.

- **New York State Center of Excellence in Bioinformatics and Life Sciences at the University at Buffalo**

Bioinformatics is the application of computing to biomedical research. At its most complex, this emerging field will help take the genetic information provided through the Human Genome Project to understand the basic mechanisms of disease. This will lead to future drug discoveries and personalized medicine in common and pervasive diseases such as cancer, cardiovascular, diabetes and multiple sclerosis.

This center is led by the University at Buffalo in partnership with two other world-class Buffalo-based research institutions: the Roswell Park Cancer Institute and the Hauptman-Woodward Medical Research Institute. The center also counts a variety of corporations as partners, including GE Healthcare, Biogen, Cognigen, General Electric Global Research, Invitrogen Corp., Silicon Graphics Inc., Stryker Corp. and 3M (Diagnostics and Pharmaceuticals).

The Center has attracted leading researchers like **Steven Gill**. Gill came to UB from The Institute for Genomics Research (TIGER).

www.bioinformatics.buffalo.edu

- **Center of Excellence in Nanoelectronics at the University at Albany**

Nanotechnology is the science of the small with large-scale potential. Located at the Albany NanoTech complex, this center is a fully-integrated technology development and deployment, product prototyping, manufacturing support and workforce training resource for the nanotechnology and nanoelectronics industry.

Its portfolio of products range from emerging microprocessor and memory computer chips with higher functionality and complexity, to the rapidly evolving areas of micro- and nanosystem based "systems-on-a-chip" (SOC) technologies, including biochips, optoelectronics and photonics devices, and nanosensors for the energy and the environment.

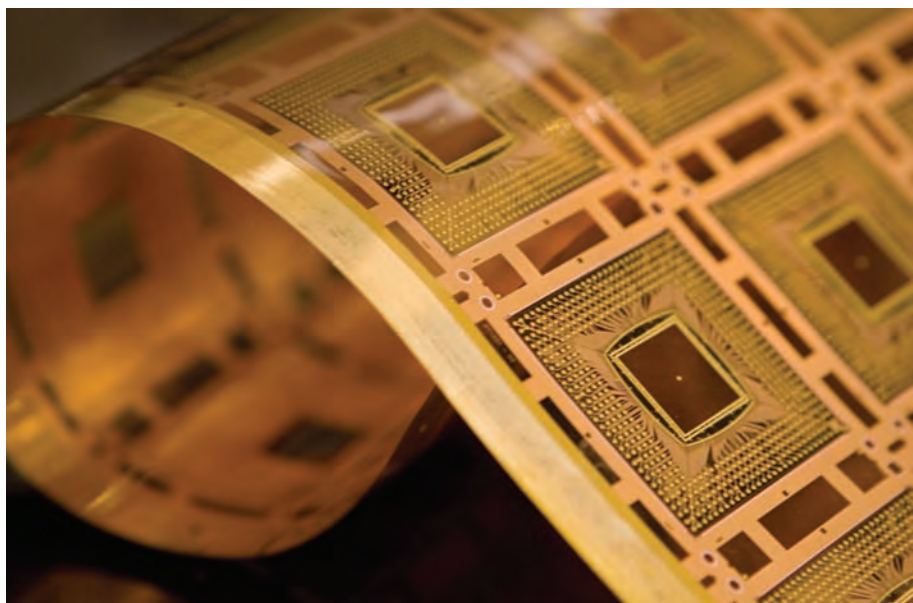
http://cnse.albany.edu/about_cnse.html

- **The Center of Excellence in Small Scale Systems Integration and Packaging at Binghamton University**

This center is dedicated to the creation and development of new electronic applications that will enhance the way people live and interact with their surroundings. Researchers address challenges in small scale systems design, development, prototyping, process development and manufacturing for the microelectronics industry. The center engages Binghamton's newly developed Center for Advanced Microelectronics Manufacturing, a national roll-to-roll manufacturing R&D center. Work conducted here will be central to the nascent field of flexible electronics.

