Borough of Manhattan Community College • The City University of New York

A Journal of Faculty and Student Excellence in Research and Learning

2013-2014

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Welcome to the 2013-2014 *Marks of Excellence*, our annual showcase of outstanding achievements by faculty and students at BMCC. This year's issue highlights projects in fields such as accounting, art and education, as well as cutting-edge science research.

These accomplishments are exemplary for many reasons. As is true for all community colleges, we don't have post-doctoral or graduate students to work alongside faculty in our labs. It's also true that community college students sometimes face more day-to-day challenges than those at traditional research universities.

That said, we have many things in place, to cultivate scholarship at our college. BMCC is home to students who welcome the rigorous expectations of ongoing, highly relevant research. And we are proud of our faculty who share a life-long passion for their fields, making complex theories accessible to students who are often the first in their families to attend college.

Our professors not only guide students in universal lab protocols, they pique their curiosity and engage them in hands-on, scientific inquiry, easing their transfer to four-year colleges where they continue their research endeavors.

We also understand that student engagement and growth doesn't only happen in a biology lab. It happens within our sports teams, where respect for academics ranks as high as winning games. It happens in the sculpture studio and art foundry, where new artists balance vision and technique. Student success takes root in our nursing labs, which employ the latest technology in human patient simulators, and it takes place in communities where our students, led by the seasoned social scientists on our faculty, study human behavior in a systematic, evidence-based manner, gaining insight into the critical social questions we face today.

"Diversity" is a word inexorably linked to the history and mission of BMCC. Our students hail from over 150 countries and all five boroughs of New York City. Diversity broadens the perspective of our classroom discussions and prepares our students for the increasingly global context of their prospective careers. At BMCC, we celebrate the diversity of our students with the diversity of opportunity you will see reflected in the 11 faculty and student stories presented in this issue.

Antonio Pérez, President
Borough of Manhattan Community College
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Seeing Black Holes in a New Light

Professor K. E. Saavik Ford and student Ricardo Nunes analyze the light inside active galactic nuclei—and build understanding of black holes.

Ricardo Nunes was a medical student in Salvador, Brazil when he admitted it wasn't the right path. "I had always wanted to go into aerospace engineering," he says. "It's been my dream since I was 15 years old. I'm passionate about galaxies and stars. Knowing how the universe works helps us understand how life works."

Today, Nunes is an engineering science major at BMCC. Through a stipend provided by the BMCC Scholarship Foundation, he's taking part in a research project led by Professor K.E. Saavik Ford, whose interest in stars, like his, started early. Growing up in Flushing, Queens, she often visited the Hayden Planetarium at the American Museum of Natural History, where she is now a Research Associate in the astrophysics department. She remembers being fascinated by constellations blinking from the planetarium's curved ceiling, and photographs of the scarlet cloud of dust and gas known as the Orion Nebula.

Professor Ford's current research focus is the Active Galactic Nuclei (AGN), or black holes expanding in the center of a galaxy. "Ricardo is looking at spectra from real AGNs," she says, explaining that active galaxies are bright enough to have their spectra measured by the Sloan Digital Sky Survey telescope in New Mexico. "Spectra can be graphed showing the brightness of an AGN as the 'y' coordinate," she says, "and the wavelength of the light as 'x'."

"Professor Ford is teaching me how to plot the data and giving me reference materials," says Nunes. He is also looking for gaps in the wavelengths, suggesting there is a secondary black hole orbiting a galaxy's central or supermassive black hole, a prediction made by Ford and others in a recent paper.

Black holes are collapsed stars whose gravitational pull is so strong, not even light can escape—so information gleaned from the light of a gaseous disc about to enter a black hole is of keen interest to scientists looking to understand the universe.

"Someday I want to be part of a research team looking at galaxies and stars," says Nunes. "Talking to graduate students at the museum, and being at BMCC has helped me become more outgoing in an academic setting. I always loved the idea of going where no one ever went before."

Carving Out a Future

Education major Daniel Meyer explores another side of his talent, sculpting.

