

engineering NEWS

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Dr. Anthony Lowman named new dean

A month after joining Rowan University's College of Engineering as its third dean in January, Dr. Anthony (Tony) Lowman already had a good idea about the capabilities of its faculty, staff and students and a vision for its future.

"This College has an outstanding undergraduate program taught by creative, world-class faculty," Lowman said. "Now we are poised for the next step, which includes continuing to improve our nationally recognized curriculum and expanding the research conducted by our faculty and students."

His goal? Taking a great College and growing it figuratively and literally: adding more faculty, staff, students, programs and space.

"I came here because of the vision I saw, from the president and from so many others."

That Lowman is ambitious is no surprise. While still in his early 30s he was internationally recognized for his hydrogel research. Today his ambition is focused on the College of Engineering and helping transform the College from a nationally recognized undergraduate education program and continuing to grow the breadth of the College with new research and graduate programs coming online to help support the core mission of undergraduate education.

"I came here because of the vision I saw, from the president and from so many others," said Lowman, whose career in engineering, academia and research spans almost two decades.

Before joining Rowan, he served as

vice provost for research and business development and professor of bioengineering at Temple University. Additionally, he spent 15 years at Drexel University in

numerous roles, including professor and associate dean for undergraduate studies in the College of Engineering, interim senior associate vice provost for research and associate dean for research and graduate studies. He also has held international appointments at the University of Parma, Italy, and Hoshi University, Japan.

A Virginia Beach native, Lowman earned a B.S. in chemical engineering from the University of Virginia and a Ph.D. in chemical engineering from Purdue University, where he was presented the Ismail Award for Most Outstanding Interdisciplinary Doctoral Research.

His track record is impressive, addressing many of the goals of Rowan's Board of Trustees and administration,

including an increased focus on research.

In 2003, while at Drexel, Lowman founded startup firm Geliflex Inc., the company emerging from hydrogel technology research conducted in his laboratory. Lowman and his partners sold the startup to Synthes Inc., a global medical device manufacturer — the largest licensing agreement at Drexel at the time.

Lowman helped establish major regional initiatives and served key roles with a number of agencies. A prolific international speaker and presenter, he has published more than 50 papers in refereed journals, has six issued patents and has attracted more than \$12 million for his research.

The College of Engineering at Drexel presented him with multiple awards, including those for Outstanding Teaching, Outstanding Research and Outstanding Service. In 2003, *MIT Technology Review Magazine* named Lowman one of the Top 100 Innovators Worldwide Under the Age of 35 for contributions in oral drug delivery.



Dr. Anthony Lowman was appointed dean of the College of Engineering in January.

Program brings the future into focus

As the old adage says, seeing is believing. With this in mind, CHAMP (Creating Higher Aspirations and Motivation Project), based at the University's Camden campus, illuminates just how bright the future is for students from Camden and other public school districts.

CHAMP prepares students in sixth through 12th grades for college, engaging them in activities — including engineering — to develop their skills, broaden their perspectives and build their self-esteem.

CHAMP prepares students in sixth through 12th grades for college, engaging them in activities.

"They're at a very important stage of their lives where they're starting to make decisions about their future goals," said Eric Thompson, '14, a mechanical engineering major from Piscataway, N.J., and student coordinator of CHAMP. "We're trying to show them what the possibilities are."

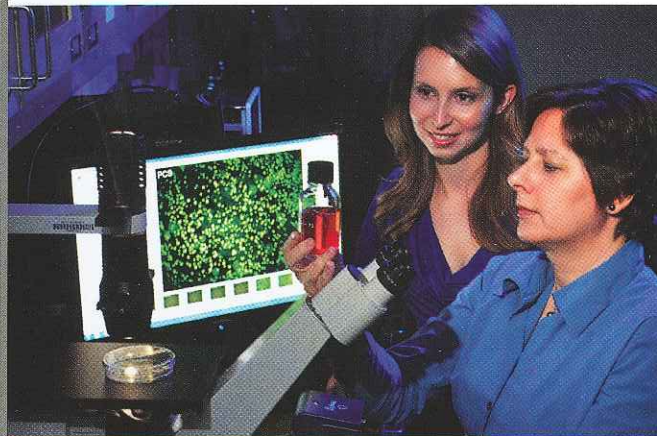
During Saturday classes coordinated by the Engineering Outreach Office, student engineering organizations lead hands-on activities they devised to expose participants to engineering principles. Projects have ranged from concocting slippery slime to building a roller coaster constructed of paper.

