School of Arts and Sciences

SPRING/SUMMER 2013

COSS

Excellence in the Arts and Sciences

Working toward a New Understanding of Human Health

Exercise scientists develop unique insights into major diseases

epression. Obesity. Chronic inflammation.

These medical conditions draw researchers across the spectrum of health, social, and physical sciences.

But there's a department in the School of Arts and Sciences that has staked out a unique approach to studying all of those afflictions.

Welcome to the Department of Exercise Science and Sport Studies.

The fast-growing department serves more than 1,000 undergraduates, offering three science options and another in sport management.

"It has grown by leaps and bounds," says acting department chair Neil Dougherty. "The pattern of medicine today, which looks at the whole body rather than just isolated aspects of one's life, has had a tremendous impact on our field."

Professors Brandon Alderman, Sara Campbell, and Greg Henderson are among the newest faculty members in the department's science concentrations. The three bring a passion for teaching and research, and a commitment to addressing major public health issues through the lens of exercise.

In Alderman's recent research, for example, students battling depression engaged in brisk aerobic workouts as well as meditation at campus recreation centers.

"I am particularly interested in the effect of exercise on mental health," says Alderman, who is collaborating on the study with faculty from the psychology department and the Center of Alcohol Studies.

As an exercise scientist, Alderman's research mission was to acquire data about changes in the students' cardiovascular responses, and the electrical activity of their brains using EEG.

(continued inside)



From left: Professors Sara Campbell, Brandon Alderman, and Greg Henderson explore major health problems through the lens of exercise science.

RUTGERS

School of Arts and Sciences

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STUDENT SPOTLIGHT



A Once Reluctant Student Finds Purpose in Eclectic Pursuit of Knowledge

An undergraduate career stands as testament to liberal arts and sciences

best way to get

people involved is

through art, music,

and mass

culture.

ark Hansen had his doubts about going to college. He was a creative thinker with a flair for finding alternative paths.

"My parents pushed me to go to college," he says. "I wanted to start a record label."

So he compromised by studying sound recording and music business at a I feel that the school in Connecticut.

But Hansen experienced a political awakening that caused him to rethink his future. He wanted to contribute to the public conversation about political and social issues, but in a way that would highlight overlooked perspectives and resonate with ordinary citizens.

"You can't expect every person to have the time or energy to develop a stance on every problem," he says. "So I feel that the best way to get people involved is through art, music, and mass culture."

Convinced he needed a more comprehensive education, he transferred to Rutgers and began a relentless pursuit of knowledge.

At the School of Arts and Sciences, where he is a senior in the Honors Program, he has taken off in multiple directions with his studies, drawing intriguing connections between humanities,

social and behavioral sciences, and fine arts.

He'll graduate with degrees in American studies and visual arts. But he has also focused on cultural anthropology, Middle Eastern studies, and political science.

Hansen describes his eclectic academic record as a response to a complex world facing complicated problems. It's also a testament to the enduring appeal of the liberal arts and

> "I felt it was better to have an understanding of many disciplines, rather than sticking with a single field," Hansen says. "I felt that innovative thinking came from an interdisciplinary approach."

Indeed, this semester he plans to work with students from the Department of Biomedical Engineering on a mobile game/application aimed at detecting autism and other developmental disabilities in children.

He is planning on a career in architecture, but in a capacity that goes beyond designing buildings. He wants to explore how architecture can help strengthen communities and contribute to civic life. Ultimately, he is seeking work that will benefit society.

"I feel lucky that through fate, or through chance, I am here at Rutgers, and I have resources at my disposal," he says. "I have no excuse not to help those who did not have such luck."

Keeper of Tradition

Larry Paragano has created a scholarship to preserve Italian language and culture in New Jersey

younger generations

that haven't had the

opportunity to learn

t was 1938 when Nazario "Larry" Paragano's family moved from a small village in southern Italy to Newark, New Jersey.

Paragano, 7 at the time, remembers having no heat or hot water in the family's sixthfloor walkup at Bergen Street and 14th Avenue.

Despite the economic challenges, Paragano says those early years in America were rich with family, faith, and friendships.

"I actually think our children are not as fortunate as we were," he says. "I had uncles, aunts, and cousins all living close by. We saw them at least once a week and most of the time a lot more."

about their Paragano, who went on to become a highly successful heritage. builder and developer, feels a responsibility to share his life experiences and heritage with younger generations. His autobiography, Life's Dreams and Realities, provides an in-depth examination of his family's roots in Italy and the move to America. He also was one of the founders of the New Jersey Italian and Italian-American Heritage Commission, which is located at Rutgers.