Daniel Meyer is majoring in Secondary Mathematics Education at BMCC, having earned a Bachelor's of Science in Psychobiology at Binghampton University. "I've always enjoyed tutoring or working with young people," he says. "When I was 15, I was a summer camp counselor. Then when I was at Binghampton, a friend invited me to work in the Harlem Children's Zone program, Learn to Earn, where I tutored science and taught music production and nutrition."

Creativity, for Meyer, is a thread connecting these endeavors, "and that's something BMCC has enabled me to pursue," he says. With professor of art and sculptor Sarah Haviland as his mentor, Meyer was one of four BMCC students (the others were Ocali Catano, Steven Fang and Christina Alvarez) to be selected last winter for a scholarship workshop at the Modern Art Foundry in Astoria, Queens. "An instructor there is guiding him one-on-one on a project from the design of an original model, through making the mold resin and bronze cast," says Professor Haviland.

Meyer adds that to create the finished work—an original relief sculpture with images of water—he'll create an armature from wood, fill in the spaces with a kind of foam, wrap that with mesh wire and apply clay. The next steps involve silicone rubber, plaster and resin. "It's a multi-staged, back-and-forth process," he says, adding that working with Professor Haviland has helped clarify each step.

"I like how she's technique-oriented, which helps with problem solving," he says, and Haviland describes Meyer as "having facility with thinking three-dimensionally, as well as theoretically."

Haviland's own sculptures and installations have been exhibited in New York City and nationally in museums, galleries and private collections. "I can guide Daniel with visual design and the pitfalls that come with building structures," she says. "Also, my experience with proposals and winning some commissions has led me to encourage him to document his progress."

In addition to his work at the foundry, Meyer is completing an independent sculpture project with Professor Haviland, creating a life-size, clay half-figure that emerges from a wall, symbolizing the effort it takes to reach one's goals. The image, he explains, had its inception in the BMCC Sculpture Club, and as members graduated, in addition to completing courses toward his major, he committed to seeing it through.

Examining Japanese-Dominican Ties

Professor Yadira Perez Hazel inspires students with her research into Japanese immigrants in the Dominican Republic.

After spending her 1998 fall semester at Cornell University, majoring in Anthropology/Latino studies and learning Japanese, BMCC Center for Ethnic Studies professor Yadira Perez Hazel spent the next semester studying in Japan.

Then came a serendipitous moment that changed the course of her academic career. In December 1999, her postal-carrier stepfather Nilo Rivera was invited in for coffee by a family member who happened to live along his route, and as they were sitting, in walked Yuki, a friend of his hostess visiting from Japan. Mr. Rivera, assuming Yuki didn't speak Spanish, switched to English—but as it turns out, she not only spoke Spanish, she had grown up alongside his relative in the Dominican Republic.

Professor Perez Hazel met Yuki not long after, and her dissertation at the University of Virginia was inspired by the story of Yuki's family. They had moved to the Dominican Republic after the dictator Rafael Trujillo signed a 1956 treaty with the Japanese government, which in turn promised fertile land and a comfortable home to Japanese families who emigrated there as agricultural laborers.

Then in 1961, Trujillo was assassinated, pitching the country into chaos. Many of the Japanese settlements were abandoned, and in 2000, descendants of the original migrant families filed a lawsuit—still pending—and Perez Hazel has been examining "how they narrate the need to sue the Japanese Government." Her research began with a Mellon-Mays Undergraduate Research grant at Cornell University and in 2005, as a Fulbright scholar, she conducted field research on Japanese immigrant communities in the Dominican Republic, returning many times since.

Today, she says, part of her goal as a professor "is to connect high-level theoretical and historical material to present, real-life experiences, and encourage students to look at the link between history and culture in their own families."