Thompson enjoys interacting with students. "We try to share the idea that the sky is the limit. You can go as far as you are willing to work," he said. "If you can get one student to realize that, then I feel like you've been successful for that day."

Rowan students bring a unique point of view as they talk about their own challenges and offer advice. "They motivate the students," said Winona Wigfall, director of precollege programs at the Camden campus. "It's much better when it's coming from someone closer to their age than coming from an adult."

Research targets back treatment

Researchers in Rowan University's College of Engineering and College of Science and Mathematics are putting their collective brain power to work to develop innovations that could someday relieve lower back pain for many chronic sufferers.



Dr. Jennifer Vernengo (left) and Dr. Cristina Iftode are researching a new innovation that could someday relieve suffering for those with lower back pain.

Although Rowan researchers know they can create new tissue by replacing damaged intervertebral disc tissue with new cells in a three-dimensional material, such as a gel, additional work remains. "The problem is there are

many materials that work, but if you try to implant them into a disc, research has shown they most likely will be expelled," said Dr. Jennifer Vernengo, assistant professor of chemical engineering.

Therefore, Vernengo and her engineering clinic

students set out to create an injectable tissue engineering scaffold that will adhere to surrounding tissue, holding the material in place. For this collaborative project, the team consults Dr. Jennifer Kadlowec, professor of mechanical

engineering, on mechanical tests. Meanwhile, Dr. Cristina Iftode, associate professor of biological sciences, and her students ensure that the material enables cells to survive and regenerate.

"We have common lab meetings once a week when the two groups meet," Iftode said. "The students present their results for the week, and then we discuss a plan for the next experiments."

Vernengo, Iftode and Kadlowec applied for a National Institutes of Health grant to support this research. They also reported their recent findings in the *Journal of Materials Science: Materials in Medicine* in January 2013.

Although their research is in preliminary stages, it may someday make a significant clinical impact. "It addresses a real need in terms of being able to translate tissue engineering and regenerative medicine into actually helping people with lower back pain, which is one of the most common medical problems," Vernengo said.

More than 800 students and 60 companies participated in Rowan's Spring 2013 Career Fair, which connected students seeking full-time positions and internships with potential employers.



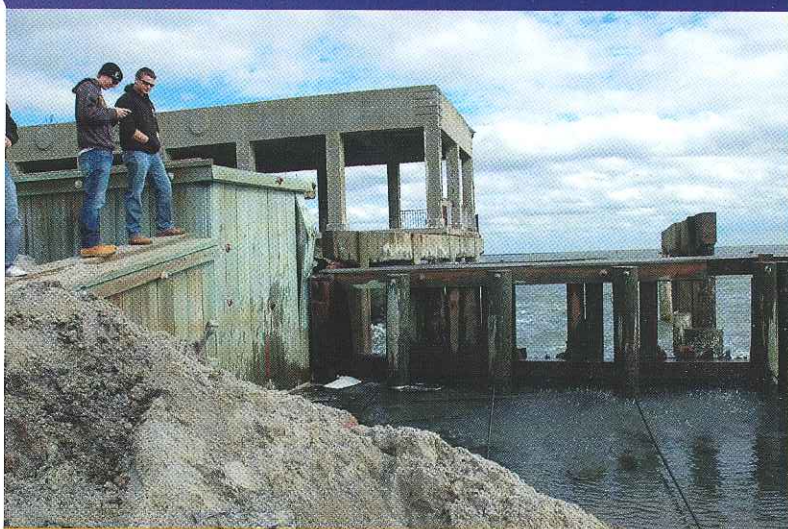
Team learns from disaster

As the floodwaters from Superstorm Sandy began to recede last fall, Dr. Beena Sukumaran, professor and chair of Civil & Environmental Engineering, and her team inspected the devastating trail of damage in New Jersey from Asbury Park to Brigantine, searching for clues that may improve storm protection strategies in the future.

