THE UNIVERSITY AT ALBANY
WHERE IDEAS GROW
FOSTERING PARTNERSHIPS, ADVANCING DISCOVERY

THE WORLD WITHIN REACH
WHERE IDEAS GROW

The University at Albany is a value proposition for New York State. One measure of this is the more than $1.2 billion in funding for research and training awarded to UAlbany faculty over the last six years. We have prepared this report to highlight some of our most successful mature, mid-stage and emerging research initiatives.

UAlbany is a university that provides unprecedented opportunities for faculty to originate and grow ideas into research centers of excellence. The breadth of sponsored activities at UAlbany reflects a number of factors. We benefit from our strategic location in New York’s capital, proximity to global financial markets, and strength in organized research and commitment to our community of stakeholders. Our portfolio of activities and expertise captures not only organized research, but also national and international workforce development. UAlbany’s talented faculty are a major resource for expertise and national and international connections.

In this report, you will find many examples of how ideas initiated by our talented faculty have been nurtured and grown at the University at Albany. We hope these stories will show you the fertile ground for ideas created through public-private partnerships, community engagement, and stakeholder-informed research. Let us partner with you to help your ideas grow.

James A. Dias
Vice President for Research

George M. Philip
President
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FROM “SANDBOX” TO GLOBAL JUGGERNAUT: THE COLLEGE OF NANOSCALE SCIENCE AND ENGINEERING
IT IS NOT QUITE THE LAUNCH PAD YOU WOULD IMAGINE:
a windowless space in the basement of UAlbany’s Physics building that spanned all of 10 by 20 feet.

Starting from this confined “sandbox” as assistant professor, Alain Kaloyeros has partnered with leaders in New York State government and private industry to build an enterprise that is internationally recognized as the world’s leading college for nanotechnology education, innovation, and economic development.

Spanning 800,000 square feet – with a 50 percent further expansion underway – the College of Nanoscale Science and Engineering (CNSE), which Kaloyeros leads as senior vice president and chief executive officer, is a hub for pioneering education and cutting-edge research and development amid the on-site presence of powerhouse high-tech companies and consortia. This unparalleled collaboration feeds a global juggernaut that is deploying nanotechnology know-how to enable the most exciting – and important – innovations of the 21st century.

Buoyed by CNSE’s world-class Albany NanoTech Complex, the NanoCollege’s research portfolio is limitless. With intellectual infrastructure and technological capabilities that are the most advanced in academia, CNSE is a home for groundbreaking research on smaller and faster computer chips that are ubiquitous for today’s “must have” consumer electronics, including smart phones, laptops, and video games.

The true game-changers are novel research initiatives at CNSE that address society’s most difficult challenges: clean energy and the environment, where nanoscale advances are fueling solar photovoltaics for production, ultracapacitors for storage, and technologies for cleaner air and water; health care, including lab-on-a-chip diagnostics, targeted nanomedicines, and technologies to repair spinal and optical injuries; information technology, driving data delivery that is ultrafast, flexible, scalable, reliable and secure; and national defense, from soldier-in-the-field technologies, to surveillance and intelligence sensors that both equip and protect our troops.

Targeting short-, medium- and long-range technologies, CNSE’s research programs utilize state-of-the-art platforms and industry-leading processes supported by a groundbreaking educational paradigm. Tailored to build the highly skilled modern workforce, it includes the world’s first undergraduate and graduate curricula in nanoscale science and nanoscale engineering, partnerships with community colleges and high schools, and certificate-level worker training.

Importantly, the research at CNSE is driving unprecedented economic growth. CNSE has attracted over $7 billion in investment – including 7 dollars of private funding for every public dollar – with growth in on-site employment from 72 in 2001 to more than 2,600 today.

Investments at CNSE have generated more than 12,500 high-tech jobs statewide since 2001, pumping over $1 billion in salaries alone annually into New York’s economy. CNSE has partnerships throughout Upstate New York, in the Utica-Rome, Syracuse and Rochester areas which leverage CNSE’s capabilities with the research and industrial strengths in those regions to foster innovation and job creation.

Kaloyeros is fond of saying there is no end zone for the NanoCollege and New York’s nanotechnology initiative. But two things are certain. Enabled by the creative “New York Works” plan of Governor Andrew Cuomo, and steadfast support of Speaker Sheldon Silver and the state Assembly, there are plenty of touchdowns still to come.