And most recently, Paragano has funded a scholarship for the Department of Italian in the School of Arts and Sciences.

The Paragano Family Foundation Endowed Scholarship for Italian Studies will provide tuition assistance to full-time graduate students, with a preference for those in the master's in teaching program.

Laura S. White, a professor of Italian, said the scholarship will help preserve Italian language and culture in New Jersey.

"The interest in Italian is growing, and there is a need for good, well-trained teachers at the secondary school level," White says.

Paragano says that in an increasingly mobile society, children grow up without access to grandparents and others who can pass There are

on traditions.

"There are younger generations that haven't had the opportunity to learn about their heritage," he says.

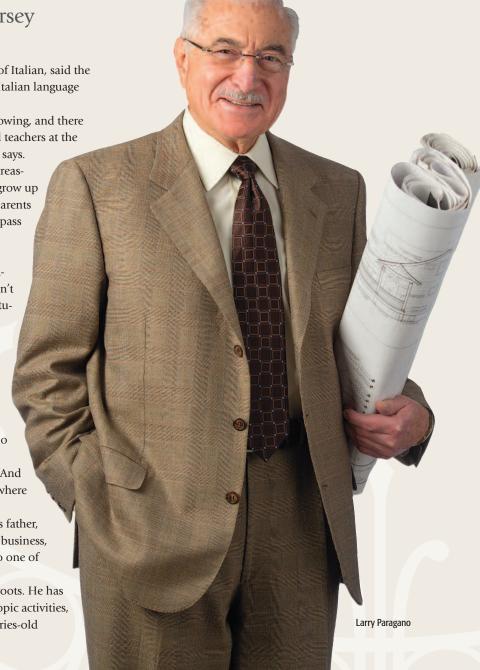
"We want to reach them and provide them with that opportunity."

Paragano was born in Camella, a village in the Salerno province.

"It was beautiful," he says. "And it had the best mozzarella anywhere in the world."

After settling in America, his father, Vincent, started a construction business, which Larry would expand into one of the largest in the state.

He has never forgotten his roots. He has been active in many philanthropic activities, including renovating the centuries-old church in Camella.



(continued from front)

Working toward a New Understanding of Human Health

ara Camphell



Gregory Henderson



Brandon Alderman

"It's very exciting because nobody really has a full grasp of the precise mechanisms by which exercise works to cause a lessening of depression," Alderman says. "Our approach gives us a better chance of understanding the finer neurophysiological details."

The three professors were all biology majors in college who saw exercise science as the natural path for their interest in life science.

"One of the great things about exercise is you can apply it to anything,"
Campbell says. "The whole concept of using exercise to combat disease has always fascinated me."

Campbell's current work may shed light on inflammation, which is a common characteristic of some of the most intractable illnesses. She and her students are exploring how fat molecules can compromise the intestinal lining, leading to inflammation.

She says exercise science is

a particularly rewarding field because it involves complex science yet also has the potential to help patients take more control over their own health.

"Our primary question in this research is: how does fat influence the intestinal integrity?" she says. "But we're also asking: how can we

The pattern

use exercise to treat and prevent this?"

Henderof medicine today, son too is focused on which looks at the fat, but his specialty is whole body, has had a the metatremendous impact bolic system, and how exeron our field. cise contributes to the breakdown of fat molecules. His recent research, in collaboration with professor Shawn Arent, fo-

to a meal.

Accordingly, he employs sophisticated life science technology, such as isotopes and mass spectrometry, to gain a deep look at the metabolic process and to learn how exercise changes the relationships between different types of fats in the body.

cuses on obese adults, exploring the

impact of a single bout of exercise prior

"I'd like to make discoveries that can be relevant to heart disease and type 2 diabetes, but I think it's incomplete to study those diseases outside of the context of exercise," he says. "Exercise directly affects those metabolic pathways that set the stage for the diseases."

Students majoring in exercise science have their sights set high, with goals that include medical school, graduate research, and careers in physical therapy and fitness management.

"What I like about this major is that it gives you a whole body perspective," says senior Stephen Shikhel, a member of Campbell's research team. "It takes what I've learned from the traditional sciences and puts it back in relation to the whole body."

