ABSTRACTS

OVERSEERS HONOR PIONEERING RESEARCH



From left: John W. Seazholtz, chair of the NJIT Board of Overseers; Rajesh Davé, distinguished professor of chemical, biological and pharmaceutical engineering, and Joel S. Bloom, president of NJIT

Rajesh Davé, a distinguished professor of chemical, biological and pharmaceutical engineering, best known for reengineering tiny drug particles to make medications more effective, received NJIT's Excellence in Research Prize and Medal from the Board of Overseers.

Drawing on physics, chemistry

and engineering, Davé's research into the behavior of particles is fundamental and his methods for adapting them are widely applicable. For example, by shaking granular or particulate materials along with nanomaterials, which form a thin coating around them, he has been able to optimize their flow, among other processing improvements.

Most recently, he has been reengineering drug particles to improve medications in a variety of ways: by increasing the absorption rates of drugs with poor water solubility, delaying the release of medications that degrade in the acidic environment of the stomach and masking the bitter tastes of drugs to make them more palatable for children as well as for adult patients who have difficulty swallowing.

"Your work has affected science and technology in an unexpected and positive way," said John W. Seazholtz '59, chair of the Board of Overseers, in presenting him with the medal.

In 2015, Davé won a major career award from the American Institute of Chemical Engineers, the organization's 2015 Lectureship Award in Fluidization, a process for agitating solids such as powders and particles in order to make them behave like liquids. The same year, Davé received his ninth patent for coming up with a manufacturing process for coating fine particles less than the diameter of a human hair that does not require water, organic solvents or heat. A global health care company that develops both drugs and their delivery systems has licensed the technology, developed along with former NJIT students who are also named on the patent.

In a nod to the many young researchers in the room, Davé, who is currently the site leader and one of the founders of the National Science Foundationfunded Engineering Research Center on Structured Organic Particulate Systems, which focuses on manufacturing processes for the pharmaceutical industry, noted, "I accept this on behalf of my students and post-docs. Without them, none of this would have been possible."

MULTIMEDIA BY PANASONIC

NJIT celebrated the latest extension of its valuable partnership with Panasonic at the official opening of Multimedia by Panasonic, a state-of-the-art multimedia conferencing room described by its chairman and CEO Joseph M. Taylor '11 HON as "the beginning of the conferencing room of the future."

Located on the third floor of Fenster Hall, Multimedia by Panasonic features the Cisco SpeakerTrack interactive video and audio conferencing system, which includes a camera that automatically focuses on whomever is speaking, and two ultrahighdefinition 98-inch display screens. The state-of-the-art lighting and shades system provided by Lutron, Panasonic's partner, includes a remote control with presets for different room uses. The room is bring-your-own-device compliant; retractable HDMI and VGA cables are installed in each of the three table cubbies for connecting a personal laptop to the displays.

"NJIT has counted Joe and Panasonic as supporters, partners and friends for many years," said NJIT President Joel S. Bloom. "Our organizations have collaborated on a plethora of projects during that

Multimedia by Panasonic

time, and Panasonic has provided NJIT with more than \$2.3 million in philanthropic support to date. They also have hired many of our graduates over the years."

In his remarks, Taylor said that he has enjoyed meeting NJIT students from diverse backgrounds who have "incredible obstacles to overcome" and who often work two or three jobs to finance their education. "The more time I spend here, the more I love the university," Taylor said. "I'm happy to play a very small part. There is nothing I'm more thrilled about than being part of this university and the Board of Trustees."

PATHWAY TO EDUCATIONAL SUCCESS

Ten students will have the opportunity to pursue a college education at NJIT at no cost for tuition, fees, room and board, thanks to \$200,000 in support from the Give Something Back Foundation (Give Back). Robert Carr, founder and chairman of Give Back, presented the award at a ceremony this fall at NJIT. Give Back is a nonprofit organization providing mentoring and scholarships to students of modest means to help them realize their full potential by achieving a college education.