And the “sandbox,” clearly, will only get bigger.
A Half Century of Discoveries

For 50 years, atmospheric scientists at the University at Albany have been leaders in weather and climate research. Today, their work is advancing understanding of phenomena ranging from hurricanes to climate variability.

The mysteries of hurricane formation are the focus of research by Department of Earth and Atmospheric Sciences professors Chris Thorncroft, Ryan Torn, John Molinari and Lance Bosart and students. Their work may yield clues to help scientists provide more advance warning of hurricanes.

Daniel Keyser, with Bosart and students, is conducting research that may help improve predictions of rainfall amounts and high wind events. Braddock Linsley and Mathias Vuille are studying the climate of the past, while Thorncroft is also exploring the potential for making climate predictions at 10-to-30-year timescales.

The level of activity of this work, together with research under way at the Atmospheric Sciences Research Center, is exemplified by the $3.8 million of sponsored expenditures.

Researching Populations to Aid the Vulnerable

UAlbany’s Center for Social and Demographic Analysis (CSDA) is an intellectual home to 48 population researchers from such diverse disciplines as sociology, anthropology, criminology, economics, geography and planning, history, public health, and social work.

Formed in 1981 by sociologist Richard Alba, CSDA in its early years produced significant reports on interstate and international migration and the implications of population trends for New York. It rose in 1997 to a National Institute of Child Health & Human Development-funded population-related research center.

Under current director Timothy Gage, CSDA supports a substantial, funded grant portfolio with $1.26 million in expenditures this year. Its seed grant program assists its research associates, and in the last few years has helped three UAlbany junior investigators receive their first federally funded research awards.

One of these was a prestigious five-year, NIH-funded K-award to sociologist Kate Strully for her investigation into how racial-ethnic segregation and patterns of racial-ethnic inequality shape sexual networks and the spread of sexually transmitted disease. Taking an interdisciplinary approach in applying testable social science hypotheses to problems of infectious disease epidemiology, Strully is exploring how segregation and inequality at school and neighborhood levels influence formation of sexual partnerships.

Maintaining the Benchmark for Criminal Justice Data

Michael J. Hindelang, the UAlbany School of Criminal Justice (SCJ) researcher who in 1972 founded what is now the Hindelang Criminal Justice Research Center, conceived of a compendium that would provide in a single location the most comprehensive collection of high-quality, relevant, and timely criminal justice-related data available.

Created in 1973, the Sourcebook of Criminal Justice Statistics is now regarded as one of the nation’s leading sources of crime and criminal justice-related information. Since its inception, it has been supported by the U.S. Department of Justice’s Bureau of Justice Statistics and in 2010 had $1.38 million in expenditures.

The Sourcebook’s website receives an average of 12,000 visits monthly from users in more than 110 countries; they range from high school students to criminal justice professionals. Compiled by a team of professional staff at the Hindelang Center and SCJ graduate students, the site is updated with pertinent data whenever national or international events dictate.
Charting Teen Crime Across the Generations

Extending over 23 years and three generations, and involving three School of Criminal Justice professors, the Rochester Youth Development Study (RYDS) has investigated key causes and consequences of the most serious problematic behaviors among early teenagers, including crime, delinquency, drug use, child abuse, and risky sexual behavior.

The study has charted the emergence of these behaviors, explained why some continue into later years, and identified their consequences.

RYDS followed 1,000 seventh and eighth-grade Rochester public school students at high risk for involvement in serious crime and delinquency. Over the years, more than 25,000 interviews were conducted. The researchers have presented at two White House conferences.

Covering the Spectrum of Public Health Research

What began with a 1984 meeting between New York State health commissioner David Axelrod and UAlbany President Vincent O’Leary has flourished into a world-class enterprise, leading the field of public health. UAlbany’s School of Public Health (SPH), in partnership with the New York State Department of Health (NYDOH), prepares students from all over the world for leadership roles in the public health field and fosters creative interdisciplinary research that designs solutions to current and emerging public health challenges.