Senior Ryan Lavell, a member of Alderman's research team, plans on going to medical school. He hopes one day that exercise science will move to the forefront of modern medicine.

"A lot of doctors today can prescribe exercise but it may be very general," he says. "But as exercise scientists practicing medicine, we can provide more accurate and more precise programs that might ultimately help to heal people."

To learn how exercise scientists at Rutgers are teaming up with psychology faculty to treat depression watch the video at sas.rutgers.edu/exercise.

CONFRONTING THE PRESERVATION CHALLENGES OF THE 21st CENTURY

A global gathering reflects the vision of the cultural heritage program at SAS

t was a scene one could imagine taking place at the United Nations.

The sloped lecture hall was filled with scholars, activists, and government officials.

They came from 30 nations and six continents for a common objective: discuss and develop ways to preserve the cultural and natural sites of the world.

But the setting for Cultural Landscapes: Preservation Challenges for the 21st Century wasn't UN headquarters in Manhattan.

something more intangible such as nature and cultural traditions.

CHAPS graduates go to work in museums, architectural firms, preservation advocacy groups, and government agencies. They may become planners, land use lawyers, or restoration contractors.

"You get a very broad perspective," says student Adi Sela Wiener, who worked as an architect in Israel before joining CHAPS. "It gives me a new set of tools and system of understanding."



Our focus on global heritage distinguishes

us from many other programs.



It was Rutgers University in New Brunswick, New Jersey.

The conference last fall was assembled by a relatively new but fast-growing program at the **School of Arts and Sciences:** Cultural Heritage and Preservation Studies, or CHAPS.

"It's our challenge to work together for a conservation plan that respects the complexity and wealth of diverse values in this rapidly changing world," CHAPS director Archer St. Clair Harvey told the audience in opening remarks.

CHAPS is a graduate and certificate program in the Department of Art History that explores how communities understand, preserve, and protect their heritage. Scholars at CHAPS envision heritage in many ways—architecture, monuments, or Joella van Donersgoed, an exchange student studying archeology in the Netherlands, agrees: "At CHAPS, I am not just reading archeology papers. I am reading the work of historians, public policy experts, and philosophers," she says.

The conference, which drew everyone from U.S. Park Service officials to a master farmer/philoso-pher/activist from Tajikistan, demonstrated that CHAPS is becoming increasingly prominent.

"Our focus on global heritage distinguishes us from many other programs," St. Clair Harvey says.

The conference marked the 40th anniversary of the landmark World Heritage Convention, which was adopted by the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

The theme of the conference was cultural



The Nagacadan Rice Terraces in the Philippines serve as a breathtaking example of a cultural landscape—a seamless blend of nature, culture, and economics.

landscapes—a holistic approach that goes beyond preserving property to take into account the surrounding landscape and communities.

Lauren J. Kane, a CHAPS graduate, says the conference provided an essential exchange of ideas on a seminal topic.

"One of the success stories of this conference was how everyone came away with handfuls of ideas that they can bring back to their communities and apply to their work," Kane says.



SOCIAL & BEHAVIORAL SCIENCE

MATHEMATICAL & PHYSICAL SCIENCES



Mike Smith, a math teacher in Old Bridge, New Jersey, helps his students gain a deeper understanding of math. He received special training at Rutgers through the Partnership for Excellence in Middle School Mathematics.

Motivated by High Ideals, She Finds Fulfillment in Geography

A graduate student is working in Bangladesh to improve living conditions

hen Alison Horton began contemplating careers, she was drawn to professions that valued social justice. She thought about becoming a social worker or an urban public school teacher.

But the field that most appealed to her ideals was geography.

"In college I was flipping through the course book and circling classes I wanted to take," Horton says. "There they all were: world hunger, poverty, migration issues, water resource management,

Alison has

made the connections

that most academics

make only after

years and years

of work.

"As it turned out, they were all geography."

population.

Now working on her Ph.D. in the geography department at the School of Arts and Sciences, Horton is not only studying those issues in depth, she's witnessing them firsthand.

The upstate New York native is spending the year in Bangladesh after winning a prestigious new Fulbright award that allows recipients to serve in foreign countries as special assistants in government ministries.

The Fulbright Public Policy Fellowship, which is in its inaugural year, aims to help scholars gain public-sector experience in an international setting while carrying out a related research project.

Horton, one of only 17 fellows nationwide in the program, is living in Dhaka, the nation's capital city, and working in the Ministry of Education.