Her students not only gain knowledge, they also learn methodologies for social research. Criminal justice major Jonathan Rodriguez, whose goal is becoming a New York City police officer, completed an assignment to conduct an oral history of someone of Puerto Rican descent, by interviewing his mother. "I learned why she is the way she is," he says. "I owe it all to this class. We became so close we even got matching tattoos. I got her name and she got mine." He is currently taking another class, *The History of Dominican Republic*, with Professor Perez Hazel.


ACCOUNTING

Taxpaying it Forward

Kaplan Scholar Chadrick Frederick and his mentor Professor Joel Barker build giving back into accounting careers.

Accounting major Chadrick Fredrick grew up in St. Lucia, where his interest in accounting began as he helped his grandmother, a fruit vendor, manage her finances. "I want to return there on visits to encourage kids to stay in school and explore careers in business or accounting," he says.

Frederick recently earned an IRS certification to be a volunteer tax preparer, and eventually, after he's earned his masters in accounting and started his own firm, "I could tutor accounting students to do returns for free like I did, using software the IRS provides," he says.

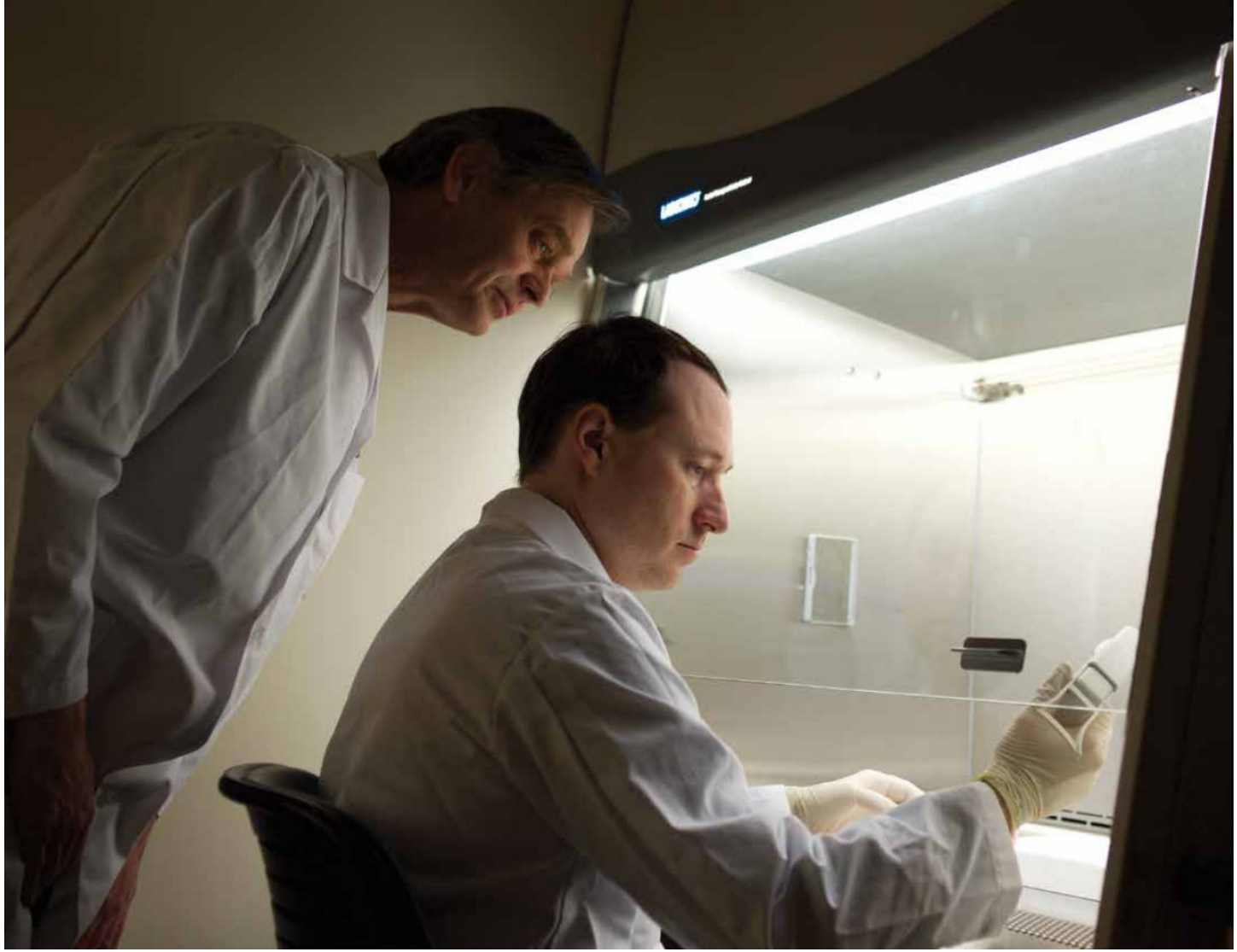
He's also doing internal auditing at the Federal Reserve Bank of New York, through a BMCC Service Corp internship, and is VP of the Accounting Club. Not only that, he's co-writing his first peer-reviewed article—analyzing IRS data and the tax code—under the close mentorship of Professor Joel Barker of the BMCC accounting department.