With $22 million in new grants over the last two years, SPH is conducting high-level research on some of the most profound health issues facing the world today: cancer, cardiovascular disease and stroke, bioterrorism, HIV/AIDS, emerging diseases, the lack of affordable and accessible healthcare, environmental hazards, obesity, maternal mortality in developing countries, genetics, and endangered food and water supplies.

Distinguished Professor Edward Hannan of SPH’s Department of Public Health Policy, Management and Behavior (HPMB) received $925,499 from the National Heart, Lung, and Blood Institute to study long-term survival rates for two of the most common and expensive surgical procedures for coronary heart disease: coronary artery bypass grafting and stenting.

A five-year $4,688,285 award from the Centers for Disease Control and Prevention charged SPH’s Center for Public Health Preparedness with establishing one of America’s 14 Preparedness and Emergency Response Learning Centers. Another five-year grant of $3.25 million from the U.S. Department of Health and Human Services launched the Empire State Public Health Training Center, aimed at strengthening New York’s public health infrastructure.

Department of Health Policy, Management & Behavior assistant professors Janine Jurkowski and Kirsten Davison received a $1.1 million federal grant to develop and implement a childhood obesity prevention program through collaborations with parents of children enrolled in Head Start and community-based organizations.

SPH researchers are conducting the Upstate New York Infant Development Screening Program, which involves about 6,500 New York families who gave birth in 2008-09. The researchers, supported by a $3.4 million National Institutes of Health grant, identify factors increasing the risk of developmental delays and refer children at risk to NYDOH’s Intervention Program.
A COLLABORATIVE FOCUS ON THE SCIENCE OF DISEASE
SCIENTISTS ACROSS UALBANY’S COLLEGES AND RESEARCH CENTERS are investigating the frontiers of the life sciences to potentially benefit humankind.

Scientists in the University’s Life Sciences Research Initiative collaborate on analyses of basic biomolecular structure and function to solve problems of human health and disease. This includes the design and development of novel compounds with potential for diagnosis and therapy.

The scientists who share state-of-the-art resources in the University’s Life Sciences Research Building generated more than $6.8 million in research funding for 2010 and have a current grant portfolio of awards in excess of $30 million.

Exemplifying the kinds of advances being made is the research of Professor Hua Shi in the Department of Biological Sciences. Shi designs and creates novel RNA-based molecular devices with the potential to control biological processes, target disease-associated proteins for destruction, and provide a unique means to deliver therapeutics in the body. Such molecules represent the next generation of diagnostics and therapeutics. He holds or shares 10 U.S. and international patents or disclosures.

Professor Igor Lednev in the Department of Chemistry is advancing research that could lead to better understanding and earlier diagnoses of Alzheimer’s and Parkinson’s diseases. He has developed novel instrumentation to characterize the amyloid fibrils and toxic protein aggregates associated with these diseases, and has also developed an innovative approach for crime scene investigators to identify body fluid traces at crime scenes.

UAlbany chemistry Professor Alexander Shekhtman has developed an innovative technology to investigate the underlying molecular basis for diabetes. The technology enables the pioneering study of interactions between molecules inside the living cell using nuclear magnetic resonance spectroscopy.
Enhancing Security Through Linguistic Cues

Established in 2001, UAlbany’s Institute for Informatics, Logics and Security Studies (ILS) is a center of excellence for advanced information processing, with a major emphasis on human language research, especially in the context of human-computer interaction. Through collaborations with academia, government, and industry, ILS researchers are making contributions to such fields as medicine, law, intelligence analysis and national security.

ILS is partnering with Lockheed Martin Corporation (LMC) on several research projects, including Detecting Social Actions and Roles in Multiparty Dialogue (DSARMD) and Computational Socio-Linguistics. The former is funded by the federal Office of the Director of National Intelligence, Intelligence Advanced Research Projects Activity; the latter directly by LMC. ILS’s director, Professor Tomek Strzalkowski, is principal investigator on both projects and Sarah Taylor is the principal research engineer on the LMC side.

DSARMD investigates the language dynamics in small group interactions across various media and cultures, including online chat and face-to-face conversations in English, Urdu, or Mandarin. Using linguistic cues, DSARMD seeks novel approaches to computational modeling and the understanding of social and cultural phenomena in human discourse. Given a multi-party task-oriented discourse, the program’s prototype system can automatically assess, with high accuracy, individuals’ roles and the overall social dynamics within the group — all valuable to the intelligence analyst.

