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University Earns High Research Activity Status

Montclair State University has achieved yet another milestone in its ascension among the ranks of the nation's top public universities, earning the designation of R2 Doctoral University — High Research Activity — in the most recent reclassification of the Carnegie Classification of Institutions of Higher Education.

Seen as the national standard for college and university classifications, the Carnegie Classification is the leading framework for recognizing higher education institutional diversity.

The accomplishment comes just three years after Montclair State earned an initial Research Doctoral University (R3) designation, and signifies a continued expansion of the University's research portfolio and doctoral program offerings.

"Our new designation as a Carnegie R2 institution is a well-deserved validation of what we have already

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Diversifying the Teacher Pipeline



The "Diversifying the Teacher Pipeline" grant will provide additional support for recruiting and preparing students of color to become future teachers.

Across the country, students of color attend schools where they rarely see themselves in their teachers. New Jersey is no different. Furthermore, while studies show that all students benefit from a diverse teaching workforce, only 16 percent of New Jersey educators are teachers of color according to the New Jersey Department of Education (NJDOE). Montclair State University has been working to change that, and a recent \$750,000 NJDOE "Diversifying the Teacher Pipeline" grant that it shares with Rutgers University will encourage teacher diversity and expand recruitment and preparation opportunities for teachers of color in high-need schools.

Montclair State, which has a long-standing partnership with Newark Public Schools, will partner with the district in a 19-month pilot program that will, among other things, develop a pipeline of teacher candidates of color who want to return to teach in the community.

"It has long been a priority for us to produce a diverse teacher population for New Jersey schools," says College of Education and Human Services Dean **Tamara Lucas**. "The 'Diversifying the Teacher Pipeline' grant will provide additional support for our efforts to recruit and prepare racially and ethnically diverse high school students to become future teachers in New Jersey."

According to Center of Pedagogy Executive Director **Jennifer Robinson**, program efforts will focus on increasing the recruitment and retention of students of color with strong academic backgrounds to the University's teacher education program; developing and placing a pipeline of teacher candidates of color in Newark Public Schools; and devising a district-based collaborative induction plan for Newark Teacher Project graduates.

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Studying Power Plant’s Effects on Barnegat Bay Estuary

The Oyster Creek Nuclear Generating Station in Lacey, New Jersey, was the nation’s oldest active nuclear power plant when it was powered down last fall, giving a team of Montclair State researchers a unique opportunity to assess the station’s impact on the Barnegat Bay Estuary.

Biology professors **Paul Bologna**, **John Gaynor** and **Robert Meredith** have received \$131,934 in grants from the New Jersey Department of Environmental Protection for the first two years of a three-year project to study the profound impact they believe the station has had on the community structure of jellyfish in Barnegat Bay.

“This is a truly once-in-a-lifetime opportunity for us to collect incredible data before and after the decommissioning of a nuclear power plant,” says Bologna. “It’s highly likely that the combined research and efforts will generate information relevant to many

different power and industrial plants.” For Meredith, the project also offers an unprecedented opportunity to conduct “a mini experiment of global climate change and its potential impact.”

In the summer of 2018, Bologna and a team of undergraduate and graduate students collected, processed, identified and measured samples in the field. The organisms will be compared to those collected after the plant’s shutdown. Gaynor and Meredith are using

DNA analysis to identify any unknown organisms collected by Bologna and his students. Their efforts, according to Bologna, will essentially “bar code” the bay.

The professors will determine the impact of the plant on the bay by discovering — and pinpointing — differences between the types of organisms collected before and after the shutdown. They expect to see an impact on everything from crabs and eelgrass to larval fish and jellyfish and have

hopes that the area will return to what it was like before the plant opened in 1969. “How long this might take, though, is anyone’s guess,” Meredith says.



Paul Bologna is among researchers studying the effects of the Oyster Creek Nuclear plant on jellyfish in Barnegat Bay.

Diversifying the Teacher Pipeline

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Work on this program began even before the grant funding and is part of an ongoing effort by the University to address a teacher shortage in New Jersey, particularly teachers of color.

“Montclair State is again in the vanguard of teacher preparation and in leading the recruitment and retention of teachers of color — as well as teachers for urban schools,” says Robinson. “The program is purposefully meant to be a model for other programs across the state.

The plan is to develop a set of strategies, policies and practices to share with other New Jersey teacher education programs.”

The new project will extend the work of the University’s innovative Newark-Montclair Urban Teacher Residency Program, the teacher certification program for college graduates and career changers committed to urban education that is the University’s model for site-based teacher preparation.