"The article examines the Earned Income Tax Credit, analyzing whether it's serving its intended population," says Professor Barker. "Every year, billions of dollars are defrauded from the IRS through fraudulent claims of EITC, and we're recommending ways in which tax preparers can assist in detouring this fraud scheme."

Professor Barker is himself an alumnus of BMCC, where he was a peer mentor and earned an Associate in Accounting degree. He received a transfer scholarship to Queens College, CUNY, earned bachelor's and master's degrees in accounting and went on to become a CPA, "but I realized the desk job facet of accounting is not my passion," he says, "so I became a professor. I followed my dream."

Chadrick Frederick's dreams are closer, thanks to the Kaplan Leadership Foundation, which is awarding him a tuition scholarship for his associate degree, and then will close the tuition gap—what's not covered by financial aid—at a four-year college for up to $10,000 a year.

"When I look at Chadrick, I see a younger version of myself," says Professor Barker, and comments on the support he felt at BMCC from professors including Josh Wolfson, now Chair of the accounting department. "He mentored me, and I mentor Chadrick," says Barker. "We pay it forward."



Cellular Ambition

Professor Alexander Gosslau leads students in research into the anti-inflammatory effects of natural product extracts.

Jeff Hedrick was the head buyer in a bookstore in Manhattan "but I had always loved biology," he says. "It was time for a change; the economy had tanked and I asked myself, 'What am I going to do?'"

The answer was to enroll at BMCC, where his first research project was with Professor Adolfina Koroch. "We were developing a strain of basil that has a genetic resistance to the mildew that causes crop failure," he says.

While working on that project, he met his current mentor, Professor Alexander Gosslau, who showed him how to check the natural extract's biochemical activities, and today, guides his participation in research focused on the anti-inflammatory bioactivity in natural extracts; specifically, those derived from black tea and orange peel.

"We inflame human cells in petri dishes," explains Professor Gosslau, "and then measure the impact of the natural extracts on that inflammation." Natural products, he says, cause few side affects and can be used to treat inflammation-based diseases such as cancer and diabetes.

Jeff Hedrick describes his role in the project. "We screen the gene panel for anti-inflammatory or 'down regulated' genes. We look at the messenger RNA—ribonucleic acid, the part that synthesizes proteins—and that tells us the cell's response to the natural extract."

They evaluate the cells with a widely used anti-inflammatory index developed by Professor Gosslau, whose career in molecular biology spans both the public and private sector. He leads cellular research at Rutgers University in collaboration with BMCC, and has developed disease-targeting technologies related to the molecular mechanisms of plant compounds.

His students not only learn sterilization techniques, but also complex cellular and molecular biology lab protocols. "Our overall goal is to get them on track for a smooth transition to a four-year college where they can continue their science studies," he says.

For Jeff Hedrick, that track points toward a doctorate in science. "Biology—we wouldn't be here without it," he says. "If those chemical reactions in a specific order hadn't happened many millennia ago, we wouldn't be here."