The Computational Socio-Linguistics project aims to advance national security efforts and may also prove useful to marketers and advertisers, among others. Studying Internet social media communication, Strzalkowski and Taylor have developed ways to facilitate cross-cultural communications between groups and communities with opposing value systems, successfully identifying matches and mismatches in concept-valuations between the groups as well as ways to mitigate them.

Advancing Digitally Streamlined Government

In 1993, the State of New York began a new kind of investment in the use of information technology to serve government. The investment created the Center for Technology in Government (CTG), which ever since has directly benefited New York State government and leveraged external funding for important research and application projects both national and global in scope. Today, under the leadership of Theresa Pardo, CTG is a world leader in digital government research that connects research to practice.

In 2009, the White House’s Open Government Directive required federal agencies to develop plans to engage citizens in new and innovative ways. With support from the National Science Foundation, CTG worked with federal agencies to respond to this challenge. In cooperation with the White House Office of Science and Technology Policy, the U.S. General Services Administration and other agencies, CTG developed a practitioner-focused planning tool for assessing the public value of open government initiatives and a framework for an open government research agenda going forward.
UAlbany’s Cancer Research Center attracts nationally recognized researchers by combining research expertise in genomics, bioinformatics, and biomedical sciences with cutting-edge technology to explore the genetic and environmental origins of the disease and to develop new therapies.

Since the Center opened in October 2005, two of the nation’s leading investigators into breast cancer have joined its ranks: Douglas Conklin, associate professor of biomedical sciences in the School of Public Health, and JoEllen Welsh, Empire Innovations Professor in environmental health sciences.

Conklin studies novel concepts in identifying new genes that contribute to the tumorigenicity of breast cancer cells. His investigation of the NR1D1 gene, a recently identified Achilles’ heel in breast cancer cells, may lead to therapies that target an aggressive form of the disease. His work is supported by $1.73 million in grants from the National Cancer Institute, the Susan G. Komen Foundation, and U.S. Army Medical Research Acquisition Activity. He also received a $500,000 “Idea Award” grant from the Department of Defense Breast Cancer Research Program.

JoEllen Welsh is internationally recognized as the preeminent researcher of Vitamin D and its role in breast cancer prevention and treatment. Her work was supported in 2009 by a two-year stimulus grant for $996,333 to study how dietary factors protect cells from environmental agents that can cause cancer, and she also received a $275,000 National Institutes of Health grant for her studies which link Vitamin D and breast cancer.

Vitamin D, which is present in the diet and also generated in response to environmental UV exposure, Vitamin D exerts effects on breast cancer cells by binding to a nuclear receptor. Welsh’s research aims to clarify the role of nuclear receptors in specific tissues and disease processes. She believes nuclear receptors represent avenues for more rational drug discovery and that clarification of their actions will enable better understanding of how environmental agents and dietary factors impact on chronic disease.

Conklin and Welsh’s laboratories are also fertile fields for talented student medical researchers. In 2010-11, doctoral students Jan Baumann (Conklin) and Don Mathews (Welsh) were awarded $240,000 Department of Defense Congressionally Directed Medical Research Fellowships to examine the effects on breast cancer cells of, respectively, nutritional limitations and various metabolites of Vitamin D.
A NEW PARADIGM FOR DEVELOPMENT AND DELIVERY OF INNOVATIVE MEDICINES, VACCINES AND DIAGNOSTIC
IN JUNE 2010, A POWERFUL NEW ALLIANCE OF TOP GENETIC SCIENTISTS AND BIOMEDICAL investigators, The RNA Institute, was created at UAlbany.

The Institute is dedicated to groundbreaking research into RNA and its implications for innovative medicines, drug therapies and technologies, and curing of disease.

Just five months later, the Institute received a tremendous boost: a $5.37 million grant from the National Institutes of Health/National Center for Research Resources toward financing the design, engineering and construction of a $7.4 million state-of-the-art research center, which will accommodate changes in RNA science and techniques for years to come.

In November 2010, the Institute also unveiled its new RNA Mass Spectrometry Center, dedicated to the development of MassSpec-based technologies for investigating the structure-function relationships of natural and synthetic RNA as tools for drug discovery. Its world-class instrumentation, placing it at the leading edge in the development of new enabling technologies, provides the opportunity for fruitful collaborations with RNA scientists worldwide.