She's conducting her own research in off hours, focusing on ways to reduce poverty and improve living conditions for the country's poorest citizens, with an eye toward alternative, community-based solutions. Though smaller in area than the state of Iowa, the country has a population of 150 million.

"I am immersing myself in the culture and humbly observing how the local people are working to improve their own country," she

says. "Bangladesh is extremely densely populated and incredibly impoverished, and the government is willing to take some alternative approaches toward improvement.

"I feel very fortunate to be placed within the ministry at such a fascinating time, and hope that I'll be able to learn from, and contribute to, the new policies."

Indeed, her fellowship comes at a time of rapid change for Bangladesh. The country is working toward its Millennium Development Goals, and has made strides in reducing poverty, increasing access to education, and improving the environment, according to the United Nations Development Programme.

Horton says one reason she chose geography is its ability to examine multiple and complex issues in the developing world.

"I really admire the approach of geographers," she says. "Many scholars examine and understand poverty through a strictly economic lens; a geographer also takes into account, for example, culture, politics, religion, climate, postcolonialism, and gender."

Professor Trevor Birkenholtz, Horton's adviser, agrees.

"Geographers are very good at asking 'why' questions," Birkenholtz says. "We want to understand why Bangladesh is the way it is, with respect to its historic colonial relationships, where it sits in global political and economic relationships."

Birkenholtz says Horton's assignment in the education ministry coupled with her own independent research makes for an extraordinary opportunity to understand Bangladesh.

"For many researchers, it's really difficult to interact with the organizations that set the policy," he says. "Alison has made the connections that most academics make only after years and years of work."

The geography department at the School of Arts and Sciences is an interdisciplinary and academically rigorous program that encompasses a range of fields, from cartography to environmental protection to international studies.

"Geography develops students' technical skills—map making and spatial data analysis—but also provides them with a well-rounded sense of their place in the world," department chair Richard Schroeder says. "We produce global literacy."

REIMAGINING MIDDLE SCHOOL MATH CLASS

An initiative to transform math education takes shape at Rutgers and local schools

h, middle school. It's a time when students' minds fill with thoughts about cool clothes, best friends, and the hottest video games.

But could they also get excited about math?
That question weighs on the minds of educators, policy-makers, and employers concerned over U.S. competitiveness in a globalized world.

"Middle school is a critical time," says Amy Cohen, professor of mathematics in the **School of Arts and Sciences** (SAS). "And there's a growing concern that students are coming into high school not knowing enough math and not showing interest in the subject matter."

Those concerns are the motivating force behind a Rutgers initiative aimed at transforming middle school math education.

The New Jersey Partnership for Excellence in Middle School Mathematics (PEMSM) draws on the talent of SAS and Graduate School of Education (GSE) faculty to provide experienced middle school teachers with new knowledge, strategies, and techniques that they can bring back to their classrooms.

In the process, Rutgers is forging critical partnerships with New Jersey school districts—an act of community outreach that can have lasting benefits for the state's educational system and economic health.

"The idea is that if we can engage students in learning math, if we can get them excited, if we can get them to feel empowered, then they stand a much better shot when they get to high school," says Cohen, who serves as principal investigator for a National Science Foundation grant that funds the program.

"This is good for the university and also good for our economic and political future," she adds.

Teachers say the program—which consists of seven graduate courses—has helped them develop an array of lively, engaging teaching techniques to augment traditional approaches that rely more on memorization of procedures.

"When I was a student, I learned to multiply fractions without really understanding what I was doing," says Ann Bomberger, a teacher in standing," Smith says. "Through the questioning, I want to see how they're coming up with the answer, and whether they understand the concept or are just following the instructions."

About 50 teachers have completed the PEMSM program and another 50 are current students. The teachers can take the courses as part of a master's in education program or as stand-alone professional development through the GSE. A total of 15 districts from across New Jersey are participating.

Rutgers is forging critical partnerships with New Jersey school districts—an act of community outreach that can have lasting benefits for the state's educational system.

Sayerville, New Jersey, who recently completed the Rutgers PEMSM program. "Now I spend a lot of time talking with my students about what it means; I draw pictures and use manipulatives so they understand what's being done and not just memorizing."

For Mike Smith RC'02, a teacher at the Carl Sandburg Middle School in Old Bridge, New Jersey, the program showed him how to effectively demystify math for students.