A member of Geotechnical Extreme Events Reconnaissance, which is funded by the National Science Foundation, Sukumaran brought several students with her to assess damage to coastal infrastructures. During this process, they looked at storm protection systems, bridge foundations and how structures built to meet the current design standards fared.

Her team continues to study the impact of the storm. "We are looking at engineering designs that worked well and at designs that did not work as well as expected," she said. "In addition, because this was an unprecedented storm, we are trying to understand the influence of local geology and hydrodynamics on the severity of the damage documented during the storm and how we can prevent this in the future."

Her junior and senior engineering clinic students are examining coastal erosion from before-and-after images as well as documenting damage. "Everybody was willing to help as soon as I asked," she said. "There was tremendous interest, not only from civil engineers but from all the other engineering disciplines as well."



Stephen Rossi, '13 (left), and Colin Yurick, '13, helped Dr. Beena Sukumaran assess the damage after Superstorm Sandy.

Such projects are important to Sukumaran and Rowan students — many of whom live or vacation in the damaged areas. "If we can educate the next

generation of engineers on how to build better in these coastal areas, then I think I will have done my job as an educator," Sukumaran said.

Student gains a competitive edge by getting involved

Jaclyn Navara, a senior mechanical engineering major from Old Bridge, N.J., has big plans for the future — plans that began to fall into place in September, when she accepted a full-time engineering position with DuPont's Parlin, N.J., facility several months before graduation.

She began laying the groundwork when she arrived on campus less than four years ago and has since racked up an impressive array of accomplishments. President of Rowan's chapter of Tau Beta Pi — The National Engineering Honor Society, she is also a member of the American Society of Mechanical Engineers and the Society of Women Engineers. She gained career experience from three internships — one



Student Jaclyn Navara embraced many of the opportunities the College offered as she prepared for her future.

with her future employer — and serves as a student blogger for the College of Engineering.

Navara is one of many students gaining from Rowan's

hands-on approach to engineering education.

When she received calls for her DuPont internship, Navara said, the interviewer told her

she had never seen anyone with so many projects listed on a resume.

Navara's goals include eventually working as a lead engineer, earning graduate degrees and ultimately returning to the classroom as a professor. "Those are the best professors, the ones who worked in industry, gained experience and can actually come back and talk about it," she said.

In contemplating these plans, she believes the College provided a solid engineering foundation and something even more essential. "Most importantly, the College gives us the mindset to stay motivated, determined and energetic, giving us the confidence that we can actually go out and achieve our goals," Navara said.



Dr. Ralph Dusseau, Civil & Environmental Engineering founding chair; Dr. Steven Chin, associate dean; Dr. Stewart Slater, Chemical Engineering founding chair; Dr. James Tracey, founding dean; Dr. John Schmalzel, Electrical & Computer Engineering founding chair; and Dr. Tirupathi Chandrupatla, Mechanical Engineering founding chair (left to right), commemorated the 20th anniversary of the \$100 million gift of Henry and Betty Rowan during a celebration in December, standing before a bronze sculpture of Mr. Rowan.

Activities spark engineering enthusiasm

Middle and high school students and teachers become engaged in engineering during these summer programs:

Rowan's Introduction for Students to Engineering (RISE)

July 9 to 11, 2013

This three-day workshop exposes high school students to engineering through hands-on projects, laboratory clinics and campus and industry tours.

Young Profs Summer Camp

July 15 to 19, 2013

This one-week camp for 11-14-year-olds with high-functioning autism and Asperger's syndrome features a range of academic programs, including an engineering segment on July 15. Contact John Woodruff at woodruff@rowan.edu for details.

Boys' Engineering, Science and Technology (BEST) Workshop for Middle School Boys

July 16 or July 17, 2013

This program introduces middle school boys to multiple engineering disciplines through activities offered during one-day workshops.

Attracting Women Into Engineering (AWE) Workshop for Middle School Girls

July 23, 24 or 25, 2013

Through this program, girls currently in sixth and seventh grades engage in one-day hands-on workshops in a range of engineering fields.

Project Lead the Way (PLTW) Teacher Training

July 21 to August 2, 2013

This program trains high school teachers to integrate project-based, pre-engineering curricula into the classroom.

Visit www.rowan.edu/engineering/k-12 to register and for more details on the programs.

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