

ABSTRACTS



A HEALING OPPORTUNITY

Mechanical engineering major Peter Cerasoli has helped to advance a leading-edge therapeutic effort at the Mayo Clinic in Rochester, Minnesota, that could prevent the onset of life-threatening pelvic skin ulcers for para and quadriplegics. Such ulcers commonly occur where skin contacts a wheelchair seat.

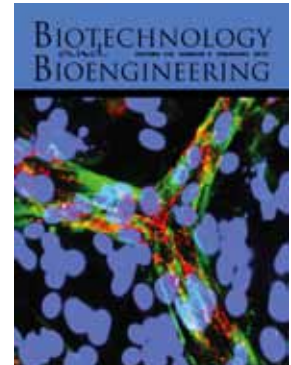
Cerasoli's participation in this project sponsored by the Mayo Clinic resulted from his internship at Pipeline Biomedical, where Robert Cohen '83, '84, '87 is vice president for research and development. Cohen, who also chairs the NCE Board of Visitors, has been collaborating with orthopedic surgeon Dr. David Lewallen at the clinic to determine if offloading a certain amount of body weight can maintain

more blood flow and reduce the incidence of ulcers. A promising concept involves implanting two magnets in the pelvic bones to "repulse" a portion of a patient's weight when positioned over magnets in a wheelchair seat, reducing pressure on soft tissue and facilitating the flow of blood.

Cerasoli helped to design the implantable magnets and an assembly for the wheelchair magnets, configuring an

HEARTFELT RESEARCH

Research in the laboratory of Assistant Professor Cheul H. Cho, Department of Biomedical Engineering, has significant implications for cardiac health, tissue engineering and drug testing. Carried out in collaboration with Research Professor George Collins and PhD students Ali Hussain '11 and Derek Yip, the results of this work were reported in an article featured on the cover of *Biotechnology and Bioengineering*. The researchers co-authored "Functional 3-D



Cardiac Co-culture Model Using Bioactive Chitosan Nanofiber Scaffolds," which describes an approach to the design and improvement of engineered tissues for the repair of myocardial infarcts and other healthcare applications. ■

<http://biomedical.njit.edu>

Above: Peter Cerasoli '13 at the Mayo Clinic Anatomy Laboratory

experimental seat with a pressure-sensitive mat to record pelvic offloading.

"This is groundbreaking basic science that addresses a real clinical issue in a challenging patient population," says Cohen. "The Mayo Clinic partnering with a New Jersey company and NJIT greatly furthered this work and brought it to the milestone point of cadaver evaluations. As Peter has proven, NJIT students are a tremendous resource. Continued development and involvement with NJIT in design and testing may eventually bring the offloading concept into human clinical trials." ■

<http://mechanical.njit.edu>

AD ACCOLADE

NJIT's "Master What's Next" ad campaign promoting graduate programs received gold-medal recognition from the 28th Annual Educational Advertising Awards sponsored by Higher Education Marketing Report, the largest educational advertising awards competition in the U.S. More than 3,000 entries were submitted by colleges and secondary schools from all 50 states and several foreign countries, with 167 gold awards given.



The Warren Street Village is scheduled to open on campus this fall.

WARREN STREET RECOGNITION

Enhancing the campus and surrounding community, NJIT's Warren Street Village has been recognized by the New Jersey Alliance for Action as a key state infrastructure project in higher education. The Warren Street Village is scheduled to open on campus this fall, providing new amenities for the NJIT community as well as residential space for Albert Dorman Honors students and fraternities and sororities.

NJIT President Joel S. Bloom accepted the award from New Jersey Higher Education Secretary Rochelle Hendricks at the Alliance for Action's annual breakfast meeting, which honored outstanding New Jersey infrastructure projects. The Alliance is a non-profit, non-partisan statewide coalition of over 2,500 business, labor, professional, academic and government leaders that advocates investment in infrastructure for New Jersey's economy, environment and quality of life. ■

<http://magazine.njit.edu/2012/spring/sp12-warren-street.pdf>



PHOTO: RICKY KHARAWALA

NJIT PRESIDENT NAMED TO INNOVATION COALITION

Lieutenant Governor Kim Guadagno has appointed President Joel S. Bloom to the newly formed Innovation New Jersey Coalition, chaired by Secretary of Higher Education Rochelle Hendricks. A key goal is to make it easier for industry and academia to collaborate on new ideas and inventions.