Students are enthusiastic about cellular research, adds Professor Gosslau, and "they love working in the lab. They stay so late, we have to kick them out."


B.M.C.C.

Winning More Than Points

The BMCC men's basketball team lands the CUNY championship and much more.

A nationally ranked basketball team may not be the first thing that comes to mind when discussing a community college. This year, though, the BMCC men's basketball team won the 2015 CUNY championship and produced the CUNY Player of the Year, Kenneth Coar. Not only that, the team's coach, Nolan Adams was crowned CUNY Coach of the Year and student Joseph Ojo was named CUNY Championship Most Valuable Player.

If that weren't enough, the BMCC Panthers spent much of the season ranked in the top ten in the NJCAA Division-III poll, which led to national buzz about the school's athletic program.

These achievements do much more than raise school spirit. Work, school and other day-to-day demands weigh heavily on the shoulders of community college students who also have to support themselves beyond the walls of the campus. This is especially true in dense, often expensive urban areas—and the tolls of those demands show up in retention and graduation statistics.

With programs such as a rigorous organized athletic competition, students become more engaged and vested, both socially and academically.

"You sometimes work with kids who may not have been that focused in high school. Maybe they went through the public school system and it wasn't such a great experience for them academically, then they come here and they meet folks such as us, and athletic director Stephen Kelly, who stay on them about their books," said Coach Adams.

In order to play for the team, students must be enrolled full time and be in good academic standing. Adams said the athletics department works with the BMCC Learning Resource Center, setting up tutoring schedules for the team's players. "Not only are they getting to do something they love, they're finding a different avenue through which to be motivated in class," he said.

All the team's senior players are headed off to four-year schools in the fall, and among them is Justin Manon, who plans to attend St. Joseph's College in Brooklyn, New York and study education. Manon, who wants to be a teacher, said the team motivated him to be a better student, and he hopes to take some of the skills he picked up playing organized sports, as he pursues his career.

"Coach always stresses not only becoming a better player, but a better person. I hope that as a teacher, I can do that too," said Manon.

The Education Connection

Education major Haile Peters helps coordinate a professional conference, and gains much more than organization skills.

In 2013, Michigan native Haile Peters made the decision to return to school, and enroll at the Borough of Manhattan Community College. Peters calls himself a "quiet guy," but was soon involved in a range of extracurricular activities, including one huge project that has enhanced his perspective on his career of choice, education.

It all started with a philosophy of education class taught by Professor Yolanda Medina, and an assignment: the reflection journal. Medina instantly recognized Peters as an exceptional student, she says, "and from that moment, I've been mentoring him."

With Medina's guidance, Peters completed an honors project examining education through his own experience as a black urban male. She also wrote recommendation letters for Peters and helped him apply for a BMCC Foundation scholarship. Then she brought him on board for a project that would challenge his strengths, and professionalize his skills.

As President Elect of the American Educational Studies Association (AESA), Medina was in charge of organizing an international conference with over 1,000 attendees in Toronto, Canada in Fall 2014. Through a small stipend courtesy of AESA, Peters became Medina's right-hand man, assisting in the processing and reading of hundreds of conference submissions for its range of presentations, panels and symposia.

He not only gained skills in the nuts and bolts of presenting a conference, he gained awareness of the conventions of scholarly writing—and even developed an app for the conference, listing details of the program schedule.

Peters credits Medina as well as Dean Michael Gillespie with helping him realize that there is a wealth of opportunity at BMCC beyond the classroom. After earning his associate degree in education, he plans to transfer to City College or Hunter College, and continue studying secondary education.

Today, he is working as an assistant teacher at the East Harlem Scholars Academy, applying knowledge and pedagogy from his studies at BMCC, as well as a new perspective on the international teaching community. "I have all these amazing education connections from my experience at AESA," he says.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Simulating Success

Nursing professor Sophia Clarke quantifies how human patient simulators benefit student learning.