Smith's eighth-grade math class is like a continuous conversation centered around algebraic problems on a smart board that gets students connected and talking about the material. He asks pointed questions, trying to draw students out so he can understand their thought process and pinpoint where they are faltering. He's always ready to tailor his explanations so that students can better grasp the concepts.

"I'm trying to help students get a deeper under-

The overall vision was evident last fall when students at the Long Branch Middle School were given a problem to solve that involved pizza. Specifically, they had to figure out how many different combinations customers could order given the available toppings.

As they enthusiastically worked out the problem, teachers in the PEMSM program worked their way around the room, talking to students, monitoring their progress, but taking care not to give away the answer.

"Because when you lead them, it's not their solution," Judith Landis, a GSE instructor and veteran educator who led the exercise, told the teachers

Landis says the beauty of such "thoughtful mathematics" is watching students think for themselves and work their way toward a solution.

"And that's where math should always be," she says.

SAS.RUTGERS.EDU



Rutgers Ph.D. student Alison Horton (second from left) is spending the year in Bangladesh with a new Fulbright program. She is pictured here with a group of women who received legal training so they can advocate for marginalized residents.

Students Explore 21st Century Issues in Signature Courses

Signature Courses cover topics of enduring importance and establish communities of intellectual exchange. Designed and taught by scholars renowned for their research and teaching, Signature Courses combine lectures with small discussion sections. Read below about the Signature Courses that will be offered this fall and watch the video at sas.rutgers.edu/sig.



Conservation

Richard Schroeder, Geography
What are the scientific, moral, political, and
economic dimensions of balancing nature
conservation and human needs?



Genetics, Evolution, and Human Health

human health?

Terry McGuire, Genetics
Why do humans still get sick? What societal and
medical changes would be required to improve



Eating Right: The Ethics of Food Choices and Food Policy

Andy Egan, Philosophy

How can we reason ethically about individual choice and social action influencing how food is grown, processed, distributed, and consumed?



Energy and Climate Change

Alan Goldman, Chemistry
What is the energy problem? Learn what energy
is, how we make it, how we use it, and how we
will have to change the way we make it.



Extinction

Rob Scott, Anthropology
What role do natural and cultural processes
play in the extinction of languages, cultures,
religions, human groups, and other species?



War: Critical Perspectives

Ethel Brooks, Women's and

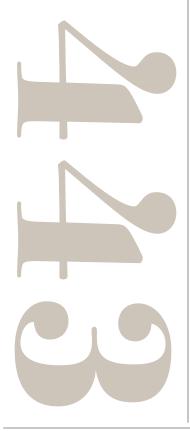
Gender Studies and Sociology

Who is affected by war? What are the
experiences and historical/cultural
contexts of war at home and for
displaced populations?

ROUNDUP

Things You May Not Know about the School of Arts and Sciences

443 current first years received Rutgers University merit scholarships.





Gwendolyn Baxley, Dean's List Fall 2012

 The Educational Opportunity Fund Program (EOF) offers financial and academic assistance to low-income New Jersey residents who show potential, and exhibit evidence of academic and/or creative promise, but who lack adequate educational and financial resources for college.

Gwendolyn Baxley, a senior EOF and honors student, has excelled at the School of Arts and Sciences, majoring in psychology, minoring in English and education, and pursuing several significant research projects. She intends to pursue a doctorate in education to become a researcher or policy analyst.

274 current first years scored above 2100 on their SATs.



There are 1.643 students pursuing Ph.D.'s at the School of Arts and Sciences in everything from Anthropology to Chemistry & Chemical Biology to Microbiology & Molecular Genetics to Women's & Gender Studies.

The School of Arts and Sciences is the school for liberal arts and sciences on the New Brunswick Campus of Rutgers, The State University of New Jersey. The School of Arts and Sciences carries on the tradition of excellence founded nearly 250 years ago by Rutgers College and expanded by the three other liberal arts colleges established in the 20th century: Douglass College, Livingston College, and University College. With more than 20,000 undergraduate and graduate students, 800 fulltime faculty, and more than 70 majors and minors in biological and physical sciences, humanities, mathematics, and social and behavioral sciences, the School of Arts and Sciences is the largest unit at the university, combining excellence in teaching with world-class research and preparing students to meet 21st-century challenges.

SAS Benefits From New Endowed Chairs

 Endowed chairs express the commitment of a university to an academic discipline at the very highest levels. In June 2011, an anonymous donor pledged to the university's Our Rutgers, Our Future fundraising campaign \$27 million to create the "Rutgers 18-Chair Challenge." For every \$1.5 million raised for an endowed chair that meets the donor's criteria, the donor will match the gift with the additional \$1.5 million necessary to fully fund a chair. Three of the first seven chairs have been created in the School of Arts and Sciences.