Key application areas include: medical diagnostics and treatment; military and homeland security; flexible displays and electronics; computer and telecommunications; and a range of new or improved consumer products.

http://think.binghamton.edu/center_of_excellence.cgi



As a national center for roll-to-roll manufacturing, Binghamton is a leader in R&D.

TRAINING TO MEET CRITICAL WORKFORCE NEEDS

Economic growth expected throughout New York will not be limited to jobs in high tech. There will be important new opportunities in the service sector – from health care, to education, to gerontology – and SUNY is creating programs that will train professionals to meet those needs, especially in rural areas. Keeping New York's college graduates in the state ensures a renewable and vibrant workforce.

EXPANDING RURAL ACCESS TO DENTAL CARE

The League for Innovation in the Community College awarded its 2007 Innovation of the Year Award to Monroe Community College's Dental Hygiene program for its "Distance Dental Hygiene Project." In partnership with Jamestown and Jefferson community colleges, the project is designed to alleviate shortages of dental hygienists in rural counties.

Online lectures and course content are offered via the SUNY Learning Network. In each of the participating communities, clinical instruction is conducted by MCC faculty.

CHILDREN'S MENTAL HEALTH IN FOCUS

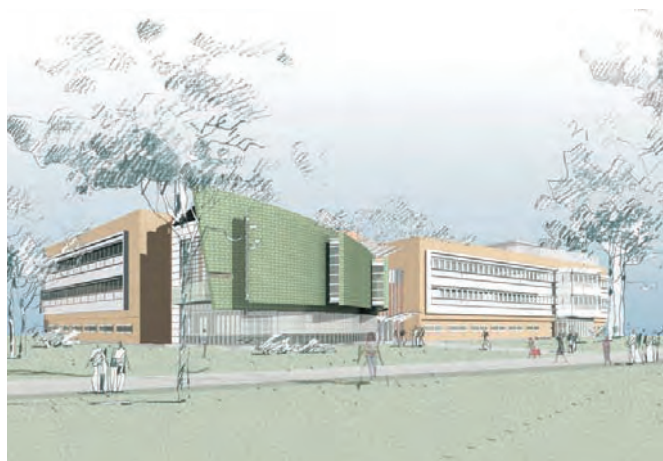
With only 6,300 practicing child psychiatrist in the country, the mental health needs of children often are not adequately addressed. In the Syracuse area, there are only a handful of child psychiatrists and none is taking new patients.

Thanks to a grant from the New York State Office of Mental Health, the Child Psychiatry Consultation Program at SUNY Upstate Medical University will provide support and assistance to parents, primary care physicians, pediatricians and school psychologists in identifying and treating children and adolescents with psychiatric problems.

SOLUTIONS FOR THE AGING

SUNY Brockport's Center for Excellence in Gerontologic Social Work is addressing the shortage in professionals who can meet the complex health care needs of older adults and their families. The center provides training for social work faculty, students and practicing professionals with a focus on effective and culturally competent client-centered interventions.

Established in 2005 with funding from the Finger Lakes Geriatric Education Center, the center provides faculty and student education through training, curricular enrichment, and outreach to social work providers and faculty in the surrounding region.



Center of Excellence at Stony Brook University



Center of Excellence at Stony Brook University

• Center of Excellence in Wireless and Information Technology at Stony Brook University

This public-private partnership brings together the research powerhouse of Stony Brook with three of the world's leading information technology companies, Computer Associates International, IBM, and Symbol Technologies, with support from the State of New York, to create information technology for the wireless world of the 21st century.

The Center of Excellence in Wireless and Information Technology is based on a vision of unprecedented dimension: a radically new information environment with pervasive computing via a universally accessible wireless network. From this center will emerge the next generation of connectivity that transcends the barriers between large, local, and personal information platforms – a world of communication without boundaries.

www.cewit.org/index.asp