"The literature doesn't always show that using simulation tools, or medical mannequins, improves student outcomes," says nursing professor Sophia Clarke, adding that the discrepancy has to do with students' incoming familiarity with medical and nursing content.

Focusing on her own students who are taking the national nursing exam, "I'll compare those results with those of students who didn't do the simulation," she says. "If we are able to quantify the benefit of using the simulation models, the next step would be to re-think our curriculum."

In Fall 2014, Professor Clarke presented preliminary findings of her project at a symposium at NYSIM, The New York Simulation Center for the Health Sciences at the CUNY/NYU Langone Medical Center at Bellevue Hospital on Manhattan's Upper East Side. An oncology nurse practitioner, she earned a master's degree in nursing at Columbia University and has worked at several New York City hospitals. "I always wanted to be a nurse," says Clarke, who was born in Jamaica, grew up in Milwaukee, Wisconsin and moved to New York as a young adult.

Professor Clark's student Colleen Duhamel took a more indirect route to a career in nursing. As a coffee buyer for a roastery in Brooklyn, she met with coffee producers in El Salvador, Honduras, Colombia and Costa Rica, before enrolling at BMCC.

"Travelling, I saw a lot of medical missionaries and really admired them," she says. "As a coffee buyer I could improve the lives of a few coffee producers, but as a nurse, I could improve people's lives on a daily basis." Eventually, she plans to earn a bachelor's degree in nursing and impact the quality of medical services in developing countries.

Meanwhile, she says, she benefits as a student from Professor Clarke's practice of "stopping in her lectures to make sure we're actually learning." She also credits her nursing skills to clinical rotations she has completed through BMCC in the psychiatric and trauma wards at Bellevue Hospital, and NYSIM sessions in which student teams critique their response to human patient simulators that breathe and bleed, whose pupils dilate, who can have a seizure, give birth and even sweat. "You don't have any textbooks in front of you," she says. "It's a valuable way to think on your feet."

Parallel Paths

Professor Yolanda Martin mentors Josean Melendez toward his dream of starting a non-profit.

This past December, BMCC student Josean Melendez had extra reasons to celebrate the holidays. He had just received a letter of admission from Poughkeepsie, New York-based Vassar College and news that he would be awarded a full scholarship to the four-year institution. He started classes this past January.

Having spent four years in the United States Coast Guard, Melendez was able to use money from the GI Bill to begin classes at BMCC. While there, he found himself inspired by the school's diversity as well as by some of its professors.

Melendez first became acquainted with Vassar after spending part of his summer at the school, thanks to BMCC's participation in the Exploring Transfer (ET) program at Vassar College. He was introduced to the ET program through Professor Yolanda C. Martin, coordinator of the BMCC criminal justice program.

As it turns out, Professor Martin herself was an ET student when she attended LaGuardia Community College back in 2002. Martin says she too applied for transfer after her summer at Vassar, was accepted that fall and started Vassar in Spring 2003.

Professor Martin went on to earn her Ph.D. at Vassar in Spring 2006. "With Josean, I felt all along like my own story was replicating. I was able to explain to him step by step what he needed to get done, how to approach the summer at Vassar," she says.

Melendez had been considering a career in education; perhaps becoming a teacher or professor, but after his summer immersed in urban studies at Vassar, his focus shifted.

"The urban studies program offers a whole matrix of sociology, urban planning, political science and education in urban environments," said Melendez. He plans to take his studies in the field to the graduate school level, then follow his dream to create a non-profit organization "that works on the ground level to reconstruct the fabric of individual communities." Among other initiatives, his organization would create rigorous after-school programs, and work closely with local police precincts, he says, guiding young people toward smarter choices on the path to success.

Research That Holds Water

Science major Crystal Mena and Professor Kibrewossen Tesfagiorgis correlate flooding and rainfall.

"I met Crystal when she was in my physics class," Professor Kibrewossen Tesfagiorgis says. "She asked all kinds of questions, and that's the kind of person you want in your research project," which in his case, centers on the world's fresh water resources, and was inspired by his childhood in Ethiopia. "I saw people walking miles to carry water back to their home," he says.