"NJIT is a distinguished institution that will provide our scholars with a technology-focused education," said Carr. "We are very proud to partner with NJIT, particularly because of its highly regarded reputation with students from underprivileged backgrounds, and it is one of the best values for higher education in the state."

"We are very grateful

for the generosity of the Give Something Back Foundation and know well the impact it will have," said NJIT President Joel S. Bloom. "NJIT has a rich history of successfully educating talented students who are from low-income households, underrepresented populations or are the first generation in their families to attend college. We have been ranked among the



Joel S. Bloom, president of NJIT, and Robert Carr, founder and chairman of the Give Something Back Foundation

top 10 percent nationally of colleges and universities for graduating minority engineers, and we earned a similar designation for computer science recently."

Bloom added, "With help from generous supporters like the Give Something Back Foundation, we are able to provide the financial and academic support necessary for students to overcome those challenges and reap the rewards of an NJIT degree-nearly three job offers in hand by graduation at salaries that exceed national averages by almost 20 percent. Providing talented students from low-income families with a pathway to educational success can be transformative, not just for the student but for his or her family and generations of those families yet to come."



CITY SMART

On Oct. 17, Newark officials joined with NJIT, the New Jersey Innovation Institute (NJII) and corporate partners to announce a long-term program that would help propel the city into becoming one of the most technologicallyconnected cities in the nation. Newark is taking the necessary steps toward becoming a "Smart City" as part of a sweeping White House initiative that brings together academia, government and business to innovate and create the next generation of urban technology and infrastructure. For communities like Newark, these solutions would permeate all parts of the urban experience for residents, daytime workers and visitors.

"Imagine Newark as a city where technology enhances every NJIT hosted a kickoff event in October to launch the Smart Cities Initiative. From left: Ali Faraji, CEO of Aptinet, Thomas Motyka '81, senior executive director, Smart Cities Innovation; Ben Levin, executive director of MetroLab Network; and Donald H. Sebastian, president and CEO of NJII.

part of your life, wherever you may be," said Donald H. Sebastian, NJII president and CEO. "Through the Smart Cities initiative, we will be reshaping and enhancing how the public experiences Newark. The open technology infrastructure we are creating will be a magnet to attract entrepreneurial businesses whose products will reshape urban life using the Internet of Things, and they will contribute greatly to the economic vitality of our city."

The city is part of the national MetroLab Network, which was launched by 21 founding cityuniversity pairings in September 2015 at the White House as part of the Obama administration's Smart Cities Initiative, which NJIT and Newark have joined with 40 other regional city-university partnerships across the nation. The local program is called MetroLab@Newark. With smart city technologies, Newark can better tackle key challenges such as reducing traffic congestion, fighting crime, fostering economic growth, managing the effects of a changing climate, and improving the delivery of city services.

Funded by the Newark Downtown District, and supported by the city, an internet kiosk called Brand Newark will open on the site. Developed by Aptinet Inc., the kiosk will be a powerful Wi-Fi hub that will provide residents and visitors with the latest news and information on local businesses, traffic, mass transit schedules, local news, videos and other important features via a next-generation fiber optic network. ■

ABSTRACTS



HONORS COLLEGE RECEIVES TOP 10 RANKING

NJIT's Albert Dorman Honors College has been ranked among the top 10 honors colleges and programs in the United States in the book INSIDE HONORS: Ratings and Reviews of Sixty Public University Honors Programs, published by Public University Press. Inclusion in this top 10 listing was based on curricular and co-curricular requirements, class size, SAT, GPA, merit scholarships, prestigious fellowships, honors housing and more. The college received the highest possible ranking of 5.0 "mortarboards," translating to top 10 status, following the publication's data analysis of 60 public university

honors programs across the country. "Since being established in 1995

with about 120 students, NJIT's Albert Dorman Honors College has grown to roughly 700 students who are sought after by many of the best universities across the country," said NJIT President Joel S. Bloom. "These are students of great accomplishment whose scores on the math and critical reading sections of the SAT average 1420 out of 1600. They are choosing NJIT because, by attending the honors college at one of only 32 polytechnic universities nationally, they are in incredible demand by employers upon

graduation and are well prepared for career success."