“For decades, we’ve been in the forefront of aligning business and industry with NJIT,” said Bloom. “Our mission has always included the economic development of New Jersey. We see this coalition providing a strong learning opportunity not only for us but also for many others whom we hope the coalition will introduce to NJIT and its resources. We look forward to being on the cutting edge of helping the state attract more federal funds and bringing innovative products and ideas to market.” ■



ANTS LEAD THE WAY

Ants may not be the smartest creatures, but they've inspired research by Assistant Professor Simon Garnier, Federated Department of Biological Sciences, that could improve the design of spaces we navigate every day, including highways and crowded buildings. Garnier heads NJIT's new interdisciplinary Swarm Lab, focused on understanding human and non-human collective intelligence in groups as diverse as ant colonies, fish schools, human crowds and robotic swarms.

Taking a cue from the way ants return to their nest from a food source, Garnier and colleagues at the National Center for Scientific Research in France recently created an experiment in which minute wheeled robots followed a trail of light left by other robots, similar to the way ants use their antennae to sense chemicals left behind by other ants without the need for more sophisticated orientation methods. They postulate that even humans may navigate effectively by simply reacting to factors such as the shape of a particular environment.

Garnier and his colleagues published this research in the March 28, 2013 issue of *PLoS Computational Biology*: “Do Ants Need to Estimate the Geometrical Properties of Trail Bifurcations to Find an Efficient Route? A Swarm Robotics Test Bed.” Capturing attention worldwide, their work has been subsequently publicized by dozens of media outlets that include *Science Magazine*, *Scientific American*, *Smithsonian Magazine*, *National Geographic*, *The Los Angeles Times*, *NBC News* and *BBC News*. ■

<http://biology.njit.edu>



PHOTO: FANNY AIZIER

NEWARK - NEW JERSEY

City Lights – Newark at Night

GREETINGS FROM NEWARK

Fanny Aizier '10 and Rahim Stennett '12 have channeled fondness for their adopted city of Newark into a viable business venture. When they could not find postcards of Newark available for purchase, they founded a company, From Newark With Love, which sells postcards featuring iconic images of the city.

Aizier, a native of France who played Division I tennis while pursuing her undergraduate degree in computer science, is now employed at Prudential as a systems analyst. An electrical engineering major originally from Jamaica, Stennett was a first-team All-Atlantic Soccer Conference honoree and won a top-scorer award during his sophomore year. He is managing the day-to-day operations of From Newark with Love while interviewing for full-time employment. The postcards can be purchased in local Newark stores or online at www.fromnewarkwithlove.com. ■

THE ABCs OF POC

Current trends in providing POC – point-of-care – medical treatment for patients were the focus of an international conference in Bangalore, India, organized and chaired by Distinguished Professor of Electrical and Computer Engineering Atam Dhawan. Topics ranged from the benefits of trans-disciplinary medical technologies to how wireless communications will change the interaction between physicians and their patients.

Broadcast around the world, the IEEE Engineering in Medicine and Biology Society International Special Topic Conference explored a broad spectrum of POC issues that included biomarkers, health monitoring and informatics, eHealth, and compliance considerations related to affordable global health care.

Dhawan, who is also interim dean of Albert Dorman Honors

College, was selected to represent the IEEE Engineering in Medicine and Biology Society as a 2012-2013 Distinguished Lecturer, traveling worldwide to speak about advances achieved through the intersection of medicine and innovative technology. He is currently developing a multi-spectral optical and near-infrared tissue imaging technique for non-invasive monitoring of blood glucose levels, without the need to draw blood as required by conventional glucose monitors. ■

<http://ece.njit.edu>



PHOTO: RICKY KHARAWALA

Distinguished Professor of Electrical and Computer Engineering Atam Dhawan

END NOTES

Treana Livingston Arinzeh, professor of biomedical engineering, has been elected a Fellow of the American Institute for Medical and Biological Engineering.

