The past year positively impacted research at Rowan University in many ways, in part thanks to the New Jersey Medical and Health Sciences Education Restructuring Act, which awarded Rowan state comprehensive public research institution status. The Act also integrated with Rowan the Stratford, N.J.-based School of Osteopathic Medicine (SOM) in July 2013.

Research at Rowan had been growing already, however. We doubled our research dollars at the Glassboro campus from FY ’11 to FY ’13. This reflected the success that Rowan and the South Jersey Technology Park at Rowan University already had at expanding the culture of research on this campus. Now, with the SOM joining us, we are thrilled to be classified as a state comprehensive public research university. Our faculty and staff are ready for this new responsibility and excited by the opportunities the integration presents.

Recruiting Dr. Kenneth Blank as our first vice president for Health Sciences has been critical to making the most of our efforts in technology development and commercialization. Having led highly successful initiatives at Temple, Drexel and Northeastern universities, Ken already has been instrumental in preparing Rowan for new levels of growth. Under his leadership, we are positioned to develop products for the private sector marketplace that can benefit the citizens of New Jersey, the nation and the world.

I also am eager to work collaboratively with our world-class research colleagues at RowanSOM. They explore a wide range of specialties and have been particularly recognized for their work in neuroscience as well as at the New Jersey Institute for Successful Aging. This integration provides an exceptional opportunity for Rowan in Glassboro and Camden and RowanSOM to build on our complementary strengths.

Given the magnitude of the integration, we are at an ambitious juncture and now are ready to apply our research talents so that the new Rowan provides real economic benefits to the State. We are committed to acting as good stewards of the new funding and resources that come with research status and ensuring that the outcomes have a positive economic impact for the citizens of New Jersey.

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DR. SHREEKANTH MANDAYAM
Associate Provost for Research
Executive Director of the South Jersey Technology Park
Empowered by its designation as a state comprehensive public research institution, Rowan has launched an ambitious plan to:

- Increase research funding to $100 million in less than 10 years
- Increase student population to 25,000
- Expand the South Jersey Technology Park’s footprint by adding several buildings in the next five years to support the region’s economic development.

This is a natural progression. In recent years, the University doubled its research dollars. With its integration with the Stratford, N.J.-based School of Osteopathic Medicine, Rowan has grown to about $24 million in sponsored research annually.

Being on the ground floor of this expansion puts the University in position to be more flexible and creative in developing innovative systems that advance technological development and commercialization. As one of only two universities in the U.S. granting both allopathic (M.D.) and osteopathic (D.O.) medical degrees, Rowan is firmly focused on health sciences. The University will continue to grow this robust aspect of research.

It is also the school’s ambition to build Rowan’s capacity to perform research that:

- Generates business development in South Jersey through the creation of new companies
- Benefits the health of citizens of New Jersey and the nation
- Provides an enriching educational experience for students.

Since new developments are the products of a creative mind, we must therefore stimulate and encourage that type of mind in every way possible.

George Washington Carver

The Landmark New Jersey Medical and Health Sciences Education Restructuring Act that took effect on July 1, 2013, catapulted Rowan University into the limelight as the state’s newest comprehensive research university.
### DR. WARREN GOLDMAN

**Title:** Chairman and chief of the Department of Neurosurgery at Cooper University Hospital and director of the Cooper Neurological Institute  
**Funder:** Elekta  
**Amount:** $300,000

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### TOP 3 FEDERAL FUNDERS (FY '13)

<table>
<thead>
<tr>
<th>Funder</th>
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<tr>
<td>Health Resources and Services Administration</td>
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<td>National Institutes of Health</td>
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<td>U.S. Department of Education</td>
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A virtual environment may make all the difference for patients suffering from brain illnesses or injuries.

Dr. Warren Goldman has partnered with researchers at the South Jersey Technology Park (SJTP) at Rowan University to bring surgical visualization to a new level—using a Cave Automatic Virtual Environment (CAVE®).

Elekta (a medical technology firm based in Stockholm) awarded Goldman a $300,000 grant in support of the Joint Laboratory for Integrative Neuroimaging, which will use the CAVE®—a 100-cubic-foot, fully immersive, navigable and interactive virtual reality system.

“We now have the opportunity to develop 3-D, immersive environments that are navigable and interactive to assist surgeons with integrated visualization of multiple platforms, including CT, MRI and PET scans,” Goldman said. The fusion of these data sets inside a CAVE® virtual reality environment enhances a diagnosis.

This technology has particular relevance for neurosurgery, where the ability to “see” the whole brain from the outside is a tremendous advantage. “You can’t move the brain that much—can’t retract it or lean on it without causing significant damage,” said Goldman. “Accessing a brain tumor requires ‘corridors of accessibility’—a pathway or a trajectory, so we can make smaller incisions and avoid vital structures.”