Tesfagiorgis earned a Ph.D. in Civil Engineering at the Graduate Center, CUNY, focusing on remote sensing and hydrology, then worked as a postdoctoral scientist at NOAA-CREST, the National Oceanic and Atmospheric Administration-Cooperative Remote Sensing Science and Technology Center at City College, CUNY.

There, he joined a project developing a Global Flood Monitoring System, using microwave satellite data to estimate the soil wetness variational index (SWVI).

Once Professor Tesfagiorgis became Crystal Mena's mentor in the LSAMP (Louis Stokes Alliance for Minority Participation) program, she was keen to join the flood project and analyze a 2013 flood in Uttarakhand, India that had caused over 6,000 fatalities. First though, says Tesfagiogis, she needed training in computer coding, so Tesfagiorgis arranged for her to take a MATLAB workshop with NOAA-CREST at City College.

The programming language MATLAB enables scientists to work with large amounts of data, and Mena is using it to compare data sets with those from the Dartmouth Flood Observatory, SWVI and TRMM (NASA's Tropical Rainfall Measuring Mission), looking to see how flooding and rainfall are correlated.

"We're translating satellite data into a graphic representation," she says. "We're asking, 'Why does it take so long for flooding to occur after rainfall?' We take the snow on the ground, rain clouds and other variables into account."

In February 2015, Mena presented a poster on the research at the Emerging Researchers National Conference in STEM (Science, Technology, Engineering and Math), in Washington, D.C. A member of Phi Theta Kappa and on the Dean's List, Mena grew up in East New York, Brooklyn, the youngest of four siblings and the only one to graduate high school and go to college. "They give me pep talks about the flood research," she says, "and always have my back."

Researching Relationships

Liberal arts major Lisa Neptune and Professor Sheldon Applewhite research the social determinants of HIV status in black gay male couples.

A few years ago, BMCC social science professor Sheldon Applewhite noticed a spike in breakups among his black male friends who happened to be in same-sex relationships. The reasons ranged from financial difficulties to religion and trust issues, and got him thinking about another timely topic—how black gay males negotiate safer sex issues within their relationships.

Applewhite's focus on the subject led to a research project and poster presentation at the 2014 International AIDS Conference in Melbourne, Australia. Black gay men in the United States are one of the most heavily affected groups, when it comes to the acquisition of HIV infection, and Applewhite set out to identify the relationship dynamics behind this phenomenon, especially as they pertain to strategies for black gay couples to protect themselves from HIV infection.

First, he attended three summer sessions on how to develop a National Institutes of Health HIV prevention study grant, at the Center for Aids Prevention Studies at the University of California, San Francisco. His 2012 to 2013 research project, "Black Gay Couples: Relationship Dynamics and Their HIV Risk Behaviors and Resilience," addresses questions such as, "How does growing up in the U.S., under the hetero-normative model of what it means to be a man, impact men's relationships with other men?"

Applewhite recruited 20 couples in the New York City area, and recorded interviews with them both as a couple and individually. The study took HIV status into account: both positive, both negative, or serodiscordant; one positive and the other negative. He found that resiliency in black gay male relationships is linked to factors such as the commitment to preserve one's own health, as well as that of one's partner; using condoms and communicating openly.

Assisting in the project was liberal arts major Lisa Neptune, whose love of writing and research was evident in the social science classes she attended as Applewhite's student. Not only that, she had lived in the Flatbush neighborhood of Brooklyn, New York, and observed "the cultural taboo on gay male relationships in some West Indian-descended and African American communities," she says, adding that the HIV infection rate is higher among people of color, especially in urban communities where healthcare is often lacking.

"We cannot turn a blind eye to what is going on in our neighborhoods," says Neptune, who plans to be a high school social studies teacher and use the research skills she's learned in her own classroom someday. "The project raised my awareness of how different ethnic groups and cultures use different coping mechanisms. Socio-cultural factors definitely impact people's relationships."

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