Meredith Aronson, director of NJIT's Advanced Manufacturing Talent Network (ManufactureNJ) was named Business Person of the Year by Essex County Vocational Technical Schools. ManufactureNJ is one of seven sector-focused talent networks funded by the New Jersey Department of Labor and hosted at NJIT in the Continuing and Professional Education program.

Reza Curtmola, assistant professor in the College of Computing Sciences, and doctoral candidate **Bo Chen** received the Outstanding Paper Award from the Third Association for Computing Machinery Conference on Data and Application Security and Privacy. The paper is titled "Towards Self-Repairing Replication-Based Storage Systems Using Untrusted Clouds."

Charles J. Fey, vice president for academic support and student affairs, has co-authored a chapter in the recently published *Called to Serve: A Handbook on Student*

Veterans and Higher Education. Fey's contribution is "Institutional Leadership on Serving Student Veterans and Service Members."

Jerry Fjermestad, professor in the School of Management, and **Karen Patten** PhD '09 were recognized for the best paper in the teaching track of the Third Business Intelligence Congress at the 2013 International Conference for Information Systems. Their paper is titled "Teaching Business Intelligence: A Research and Practical Technology Approach."

Durgamadhab Misra, associate chair for graduate programs in the Department of Electrical and Computer Engineering, has received two awards from the Electrochemical Society (ECS). An ECS Fellow, Misra has been honored with the 2013 Electronic and Photonic Division Award and the 2013 Thomas D. Collinan Award from the Dielectric Science and Technology Division.

POINT BY POINT

www.njithighlanders.com

STANDING OUT IN DIVISION I

PHOTOS: LARRY LEVANTI



Chris Flores

MEN'S BASKETBALL

The NJIT men's basketball team set a new record for wins on the way to the program's first Division I winning season (16-13), clinching the regular season championship of the Great West Conference (GWC) with a 69-58 win over visiting Houston Baptist University.

Senior Chris Flores scored a game-high 21 points, and fellow senior PJ Miller added a career-best 17 points for the Highlanders.

Acknowledged as an Associated Press All-America honorable mention, Flores added another postseason award to his collection when the National Association of Basketball Coaches voted him to the All-District 13 First Team. District 13 is composed of 23 teams from the GWC, the Ivy League and the Patriot League.

He was also named GWC Player of the Year as voted by the conference's head men's basketball coaches and sports information directors. Additionally, he was the consensus GWC Player of the Year in selections made by the media that pick their own GWC honorees.

Now in his fifth year as head coach, Jim Engles was named GWC Coach of the Year by CollegeSportsMadness.com. CollegeInsider.com also named him GWC Coach of the Year. ■

WOMEN'S BASKETBALL

NJIT women triumphed on the court to win the championship of the 2013 Great West Conference women's basketball tournament, defeating top-seeded regular season champion Utah Valley in a wire-to-wire 52-42 win. In his first season as head coach at NJIT, Steve Lanpher's emphasis on defense and observation proved

to be spot-on as the Highlanders shut down Utah Valley for NJIT's first women's basketball championship at any level.

First-team all-conference senior Rayven Johnson was named tournament Most Valuable Player after leading all players on both teams with 20 points and 18 rebounds. Johnson's 18 rebounds were the most for an NJIT player in the program's Division I era. ■

The postseason meet concluded the best season Highlander swimmers have completed since transitioning to Division I.



Richard Seffrin

MEN'S SWIMMING

The men's swimming team placed 12th out of 29 declared teams with a total of 81 earned points – its best in school history – at the Eastern College Athletic Conference (ECAC) Open Swimming and Diving Championships at Harvard University. NJIT bested America East foes University of Maine-Orono and Binghamton University, and Division I rival St. Francis.

Highlights included five new school records as well as

several top-16 finishes by the six swimmers that qualified for the sectionals meet, which included Division I and Division III teams from the Northeast and Middle Atlantic region.

The postseason meet concluded the best season the Highlanders have completed since transitioning to Division I, with 19 school records broken throughout the season, the best-place finish at the Metropolitan Championships and ECAC Championships, and the most swimmers qualifying for finals in school history at both meets. ■



Rayven Johnson