The college is a member of the National Collegiate Honors Council, an affiliate member of the National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology, and offers a full curriculum of honors courses, colloquia, study tours, dual-degree and study-abroad opportunities, internships, undergraduate research, community-service involvement and accelerated programs through partnerships with neighboring universities.

Interim Dean John Bechtold,

who also is professor of mathematical sciences at NJIT, was the driving force behind the college's first-time request to be evaluated for inclusion in this biennial publication and attributes the ranking to the college's wide-ranging curriculum as well as the quality of students the college attracts—this year's class had scored an average SAT score of 1420 in reading and math, the highest to date.

"Prospective students are going to see we're ranked so highly and will further consider us as one of their top college choices," noted Bechtold. "They will realize the caliber of our students and the opportunities afforded to them. We are very proud of our ranking."

SOUNDS OF THE NATURAL WORLD

The tuneful behavior of some songbirds parallels that of human musicians. That's the conclusion presented in a recent paper published by an international team of researchers, among them David Rothenberg, distinguished professor of philosophy and music in NJIT's Department of Humanities.

"Temporal regularity increases with repertoire complexity in the Australian pied butcherbird's song" was published online in *Royal Society Open Science*, a peer-reviewed open-access scientific journal launched in 2014. In the past, claims that musical principles are integral to birdsong were largely met with skepticism and dismissed as wishful thinking. However, the extensive statistical and objective analysis of the new paper demonstrates that the more complex a bird's repertoire, the better he or she is at singing in time, rhythmically interacting with other birds much more skillfully than those who know fewer songs.

Rothenberg, who provided his unique perspective, said, "Science and music may have different criteria for truth, but sometimes their insights need to be put together to make sense of the beautiful performances we find in nature."

The recipient of the NJIT Overseers Excellence in Research Award for 2010, Rothenberg has written extensively about the bond between humans and our surrounding natural world, a world we share with myriad other creatures. As a musician—he plays the clarinet and saxophone—Rothenberg has added the dimension of music to research connecting the living sounds of the natural world to traditions of global rhythmic innovation and improvisation.



A butcherbird mid-song

AFTER-SCHOOL SPECIAL



From left: Dax-Devlon Ross, executive director, After-School All-Star program; Congressman Donald M. Payne Jr.; Alicia Feghhi, assistant director of leadership and professional development, Albert Dorman Honors College; Dushyant Singh (freshman, computer science); Sainithin Kuntamukkala (freshman, undecided); Matthew Shpiruk (sophomore, electrical engineering); Constantine Baltzis (freshman, biology)

Representative Donald Payne Jr. stopped by Camden Street School in Newark to chat with NJIT Albert Dorman Honors College scholars who are helping to cultivate supportive, experiential learning environments by mentoring middle-school students in the After-School All-Star program (ASAS).

As part of a free STEM mentoring program, Honors College scholars, who are required to volunteer for 30 hours, help ASAS students with their math, science and reading homework before assisting with a DJ academy, cooking class, film criticism class and soccer club.

The students in the after-school program, which focuses on health and fitness, career readiness and art and culture, were targeted because they either failed or barely passed the PARCC exam. "We provide the students with vital skill development opportunities," said Dax-Devlon Ross, executive director, ASAS. "We're preparing students to transition from middle school to high school."

Samuel Garrison, the principal at Camden Street School, gives credit to NJIT scholars for the increase in reading scores, which exceeded the state average by a significant margin last spring.

Before touring the DJ Academy, where the students blended sounds and beats using a mixing board, Congressman Payne took a moment to laud the Honors College scholars for a job well done. "I really commend you guys for doing this," he said. "This means a lot, especially to young people who may not have the opportunity. This could be what really changes their lives."