Serving as a sustainable resource for the research and discovery of medical interventions and diagnostics aimed at treating a range of human and hard-to-treat diseases — from breast cancer to drug-resistant TB, HIV, and bacterial and viral infections, depression, and neurodegenerative and neuromuscular disorders such as ALS and neurofibromatosis — The RNA Institute comprises more than 35 principal investigators from corporate, government, and university research entities.

In conjunction with scientific discovery and research, it offers resources for small, medium and large biomedical businesses to spur the development of start-up companies, new R&D centers, and related business operations in New York State through public-private partnerships.

Collaboration with UAlbany’s School of Business is providing tools and strategies to successfully develop and commercialize intellectual property in the field.
Emerging Research Areas: Translational Sciences, Societal Challenges

Paul Agris, professor of Biological Sciences, arrived at UAlbany in 2009 from North Carolina State University to head The RNA Institute, a powerful alliance of top genetic scientists and biomedical investigators.

A professor in NC State’s Department of Molecular and Structural Biochemistry, Agris chaired the department from 1988 to 1993. Beyond his faculty position, he founded the RNA Society of North Carolina, which he chaired for 14 years, and also chaired the international Symposia on RNA Biology. He co-founded the drug technology company NEOS Discovery, Inc. (now TRANA Discovery) in 2000, and is the founder of another: SIRGA Advanced Biopharma, Inc.

Agris’s interest in the basic and applied aspects of RNA chemistry and structure has been supported continuously from 1974 through grants from the National Science Foundation, the National Institutes of Health, and a host of foundations and biotechnology firms. He has published more than 130 journal articles, six book chapters and three books. All of the intellectual property coming from Agris’s research to date has been licensed to a variety of pharmaceutical and diagnostic companies. He has been a consultant to many of these firms, and has three patents to his credit, with two additional patents pending.

The RNA Institute’s Mass Spectrometry Center (MassSpec), created in 2010, probes the structure-function relationships of natural and synthetic RNA as tools for drug discovery.

Daniele Fabris, professor in UAlbany’s departments of Chemistry and Biological Sciences, has assembled a talented team of research associates, graduate, and undergraduate students to design new approaches amid a unique collection of modern instruments and technologies.

The team’s work is supported by four state-of-the-art mass spectrometers. One is a Fourier transform ion cyclotron resonance (FTICR) model from Bruker Daltonics, with whom the Institute has a working agreement in developing new analytical approaches for the identification and characterization of nucleic acids. These will take full advantage of the unique characteristics and high performance of the FTICR. In turn, any new technologies developed by MassSpec on the FTICR will be available to Bruker’s R&D team for licensing and marketing.

Fabris has received $6,442,229 in federal funding since 2001, including a $1,768,690 renewal (through 2014) of his main NIH grant which supports his investigation of the structure and function of the HIV-1 5’-UTR region, a section of viral RNA which mediates many critical processes of the AIDS virus lifecycle.
Promoting Inquiry and Intervention for Better Community Health

The seven-year-old Center for the Elimination of Minority Health Disparities (CEMHD) brings together UAlbany researchers from across disciplines and community groups in the smaller cities and towns of New York to identify and work to eliminate community health disparities.

Backed by a $6.8 million National Institutes of Health grant, CEMHD’s programs include the “Women’s Health Project,” a five-year effort in Hudson, N.Y., that encourages adult African American women to seek regular reproductive healthcare services and cancer screenings.

The project, led by Associate Professor Annis Golden and Vincent O’Leary Professor Anita Pomerantz of the Department of Communication, has two primary interventions: community health education events, with screenings, and a transportation voucher program.

Another CEMHD project, led by Distinguished Professor Kajal Lahiri, Assistant Professor Pinka Chatterji and Ph.D. student Zulkarnain Pulungan of the Department of Economics, studies a 14-year time period across various-sized U.S. communities to see how race, ethnicity and socioeconomic status are related to health disparities among minority groups.

A third major project, led by CEMHD Director and Professor of Anthropology and Epidemiology Lawrence Schell, Mia Gallo of the Department of Anthropology, and Professor David Carpenter of the School of Public Health, is examining how the reproductive health of women of the St. Regis Mohawk Tribe on the St. Lawrence River has been adversely affected by toxicants.