“The grant will also help to provide funding for summer community internships, digital backpacks and

more, and allow us to continue Residency practices with additional certification areas,” she says.

The project is especially meaningful for Robinson. “Since 1998, much of my scholarship has been in the area of recruiting and retaining teachers of color, beginning with the establishment of Teacher Education Advocacy Center within the Center of Pedagogy,” she says. “This grant will help us sustain our work. Most important, it will help us learn more about how to do this work so that we can increase the diversity of the New Jersey teacher population.”

Supporting Clean Energy Development

The University’s Clean Energy and Sustainability Analytics Center facilitates research, analysis and outreach regarding clean energy development in the state, country and abroad.

Center programs are funded, in part, by the PSEG Foundation; state agencies, including the New Jersey Board of Public Utilities; organizations such as the Sediment Management Work Group; and ongoing National Science Foundation and U.S. Department of Agriculture grants.

The Center collaborates with faculty on numerous research projects. “For example, we’re working with School of Communication and Media Professor **Anthony Pemberton** on a film and education project documenting stakeholder perspectives on clean energy in India — and here in New Jersey,” says Center Director and Earth and



Environmental Studies Associate Professor **Pankaj Lal**.

Other Center-related research projects include Lal’s own explorations of place-based bioenergy sustainability and biomass-based biofuel development.

The Center also contributes to New Jersey energy and environmental planning through faculty-student research in clean energy and

sustainability analytics and the development of state-of-the-art integrated economic models.

Lal says the Center is not only the future of energy in New Jersey by hosting events for policymakers, academics and other stakeholders — such as the 2018 First Annual Clean and Sustainable Energy Summit — but also through a host of education programs designed to cultivate tomorrow’s energy leaders.

Selfie-Identity Matters

For young African Americans, exposure to racial discrimination — online as well as in everyday life — often leads to anxiety, depression and diminished academic performance.

Psychology professors **Sally Grapin** and **Carrie Masia** have received a \$10,000 grant from the American Psychological Foundation for their project “Selfie-Identity Matters,” to explore the relations among online racial discrimination, racial centrality and academic achievement among African-American teens.

“We hypothesize that racial identity will moderate the relationship

between racial discrimination and academic outcomes,” says Grapin. “Specifically, when students exhibit higher levels of racial identity, the relationship between discrimination and academic outcomes will be attenuated.”



In fact, Grapin suggests, racial identity may well be a source of “immunity” against the harmful effects of discrimination.

The team will survey more than 100 children and adolescents for the project, which will study online discrimination targeted to specific individuals as well as vicarious discrimination targeting racial and ethnic groups.

Doctoral and undergraduate students will be involved in the project that is expected to offer insight into protective mechanisms and possible intervention pathways for improving the well-being and academic achievement of African-American youth.

“This research,” says Grapin, “may have implications for interventions in schools and other community settings.”

Overcoming Childhood Speech Sound Disorders

While most children outgrow common speech sound disorders — such as producing a “w” for an “r” — others persist in making speech sound errors, which can create academic and social issues that can persist for years.

Clinical Biofeedback Laboratory founder **Elaine Hitchcock** is working to change that.

“Speech sound disorder in childhood poses a barrier to academic and social participation, with potentially lifelong consequences for educational and occupational outcomes,” says Hitchcock, an associate professor of Communication Sciences and Disorders.

She recently received a \$271,000 sub-award for the first year of a

five-year, \$1.4 million collaboration with colleagues at New York University and Syracuse University for a study that will advance both the understanding of speech production as well as the remediation of residual speech errors in school-aged children.

Funded by the National Institutes of Health, Hitchcock’s project “Biofeedback – enhanced treatment for speech sound disorder” will meet a public health need by conducting the first randomized controlled trial that compares the efficacy and efficiency of speech intervention with and without real-time visual biofeedback.

“It will also test the hypothesis that the intervention efficacy can be optimized when biofeedback

technology is selected to offset the learner’s primary deficit,” Hitchcock says.

The project will employ both undergraduate and graduate students, who will work with Hitchcock in the Clinical Biofeedback Lab testing children up to age 15.



Elaine Hitchcock works with a student in her Clinical Biofeedback Laboratory.

Changing Lives in Paterson

For many, life is hard in Paterson, New Jersey — a city confronting problems from extreme poverty and rising crime to substance abuse. It can be a difficult place to grow up.

P-CASA — the Paterson Coalition Against Substance Abuse — works to stop alcohol, tobacco and drug use among the city’s young people through outreach, education, community empowerment and collaboration, with help from Montclair State faculty.