The CAVE® virtual reality environment creates layers of overlapping information in a single view. Goldman added, “We can add information about brain waves from an EEG to complete an exquisite picture that enables us—as in epilepsy surgery—to pinpoint the origin of the physiological data.”

The technology is useful both as a diagnostic tool in pre-op and as a guide during surgery. Given its excellent applications for teaching, Goldman and his team presented composite imagery of a full body at an academic meeting in May 2012. Manufacturers of medical equipment such as Medtronic Inc., which donated a $500,000 portable unit to the SJTP, are among the multiple partners supporting this leading-edge research.
Cigarettes kill.

They are the number one cause of mortality and preventable morbidity in the U.S., and a researcher at Rowan is focusing on developing an online game that can help save lives by encouraging players to kick the habit.

Dr. Bethany Raiff is the co-principal investigator for several National Institutes of Health-funded studies focusing on technology-based treatments for smoking cessation.

One $613,316 grant for a three-year period enables her to collaborate with a team of experts using an iterative development process to create a fun and engaging social strategy videogame for Facebook called “Up from the Ashes.” Other primary investigators in the study include the designer of the game, who is a small business owner.

The web-based program monitors the user’s carbon monoxide levels, and the user can earn access to game features through abstinence from smoking. A social component means that users also will play as part of a group and can unlock additional game features if all members maintain abstinence, earning additional incentives. The game would provide widespread access to this empirically based, innovative, sustainable intervention at a relatively low cost—the game will be available to play for free—thereby offering potential substantial public health benefits.

Another of Raiff’s grants focuses on diabetes management using the same technological innovations to measure blood glucose in teens. “We would love to extend this model to other health issues as well,” she said.
Title: Assistant professor of Psychology
College of Science & Mathematics
Funder: National Institutes of Health
Amount: $613,316
In keeping with its mission to provide innovative technological opportunities to businesses and residents of the region, Rowan has established a Technology Development and Commercialization Office that will actively work with faculty to:

- identify and develop promising technologies
- develop research and funding sources that result in advanced-stage technologies with increased value and probability of commercialization
- diversify the research portfolio, resulting in increased revenues from grants and contracts
- significantly increase revenue from technology licensing.

The staff of the Technology Development and Commercialization Office works directly with researchers in the labs to help immediately identify marketable and patentable technologies. This helps streamline the process of identifying, protecting and fostering new discoveries that have commercial value.

Rowan places the highest priority on working closely with industry and government partners to innovate solutions to complex problems. Companies choose to work with Rowan to:

- take advantage of the intellectual capital of the University in the form of its faculty and students
- use Rowan as a source of recruiting to grow their workforce
- develop innovative technologies, via the University's research, that have potential in the marketplace.
At a time when traditional sources of research funding for faculty from the National Science Foundation (NSF) and the National Institutes of Health (NIH) are becoming increasingly competitive, additional technology commercialization will contribute revenue to Rowan and also support economic development at the local, state and national level.

Applied research will be the vehicle that drives the new Rowan University.

Rowan will implement a strategy to leverage NSF and NIH funding by actively pursuing business development with government agencies, such as the Federal Aviation Administration, the Department of Defense and the Department of Energy.

The University also will strive to directly involve the public sector in public education and research, which places less of a burden on the state and federal governments to support research efforts. More importantly, it translates research from the lab so it is applied and can enter the marketplace.

Rowan currently has numerous outstanding investigators who have developed technology that can be commercialized. During the next 10 years, the University will build a culture of commercialization and innovative research that will lead to the development of a wide range of marketable products.

To foster this environment, Rowan seeks to hire researchers and faculty who:
> have a strong background in commercialization
> are entrepreneurial in their approaches to developing technology that is needed
> work in research areas that are flexible to accommodate the needs of the market.
Dr. Robert Nagele is staging a fight against one of the scourges of aging.

As part of the team at the New Jersey Institute for Successful Aging (NJISA), Nagele is trying to change the future of Alzheimer’s disease (AD) with leading-edge research into new biomarkers. His study focuses on the connection between AD and mild cognitive impairment (MCI), which affects one in five individuals older than 65 and is thought to drive 60 percent of the cases of early-stage AD.

A three-year grant for $799,800 ($268,000 in 2013) from the Osteopathic Heritage Foundation in Columbus, Ohio, funds the study. In early 2013, Nagele published the discovery of auto-antibodies, which everyone has, regardless of age, health or sex.

“People with AD generate more brain debris than they should,” he explained, “and their immune systems respond by raising the level of auto-antibodies to clean up that debris.” How is this significant?