KUDOS FOR STEM DIVERSITY



The readers of Diversity in Action, a publication that highlights the achievements of current and future members of the diverse STEM workforce, have selected NJIT as the top 2016 "Dedicated to STEM Diversity" recipient in the higher education category. Additionally, readers have also recognized Janice Daniel. associate professor in the department of civil and environmental engineering, as an advocate for diverse STEM professionals and students. Diversity in Action launched its

first reader survey in May, allowing readers to submit the names of companies, nonprofits, government and defense agencies, institutions of higher learning and individuals that they believe are advocates for diverse STEM professionals and students. The results were published in the November/December 2016 issue.

NJIT NAMED 2017 MILITARY FRIENDLY SCHOOL



For the third consecutive year, NJIT has earned the 2017 Military Friendly[®] School designation by Victory Media, publisher of *G.I. Jobs*[®], *STEM Jobs*sm and *Military Spouse*. First published in 2009, Military Friendly[®] Schools is a comprehensive resource for veterans today. Each year, the list of Military Friendly[®] Schools is provided to service members and their families, helping them select the best college, university or trade school to receive the education

and training needed to pursue a civilian career. Institutions earning the Military Friendly[®] School designation were evaluated using both public data sources and responses from Victory Media's proprietary survey.

More than 1,600 schools participated in the 2017 survey; 1,160 were awarded with the designation. NJIT will be showcased along with other 2017 Military Friendly[®] Schools in the annual *Guide to Military Friendly[®] Schools*, special education issues of *G.I. Jobs[®] and Military Spouse* magazine and on militaryfriendly.com.

END NOTES

MICHAEL EHRLICH,

associate professor in NJIT's Martin Tuchman School of Management and co-director of the New Jersey Innovation Acceleration Center, published an article on the National Science Foundation's Lean Start-Up Push in Coller Venture Review. "The National Science Foundation's Lean Start-Up Push: I-Corps as a Model for International Univenture" surveys initiatives and focuses in detail on I-Corps, a flagship program launched by the National Science Foundation in 2011.

MELODI GUILBAULT,

senior university lecturer in NJIT's Martin Tuchman School of Management, published an article in the *Journal of Marketing for Higher Education*. The article reframes the debate about who the customer is in higher education using the framework of market orientation, customer orientation and service (including co-creation) and relationship marketing.

MURAT GUVENDIREN,

assistant professor in the Otto H. York Department of Chemical, Biological and Pharmaceutical Engineering, gave a keynote speech entitled "Designing Biomaterial Inks for 3D Printing of Tissue Engineering Scaffolds and Medical Devices" at the 2016 Symposium on Biomaterials held Oct. 24-25 in Iselin, N.J.

BURT KIMMELMAN, professor



of English, has published his ninth collection of poetry, *Abandoned Angel* (Marsh Hawk Press).

MARGUERITE SCHNEIDER,

associate professor of management in NJIT's Martin Tuchman School of Management, has won the annual NJPRO Foundation/ Seton Hall University Best Paper Award in Finance for her book chapter "Managerialism vs. Shareholderism: An Examination of Hedge Funds Activism."

RICHARD SHER,

distinguished professor of history in the Federated History Department of NJIT and Rutgers University-Newark, has been appointed a Senior Warnock Fellow at Yale University for the 2016-17 academic year while on sabbatical leave.

MING FANG TAYLOR,

assistant professor in NJIT's Martin Tuchman School of Management, presented two papers during the American Accounting Association 2016 Annual Meeting. The titles of the two papers were "Executive Social Networks and Earnings Management" and "CFO Social Networks and Tax Avoidance," both co-authored with Bill Francis, Iftekhar Hasan and Qiang Wu.

MENGCHU ZHOU,

distinguished professor of electrical and computer engineering, co-authored a paper that won the Best Paper Award at the 9th International Conference on Internet and Distributed Computing Systems (IDCS 2016), Sept. 28-30, 2016, in Wuhan, China. "A Sliding Window Method for Online Tracking of Spatiotemporal Event Patterns" presents a fast-learning method to perform accurate online tracking of spatiotemporal event patterns encountered in Internet of Things-enabled environments from smart homes and smart buildings to smart campuses and smart cities.