Addressing Children’s Autism Without Delay

UAlbany’s Center for Autism and Related Disabilities, in collaboration with CapitalCare Developmental-Behavioral Pediatrics, is providing an essential first-of-its-kind service for parents of children newly diagnosed with autism. The parent education program’s curriculum was formed through a multidisciplinary collaboration among medical, psychological, and educational professionals.

According to the National Research Council, providing services at a young age is critical for children with autism spectrum disorders, which are pervasive and typically result in a demand for a wide array of supports. Making available to parents an education program that provides information on the steps to take following a diagnosis of autism reduces the likelihood they will need to wait long periods of time before learning about and accessing resources for their child.

The anticipated outcomes included improved educational and treatment planning for the child, reduced parental stress, and an overall improvement in family quality of life. This program, which plans to reach more than 80 parents a year for four-and-a-half years, is funded by a grant from New York State’s Office for People with Developmental Disabilities.
Preventing and Expanding the Public Health Workforce

The School of Public Health's Center for Public Health Continuing Education is one of the primary sources of continuing education for New York’s public health workforce. Among its popular programs are the monthly broadcast “Public Health Live” and the Field Epidemiology Training Project.

Since 1999, “Public Health Live” has provided continuing education opportunities free of charge and available live via webcast or online for later viewing. Funded primarily by the NYS Department of Health, recent topics include new finds in HIV/AIDS, diabetes prevention and health equity. Special broadcasts on immunization have received support from the U.S. Centers for Disease Control and Prevention. The audience for the program is drawn from all 50 states and 17 countries.

The Field Epidemiology Training Project provides training for front-line public health nurses and environmental health staffs — two professions experiencing shortages — to achieve basic field epidemiology competencies in dealing with outbreak investigations.

Honoring Professionals for New York’s Vital Tasks

Since 1976, the award-winning Professional Development Program (PDP) has served continuing professional education and extended learning for public service workers in government and the non-profit sector.

Since 2000, PDP training programs through the New York State Office of Children and Family Services have reached more than 2,800 individuals who protect the well-being of children, especially in daycare facilities. PDP’s work plays a vital role in the licensing, registration, and inspection of daycare facilities.

In 2010, PDP’s four-day Case Processing Review Training Program delivered nine dynamic sessions statewide to 132 Temporary Assistance and Food stamp supervisors who review and determine eligibility. The program has been recognized by state and New York City agencies for improving payment accuracy and error prevention.

Funding from the state’s NYS Council of Children and Families allowed PDP to create the first comprehensive resource for more than 800 healthcare consultants serving licensed and registered childcare programs across New York. Utilizing its extensive organizational knowledge of the state’s childcare regulatory system, PDP developed an online resource guide which received more than 2,000 hits in the three months after its launch in November 2010.
Training and Workforce Development: Addressing Needs Around the Globe

Enhancing Governance Worldwide

For more than two decades, the SUNY Center for International Development (SUNY/CID), part of UAlbany's Rockefeller College of Public Affairs and Policy, has enhanced knowledge and practice in governance and policymaking worldwide.

Since 2000, SUNY/CID's work with the Kenya National Assembly has focused on strengthening key deliberative, budgetary and oversight functions. SUNY/CID's efforts have assisted in establishing public hearings, live broadcasting of plenary sessions, strengthened committee structures, a Parliamentary Budget Office, and a five-year strategic Plan for 2008-2018. In addition, CID has helped train over 3,000 MPs, staff and civil society representatives.

Last year in Ghana, SUNY/CID developed a strategic plan for the institutional development of the Ghanaian parliament, with UAlbany faculty providing lectures and presentations. It has designed a comprehensive legislative-strengthening strategy and, since 2008, partnered with three Ugandan universities to train parliamentary interns, who now work on such issues as HIV/AIDS, corruption, peace-building and natural resource management.

Unraveling the Intricacies of ‘The Market’

The Institute for Financial Market Regulation (IFMR) is a partnership among UAlbany, Albany Law School, and regulatory and market professionals, which, through education and research, addresses the need to strengthen modern financial systems. IFMR’s innovative curriculum incorporates all critical aspects of market regulation, including technology, finance, law, and policy.