With less than one drop of blood, Nagele’s team can determine which specific system has been affected. For AD and Parkinson’s disease, his team has identified the 10 best auto-antibody biomarkers that can diagnose these diseases with greater than 95-percent accuracy.

“The question is, how early can we detect this degeneration?” he said. “Research suggests that AD begins 20 years before any symptoms.”

Nagele ultimately hopes to develop a diagnostic human protein micro-array test kit for Food and Drug Administration approval. The NJISA’s new Biomarker Discovery Center will spearhead these efforts, and Nagele presently is seeking industrial partners to accelerate work on the development of the diagnostic test kits. His team also has filed a number of patents.

“We have good data to begin exploring multiple sclerosis and early-stage breast cancer,” said Nagele, “which would make this a multidisease diagnostic, with far-reaching applications for early detection, diagnosis and therapeutics.”
DR. ROBERT NAGELE

Title: Professor of Medicine and Cell Biology
School of Osteopathic Medicine
Funder: Osteopathic Heritage Foundation
Amount: $268,000

$8,646,612

SCHOOL OF OSTEOPATHIC MEDICINE TOTAL FUNDING
(FY '13)
**DR. JOHN HASSE**

**Title:** Professor and chair of Geography and Environment  
College of Humanities and Social Sciences  

**Funder:** The Dodge Foundation  

**Amount:** $65,000

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**OTHER NOTABLE ROWAN SPONSORS**  
(FY ’13)

- National Geographic Society
- National Collegiate Athletics Association
- National Association of School Psychologists
With his project NJ MAP, Dr. John Hasse is empowering residents to do sound land use planning—a critical issue given New Jersey’s high rates of development. This online application simplifies and disseminates information that enables residents and policymakers alike to make informed decisions.

Hasse, executive director of the Geography Department’s Geospatial Research Lab, and his team have been funded by The Geraldine R. Dodge Foundation based in Morristown, N.J., to create an innovative, engaging and accessible website (http://njmap.rowan.edu). The site, launched in September 2013, pares down complex environmental information from a GIS (Geographic Information System) database to shed light on all 565 municipalities in New Jersey.

The team has developed a mapping platform with dynamic graphics and mapping interactivity. Users may search, zoom and explore detailed maps of any New Jersey town, finding relevant statistics and viewing aerial imagery dating back to the 1930s, including some from the New Jersey Department of Environmental Protection. Layers of different colors reveal whether a town features urban, agriculture, forest, water, wetland and/or barren/transitional lands. The site is organized by key environmental themes: land use change and development patterns, agricultural preservation, endangered species’ habitats and impervious surfaces within watersheds. Hasse noted, “Planning in these areas will have a significant impact going forward, on a fiscal as well as environmental level.”

Users can download information for each municipality as an Excel file, or use the crowd-sourcing NJ MAP: Growth to contribute sketches and share local knowledge of new land use changes they have noticed since the last maps were created in 2007. “This is information that each New Jersey taxpayer helped to create,” Hasse said, “and it should be readily accessible to all residents and not just the experts.”
Part of Rowan’s research mission is to continue to develop in areas where it has existing strengths, so that the University can benefit from a team of multiple investigators involved in different aspects of a single area of research. Strategic hires in these areas will make the Rowan faculty increasingly competitive.

What is more, the institution wants to support all Rowan students, as well as the entire University staff, in realizing their potential as entrepreneurs. Students are already actively developing applications and other technologies on their own—often in their rooms in the residence halls. One goal is to create an on-campus venue with the structure to help students transform their ideas into formal business plans and eventually companies that can become successful. In some instances, this will mean working in partnership with faculty. All of these efforts foster the entrepreneurial environment that is Rowan’s future.

Rowan is squarely focused on building centers of excellence that are based on certain “platform technologies”—those technologies that provide a platform of expertise from which to develop a range of applications.

For example, the emerging applications from the virtual reality display technology cut across many disciplines. Research teams can direct applications for medical purposes as well as for the Department of Defense and the Federal Aviation Administration, and Rowan also is working with a number of companies on these initiatives.

This new phase of research at Rowan will impact academic disciplines throughout the University as well as research in general. Rowan is proud to raise the standards for higher education in New Jersey and beyond, while also having a positive impact on the South Jersey economy.

Science and everyday life cannot and should not be separated.

Rosalind Franklin
Dr. Leslie Spencer and her students are helping people improve their physical health through the Get FIT (Fitness, Integration and Training) program. Spencer is the principal investigator on a series of grants totaling $60,000 in support of the Get FIT program, which strives to improve access to wellness programs for people with intellectual and developmental disabilities (IDD)—such as autism and epilepsy—and their caregivers. This year’s grant, which includes $25,000 from Aetna Foundation, builds on a strong record of support during the past several years. Horizon Foundation for New Jersey also funded Get FIT with $10,000.