The Murray and Charlotte Strongwater Endowed Chair in Neuroscience and Brain Health: Created in February 2012 by Bed Bath & Beyond CEO Steven Temares RC'80 and his wife, Amy, the chair honors Amy's parents and is designed to recruit and retain an eminent scholar in the field of neuroscience. The chair will serve as the director of the Brain Health Institute, which investigates new ways to treat, cure, and prevent neurological disorders such as autism, Alzheimer's disease, and auditory aging.

The Gregory Q. Brown Endowed Chair in Cell Biology and Neuroscience: Created by the Motorola Solutions Board of Directors in May 2012, this chair honors the leadership and impact of company CEO Greg Brown LC'82. The holder of this chair will direct research to find treatments—and, potentially, cures—for strokes, Alzheimer's disease, brain and spinal cord injuries, dementia, and other debilitating conditions. The chair discipline was selected as a tribute to Brown's mother, Winifred Brown, who suffers from dementia.

The Professor Claud Lovelace Endowed Chair in **Experimental Condensed Matter Physics:** Created in December 2011 by Lovelace himself—a world-renowned expert in the physics field of string theory and a longtime member of Rutgers' Department of Physics and Astronomy—this gift supports a discipline that is, interestingly, the exact opposite of the field to which Lovelace devoted his life. "I feel I've done enough for theory," said Lovelace, who passed away in September 2012. "The experimental physicists at Rutgers produce things that are of immediate practical use."

HELPING UNDERGRADUATES DISCOVER THE RESEARCH UNIVERSITY



he annual Aresty Undergraduate Research Symposium seems to get bigger every year. In 2012, the Rutgers Student Center was overflowing with people checking out the many research projects on display. This year, the symposium takes place April 19 at the student center on the College Avenue Campus. Chuck Keeton, faculty director for the Aresty Research Center, and an astrophysics professor in the School of Arts and Sciences, discusses how the center is expanding its mission to help undergraduates get involved in research.

Q: How does Aresty go about getting undergraduates doing research projects?

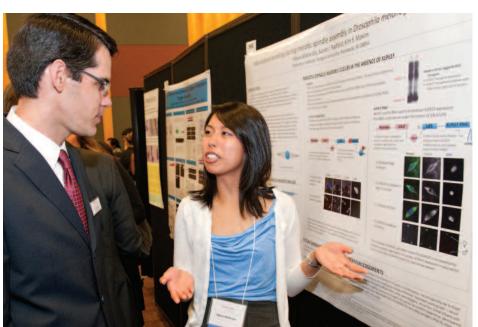
A: There are different stages in which a student might like to be involved in research. Several programs match students with faculty research projects and provide financial support as early as the summer before sophomore year. Other programs help experienced researchers with funding for expenses.

Q: Can you tell me about your new program for first-vear students?

A: The Aresty-Byrne Program is introducing students to inquiry-based learning in a seminar setting and then having them test their findings in a research environment. The goal is get students involved in research in their second semester at the university.

Q: What was the response when the seminars debuted this semester?

A: They filled up quickly. The student interest was exciting. We plan to offer more next year.



Junior Allysa Marie Go explains her research project to Charles Keeton, Faculty Director, Aresty Research Center.

Q: Aresty supports research in all areas. To what extent are nonscience disciplines taking advantage of the Aresty program?

A: At this point in the Research Assistant program, about half of the projects are not in the hard sciences. They're in the social sciences or humanities. We've seen some fantastic projects. And we're happy to talk with faculty about how to sculpt a project that would be appropriate for an undergraduate.

When we give presentations and explain to faculty and students what we do, they say, "Yes, I want to do that." We are in a fortunate position to be able to support more projects next year if we get more faculty

Q: The symposium drew nearly 400 presenters last year. How was the audience turnout?

A: It was equally impressive. What feels really good is faculty will spend hours there. The university president has always attended and so has the vice president for undergraduate education. The students see that what they do matters and that it's recognized at the highest levels of the university.

The Aresty Research Center is named for the late Jerome Aresty, a Rutgers alumnus, and his wife, Lorraine, who provided funding to establish and sustain the program.

Learn more about the program at aresty.rutgers.edu.

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