P-CASA efforts are supported by a 10-year, \$1.25 million Drug-Free Communities grant from the Substance Abuse and Mental Health Services Administration. According to **Robert Reid**, P-CASA director and a Montclair State Family Science and Human Development professor,



the DFC grant was awarded in two funding cycles, with the most recent \$625,000 cycle providing support from 2018 to 2023. P-CASA surveys detail how difficult life is for youth in the city: 30 percent said they used alcohol before the age of 13; 43 percent don’t believe marijuana increases risk of harmful consequences; and prescription drugs are increasingly popular among teens.

“These funds enable us to continue working with and within the

Paterson community to eliminate underage substance use — and to reduce the negative outcomes of these behaviors,” says Reid.

He notes that strong partnerships with Paterson students, parents, civic associations, faith-based organizations, schools, social service agencies, law enforcement and media are moving the city toward positive outcomes, including reduced access to alcohol for minors and increased awareness of the dangers of teen substance use.

During the current five-year project period, Reid anticipates that P-CASA will reach more than 37,500 individuals through substance abuse prevention activities and programs designed to further increase community collaborations and reduce alcohol, marijuana and prescription drug abuse among 12- to 17-year-olds.

Understanding How Ecosystems Respond to Change

As species extinction accelerates because of climate change and human intervention, understanding how those extinctions impact ecosystems is vital.

University researchers are using cutting-edge tools in mathematical modeling to understand ecological food webs and their resilience to change.

“In the broad sense, we’re developing mathematical tools that can be adapted to a specific setting to predict possible outcomes to random disturbances. For example, the health of a food web can be measured by its susceptibility to an invasive species or the resilience to a species extinction,” says College of Science and Mathematics Dean **Lora Billings**. She and Mathematical Sciences Professor **Eric Forgoston** have received a three-year, \$249,997 National Science Foundation (NSF) award by its Mathematical Biology program in the Division of Mathematical Sciences for their project, “Stochastic Interactions: Understanding Invasion and Extinction in Ecological Systems.”

“We will scientifically address questions about the interdependence of species and how their population changes from the impacts of climate change, human intervention and other environmental factors,” Billings explains.

By collaborating with ecologists from the British Antarctic Survey with expertise in analyzing Antarctic tundra ecosystems, the team will apply an interdisciplinary approach grounded in observable data. “While our work is general and can be used to study any food web

and its associated invaders, we’ll start by considering the Antarctic food webs,” says Forgoston.

“In addition, we plan to study soil, marine, freshwater and terrestrial food webs from around the world,

Forgoston and Billings, who note the high demand for students with analytical and quantitative skill sets in industry, as well as the opportunity for and impact on a topic the public considers a priority now and for the foreseeable future.



“We’ll be able to identify what makes an ecosystem unbalanced and how robust food webs are to unexpected environmental changes – whether from natural disasters or an invasive species.”

—Eric Forgoston

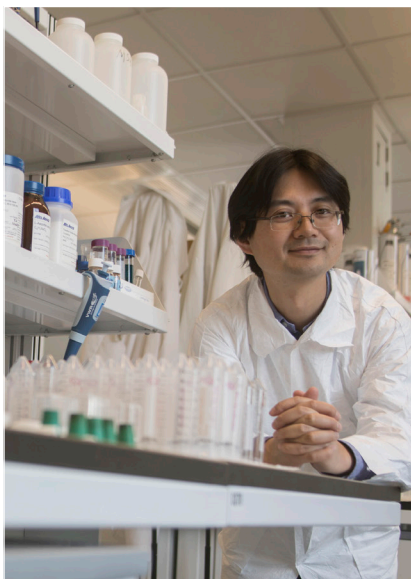
as well as synthetic food webs generated from a variety of mathematical models,” he adds. The project is funded by the NSF Research in Undergraduate Institutions (RUI) program, which supports opportunities for undergraduate research. Student research in applied mathematics at both the undergraduate and graduate levels is a priority for

“We’ll be able to identify what makes an ecosystem unbalanced and how robust food webs are to unexpected environmental changes — whether from natural disasters or an invasive species,” says Forgoston. “This improved understanding will lead to scientific tools and methods that could help us protect and better manage our environment.”

SPOTLIGHT: News Briefs

Professor Honored for Superior Achievement

Earth and Environmental Studies Professor **Yang Deng** received the 2019 Superior Achievement Award from the American Academy of Environmental Engineers and Scientists in April for his research on emergency water treatment with ferrate(VI) in response to natural disasters.