The first institution to launch the initiative, Rowan has been the primary partner of The Family Resource Network (FRN) since 2008. The majority of clients come to Rowan three times per week to work one on one with a fitness trainer, drawing on some 70 Rowan undergraduates in Health Promotion and Fitness Management (HPFM). “This means we are preparing future professionals to work with clients with IDD,” said Spencer. In 2012–13, the program had 66 clients for the 10-week sessions each semester and serviced another 15 clients offsite, most between the ages of 16 and 20.

In June 2013 the Arkansas-based Walmart Foundation gave a $25,000 grant to develop the nutrition aspect of Get FIT in 2013–14. Dr. Laurie DiRosa, a Health and Exercise Science faculty member, has since developed “Nutrition M.I. Way,” a counseling program for clients with IDD, based on a Motivational Interviewing (M.I.) strategy. She has trained 30 Rowan HPFM students and four FRN staff to serve as counselors. “We are pleased to be working with so many from the Glassboro region,” Spencer said, “but we look forward to expanding into wider southern New Jersey.”
NED ECKHARDT

Title: Professor of Radio, Television and Film
College of Communication and Creative Arts
Funder: Wyncote Foundation
Amount: $200,000

PSEG Nuclear, LLC
L-3 Communications East
ELEKTA

NOTABLE ROWAN INDUSTRY SPONSORS
(FY '13)
Professor Ned Eckhardt always has encouraged his students to use film to explore social issues. He has taught documentary production since 1990 in the Department of Radio, Television and Film. In 2012 he received a $200,000 grant from Wyncote Foundation to help his students—and those from four other college across the U.S.—produce documentaries on the prevention of rape and sexual assault for PACT5: The Fivedocs Project.

“[Rape] is the number one problem on college campuses, where one in five women is sexually assaulted,” Eckhardt explained.

The roots of PACT5 go back to 2011. Eckhardt, with the help of colleague Keith Brand, approached the Philadelphia-based Wyncote Foundation, which is specifically interested in community projects that involve the media. He then partnered with a nonprofit organization called Clery Center for Security on Campus, added a social media component and won the grant for an 18-month project (through summer 2013) that would fund five documentaries. He and his students, as well as the other four colleges (California State University, Northridge; Western State Colorado University; Northern Illinois University; and Framingham State University), delivered 10 films instead, all now viewable online (at http://vimeo.com/fivedocs and http://www.youtube.com/user/PACT5).

Two of the student filmmakers had been victims of sexual assault. Eckhardt recalled, “Through the process we really saw the students take hold of the subject matter.”

During National Campus Safety month in September 2013, more than 300 colleges used the documentaries for freshman orientation and to train resident assistants. Eckhardt said, “The students are thrilled that their hard work could have such a broad impact.”
Dr. Beena Sukumaran was among the first in her field to lead a rapid response project in the wake of Hurricane Sandy in October 2012. An expert on soil mechanics and structural foundations, she was part of a team formed by the National Science Foundation-funded Geotechnical Extreme Events Reconnaissance (GEER) association that was onsite within two days, surveying bridges and communities along the shore.

“The purpose was to document the damage before repair efforts were underway,” she explained, “and to contrast damage on the ocean and bay sides, in new structures versus older ones that were not built to code.”

Eager to ensure that the focus of the project extended beyond New York to include the New Jersey coastline, Sukumaran led her team that first weekend from Brigantine to Asbury Park, working from early morning to sundown. In some places they had to negotiate with local police to cross smaller bridges that posed a safety risk. The research continued through December, and in spring 2013 she joined with other Rowan faculty to lead curriculum clinic projects with civil and mechanical engineering students that grew out of the data she gathered for the GEER report.

Sukumaran’s current research includes a $220,000 project for the New Jersey Department of Transportation. In August 2013, she began conducting quality control assessments through laser ablation to determine the mineralogy of rocks and gravels that serve as foundations for roadways.

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**DR. BEENA SUKUMARAN**

**Title:** Professor and chair of Civil and Environmental Engineering  
**College of Engineering**  
**Funder:** National Science Foundation, New Jersey Department of Transportation  
**Amount:** $220,000

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**Research on the front lines benefits communities**

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TOTAL EXTERNAL FUNDS RAISED AT ROWAN (FY ’13)

$26,288,008
To learn more about partnering with Rowan University:

Visit rowan.edu/research, call (856) 256-5150 or email research@rowan.edu
Visit sjtechpark.org, call (856) 256-4099 or email sjtp@rowan.edu