IFMR is studying, through a National Science Foundation-funded project to the College of Computing and Information and other units of the University, how theoretical and applied issues in computer science pervade financial market regulation. Aided by IFMR’s associations with financial regulators and industry, the project is developing cases that will be used nationally to motivate interest in computer science within that major and in other disciplines. The cases explore how computational thinking applies to financial markets and to critical economic and policy issues more broadly.

Among other research underway is a project focusing on the shared regulation of complex financial technology by public and private organizations. IFMR is studying how regulators, firms, industry associations, and other stakeholders engage each other in managing and regulating the extraordinary complexity of current financial instruments and market technology.
Sanjay Goel, associate professor of information technology management in UAlbany’s School of Business, explores unconventional areas to expand the boundaries of traditional disciplines and incorporate innovative concepts from other fields. An example is his work as director of research for the UAlbany-based New York State Center for Information Forensics and Assurance, where he includes abstracting models from biology to develop network security frameworks.

His funded research reflects his wide scope of interests and expertise: information and wireless security, computer forensics, and security risk analysis. The former research scientist at GE Global Research is lead investigator on a cyber-security initiative, supported by $2.25 million in software from Palantir Technologies of California that combines information from hacker forums with global network data to globally track cyber terrorism.

In 2010, Goel won a $378,375 grant from the James S. McDonnell Foundation to improve the efficiency of traffic lights, to save drivers time, fuel, and frustration while reducing carbon emissions. A month later, he was awarded $780,000 by the U.S. Department of Education and Russian Ministry of Education and Science to develop joint online courses in information security.

Melinda Larsen, assistant professor of biological sciences, is deciphering the molecular mechanisms of tissue formation and maintenance to develop advanced therapeutic strategies for damaged and diseased tissues.

Larsen was awarded a two-year, $600,000 stimulus grant from the National Institutes of Health Challenge program to examine salivary gland development. This research will provide insights into the root causes of gland disorders, including the inability to produce saliva. She is collaborating on the project with a team of scientists from GE’s Global Research Center in Niskayuna.

UAlbany research excellence is a driving force for innovative new businesses. In 2008, when Chequed.com entered the growing market for technology that predicts the suitability of job candidates for employers, it looked for a behavioral science expert to be its first chief science officer. UAlbany’s Kevin Williams was a natural choice.

Williams, professor of psychology and dean of graduate studies, has been active in the industrial/organizational psychology field for more than two decades. Working with his research team of UAlbany graduate students and faculty, he developed and validated a set of competency-based assessments for Chequed.com that are used for on-line applicant screening and reference checking.

The assessments provide real-time delivery of job candidate evaluations and highly actionable information for employers. The result, says the company, is rapid and accurate predictions of new-hire performance.
**Sponsored Program Expenditures at UAlbany**

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**Doctoral Degrees Awarded: 196**

Fiscal Year 2009-10

- Business 1%
- Rockefeller College of Public Affairs 9%
- DNSE 3%
- Public Health 13%
- Social Welfare 7%
- College of Computing & Information 6%
- Criminal Justice 5%
- Education 24%

**Federal Expenditures Sponsorship**

Fiscal Year 2009-10

- Agency for International Development 35%
- Department of Justice 3%
- Department of Education 3%
- Department of Energy 1%
- Small Business Administration 11%
- Department of Commerce 4%
- National Science Foundation 10%
- Department of Health and Human Services 26%

**Expenditures by Discipline**

Fiscal Year 2009-10

- Math/Computer Sciences 1%
- Other* 10%
- Life Sciences 2%
- Health Services & Policies 2%
- Education 1%
- Social Sciences 20%
- Environmental Sciences 1%
- Physical Sciences 63%

**Expenditures by Sponsor Type**

Fiscal Year 2009-10

- Private Non-Profit 2%
- New York State 34%
- Federal Flow Through 15%
- Federal 20% *
- Business Industry 23%
- Other 6% **

* Federal funds awarded through a nonfederal agency.
** Other category may include: Colleges/Universities, Health Organizations, Local Government, States other than NYS, Multiple Sponsor Accounts and/or Foreign Sponsors.

* includes School of Business, Humanities and Administrative units.
Data includes Research Foundation expenditures.
* includes federal sponsors whose percentage of total is less than 1 percent.