Yang Deng was honored for achievement.

The Academy's awards competition honors the best environmental engineering and science in the country.

With the frequency and magnitude of natural disasters increasing globally, clean water is a top priority after catastrophic events for survival and disaster relief.

"But the invented technology is expected to be applied anywhere for production of safe and clean water after natural disasters," says Deng, whose work includes student researchers and is supported by the PSEG Institute for Sustainability Studies and New Jersey Water Resources Research Institute.

Studying Italy's Migration Experience

Immigration is a hot button issue making daily headlines both in the United States and abroad. Associate Professor of Italian **Teresa Fiore**, the Inserra Endowed Chair in Italian and Italian American Studies, recently published an exploration of the Italian migration experience that has garnered international acclaim.

Pre-Occupied Spaces: Remapping Italy's Transnational Migrations and Colonial Legacies explores Italy's formation and development on a transnational map through a cultural analysis. As Fiore sees it, today, Italy and the United States face similar immigration issues — from border closings to views of immigrants. "Such belittling and exclusion [that is seen in both countries] only compounds problems by creating divisions and a deeper sense of frustration," she says.

Published by Fordham University Press, the book has won the American Association of Italian Studies Book Prize and was a finalist for the international 2018 Bridge Book Award.

Tracking Income Inequality

Because the Federal Reserve's mandate is a low unemployment rate, the Federal Reserve has often lowered interest rates in an attempt to stimulate the economy. While lowering interest rates may do just that, it is not clear that all income groups experience equal growth in incomes because of the policy stimulus, says Assistant Professor of Economics **Edmond Berisha**, whose research on

Professor Receives National Award

Information Management and Business Analytics Professor **Ethne Swartz** was inducted as a Justin G. Longenecker Fellow at the annual conference of the United States Association for Small Businesses and Entrepreneurship in January and will be a Fulbright Scholar in South Africa this summer. With her induction, Swartz joins a select group of 66 distinguished educators, researchers, government officials, small business advocates and trade association leaders who have received the Association's prestigious award since 1986.

"I'm honored to be recognized for my contributions and to be among some of the most eminent educators in the United States," Swartz says, noting that academic research focused on the importance of women entrepreneurs has made its mark on state and national government policy. "I'm proud that those of us who pushed for equity in treatment of women-owned companies have helped to create support for these companies."

income inequality and household debt has been published in both *The Social Science Journal* and the *Journal of International Money and Finance*.

"From our empirical work, we find that household debt and equities are inversely related to interest rates and associated with higher levels of income inequality," he says.

NEH Supports Norman Conquest Project

For a century after the Norman Conquest of Sicily, the Italian island flourished. Sicily was at the height of its power in the 12th century, and even now, hundreds of monuments built in the era — from castles to monasteries — dot the Sicilian landscape. Now Montclair State researchers are looking to document and protect them.

Associate Professor of History **Dawn Marie Hayes** recently received a nearly \$50,000 National Endowment for the Humanities (NEH) Humanities Collections and Reference Resources grant for an

a software engineer in the private sector, have been working on.

The one-year grant for the project, titled “Documenting the Past, Triaging the Present and Assessing the Future: A Prototype for Sicily’s Norman Heritage, ca. 1061-1194,” supports a pilot phase that will produce an online prototype that documents the 147 monasteries known to have been built during that era. The team will provide historical and site-specific data for all of the monasteries, as well as photographic and video documentation and relevant

significance. “It’s important because it calls attention to a special society that was culturally rich — one where Christians, Muslims and Jews lived side by side in relative harmony over a century or so.”

According to Hayes, while the project is rooted in medieval history, it also draws on 21st-century STEM disciplines. “The Norman Sicily Project represents a society from almost a millennium ago via cutting-edge technologies that will be connected to other data sets on the web,” she says.

Earth and Environmental Studies Acting Chair **Greg Pope** is the project’s co-director and will guide the project’s sustainability component.

“We’ll enter information from field visits, seismic data and, whenever possible, results from on-site sustainability assessments of the conditions of the monuments’ stones and the greatest environmental threats to their survival,” Hayes explains. “We’re not just exploring these monuments as relics of a past age; we’re also assessing their ability to endure climactic, geologic, seismic and — in some cases — volcanic threats.”



12th century cathedral in Monreale, Sicily

ongoing digital archival compilation of the Sicilian monuments for a project Hayes and her husband, Joe,

genealogical data for the 52 surviving structures. For historian Hayes, the project has special

University Earns High Research Activity Status
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known — that we are a dynamic research university with faculty and students who are producing cutting-edge research,” says Vice Provost for Research and Dean of The Graduate School **Scott Herness**.

Since its initial R3 designation in 2016, the University has not

only added new doctoral-level programs such as its PhD in Clinical Psychology, but it has also increased the breadth of funding for its research, from federal, state and private funds in support of both basic and applied research.

“Montclair State’s new status as a Carnegie R2 institution confirms the continuous growth of the University, and will further enhance

its capability to attract the highest caliber students, faculty and staff,” says University Provost and Vice President for Academic Affairs **Willard Gingerich**.

“This designation recognizes the impact we are making in the state, and is a testament to the years of hard work by so many members of the Montclair State community,” he adds.

University Debuts Research Portal

As part of its partnership with Research with New Jersey, Montclair State University’s online research portal, Research with Montclair, debuted in early 2019.

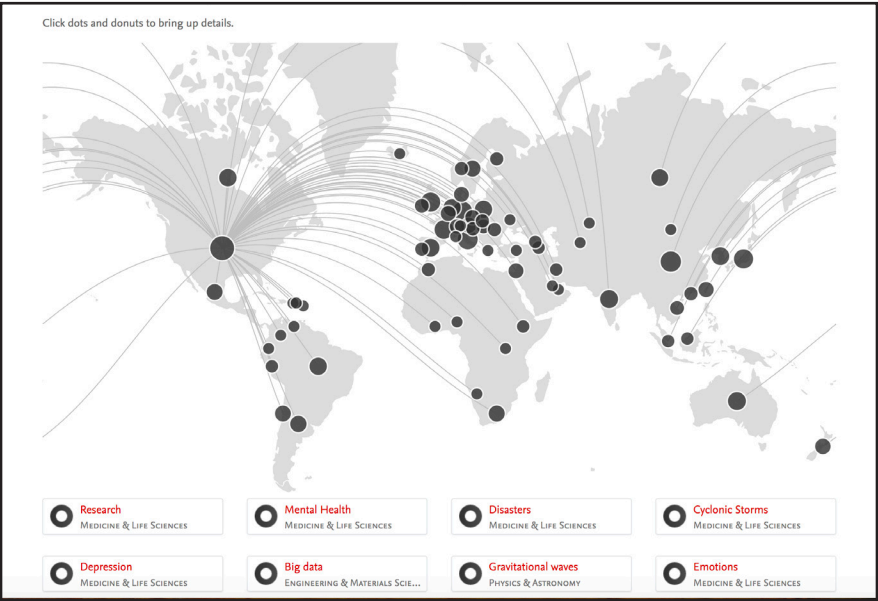
“The portal gives visitors a quick look at the state, national and international impact of the University’s outstanding research efforts,” says Vice Provost for Research and Dean of The Graduate School **Scott Herness**. “It is also an efficient way for entrepreneurs to connect with the cutting-edge research breakthroughs that can lead to the creation of new products and bolster the state’s reputation as a national leader in innovation.”

The portal includes an interactive map that shows the extent of the University’s collaborative research reach as well as abstracts of published works and researcher biographical information.

Montclair State is among six leading New Jersey universities contributing to Research with NJ, a scientific database launched in 2018 by Governor Phil Murphy to foster scientific collaboration and support the continued development of New Jersey’s innovation economy.

While the Research with Montclair portal showcases University research and researchers, it also links to the research produced at Rutgers University, Princeton University, the New Jersey Institute of Technology, Rowan University and Stevens Institute of Technology, which are all part of the Research with NJ program.

Research is critical to the mission of the University, which has just recently earned the designation of R2 Doctoral University — High Research Activity — in the most recent reclassification by the Carnegie Classification of Institutions of Higher Education. *(See story on page 1 for more information on the classification.)*



Montclair State’s research portal shows its global collaboration at researchwith.montclair.edu.

“The portal is also an efficient way for entrepreneurs to connect with the cutting-edge research breakthroughs that can lead to the creation of new products and bolster the state’s reputation as a national leader in innovation.”

—Scott Herness

Building on a distinguished history dating back to 1908, Montclair State University is a leading institution of higher education in New Jersey. Designated a Research Doctoral University by the Carnegie Classification of Institutions of Higher Education, the University’s 11 colleges and schools serve 21,000 undergraduate and graduate students with more than 300 doctoral, master’s and baccalaureate programs. Situated on a beautiful, 252-acre suburban campus just 12 miles from New York City, Montclair State delivers the instructional and research resources of a large public university in a supportive, sophisticated and diverse academic environment.



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