Welcome to the 2015-2016 Marks of Excellence, our annual showcase of outstanding achievements and projects led by faculty and students at BMCC. This year’s issue reflects the rigorous academic standards we provide for our students, who apply their skills both inside and outside the classroom. BMCC students engage in social entrepreneurship, biological research, internships and other opportunities. Alongside faculty mentors, they blend disciplines and travel the world. They stretch their academic skills as well as their compassion and sense of possibility.

In this issue you’ll read about BMCC student and faculty projects on campus and far from New York City. Our Study Abroad program in Summer 2015 had more Gilman Scholars than any other community college in the nation. One of these scholars, Gabriel San Emeterio, traveled to Mumbai, India, and observed a model of social entrepreneurship that brings vaccination programs to impoverished villages by building community trust and buy-in. Gabriel is now continuing his education through a special CUNY bachelor’s degree program, and hopes to incorporate what he learned through Study Abroad in his community development career in New York City.

Raising a community’s quality of life can take many forms, as the range of articles in this issue shows. Computer Science Professor Ching-Song Wei has brought students together to build an app that collects data from the New York Police Department and alerts drivers passing through high-accident areas. Christine Priano, a molecular biologist and BMCC science professor, is working with students to gather samples in the ponds and lakes around New York City, examining the role of weather patterns in the growth of microorganisms. Funding for research at BMCC comes from the National Science Foundation, the National Institutes of Health, and elsewhere. Student participants receive stipends from sources such as the Collegiate Science and Technology Entry Program (CSTEP) and the BMCC Foundation, and share their findings at conferences across the country. Others work behind the scenes, such as our Media Arts and Technology students who have interned at a TEDxFultonStreet stage in Lower Manhattan, learning the mechanics of communicating ideas, and their relevance in our society. I hope you will enjoy the 11 stories in this issue, which highlight our students taking initiative, applying theory to practice, and finding out that higher education not only prepares them for the world, but immerses them in it.

Antonio Pérez, President
Borough of Manhattan Community College
The City University of New York
Seeing Global Change
Under the Microscope

BMCC Science Professor Christine Priano leads students in a study of microbial organisms in bodies of water that millions of New Yorkers visit.

Could changes in the world’s environment impact the growth of microbial organisms in New York City bodies of water? That’s the question BMCC Science Professor Christine Priano, along with her students, is seeking to answer. Using modified Environmental Protection Agency (EPA) procedures and DNA analysis, taking into account fluctuations in temperature, rainfall, pH and salinity, the team is assessing protozoa and bacteria in some of the most famous ponds and lakes in Manhattan and Brooklyn.

"This research offers a novel way of engaging community college science students in independent research that concerns their own living environments," says Priano, a molecular biologist who conducted research at Columbia University on the role of RNA secondary structure in bacteriophage gene expression. "Each student knows how to conduct an experiment in a controlled manner, interpret the results and talk about their findings."

Science major Murodilla Fatkhullaev is examining samples from Brooklyn’s Prospect Park Lake. "It’s important that we learn where bacteria exist," says Fatkhullaev, who receives a research stipend through the BMCC Foundation. "That way, we can better understand how microbes work for us and how to stop the dangerous ones from causing disease." Science major Miftunas Kurbonnazarova took water samples in Sheepshead Bay, she says, "then did a microscopic examination to distinguish different types of bacteria."

Kurbonnazarova receives a stipend from BMCC’s Collegiate Science and Technology Entry Program, or CSTEP. She plans to transfer to Hunter College, CUNY to earn a bachelor’s degree and eventually become a medical doctor, a goal she shares with Science major Ornela Mulkurti, who is testing The Pond in Central Park for e-coli bacteria contamination. "Millions of people visit the landmark pond," she says, "but most never wonder about what might be living in there."

While students focus on the microbial level, Professor Priano keeps them grounded in the larger picture. Microscopic organisms multiply rapidly, and environmental stress appears in a short period of time, she says, impacting aquatic food chains. By comparing data from their samples over time, students grasp how changes in environmental conditions can impact an entire ecosystem. "They participate in ‘hands-on training and critical analysis in science,'" says Professor Priano, "and find meaning in the research as they ‘engage in important ecological and environmental issues surrounding their own community.'

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A Catalyst for Change

Liberal Arts major Mackendy Blanc joins a cohort of citywide college students to help link nonprofits with resources.

BMCC Liberal Arts major Mackendy Blanc moved to New York City from Haiti when he was 12 years old and graduated from Brooklyn’s International High School in 2013. As a high school student, he traveled to the Dominican Republic and Haiti with the non-profit Global Potential to help rural families incorporate sustainable methods into their farming. “It’s important for young people to see firsthand the struggles and resiliency of communities outside New York,” says Peter Maugeri, Co-Founder of Global Potential. “This experience shaped Mackendy’s perspective on dynamics such as community buy-in that could be effective for making positive impact in his own community.”

Fast-forward to Fall 2015, and Blanc is enrolled at BMCC, where he learns of the Shared Resource Challenge/Innovate NYC sponsored by the New York City Economic Development Corporation (NYCEDC) and administered by the Do School, a global education platform.

“arange the program was devised to bring together talented students from all over the city to generate ideas or products that could help link nonprofits and social enterprises in New York City to resources that enhance their services,” says Laura Burrell, Director of BMCC’s Office of Internships and Experiential Learning. “Mackendy is already a catalyst for change and has accrued experience in supporting youth from underserved communities through his work.”

Blanc and 19 other college students from across New York City will be guided through weekly classes at the Do School, led by working experts and social entrepreneurs. The students will present their results to the NYCEDC when the challenge concludes with three weeks of full-time workshops in June 2016.

According to Do School Managing Director Jeffrey French, Blanc was applying to join the project along with students from schools including Columbia University, New York University and Cooper Union. “The process for getting a spot in the Shared Resource Challenge is extremely competitive,” he said, “but the benefits of experiential learning, developing a complete set of skills to be able to participate and thrive in the 21st century economy, are worth it.”

Blanc’s long-term goal is to return to Haiti someday, and apply what he has learned to help build economically sustainable communities. “I want to see a Haiti that relies on no one else but Haiti,” he says.
In the early 2020s, preeminent climatologist Dr. Emmanuel Sampson predicts a confluence of hurricanes, fires and tsunamis, and the nations of the world unite in a global emergency response.

This fictitious disaster scene is from a new video game for Science, Technology, Engineering and Math (STEM) majors at BMCC, and is being developed by an interdisciplinary team including BMCC Professors Kathleen Offenholley (mathematics) and Ching-Song Wei (computer science), and consulting professor of English, Francesco Crocco. Together, they are creating the game-based curriculum to accelerate students’ time in math remediation, non-credit bearing instruction that prepares them for college-level work.

The project is funded by a recent $875,794 grant from the National Science Foundation (NSF), and will roll out three to five new games. The first of these will be piloted at BMCC in Summer 2016 with 20 Geographic Information Systems (GIS) majors enrolled in a developmental (remedial) mathematics class. “Students will play the video game and be tasked with preparing for the simulated disaster by collecting resources,” says Professor Offenholley. In the process, she explains, they will engage in basic algebra, a major stumbling block for students seeking careers in STEM fields notorious for their deficit of minority and women students.

Applying for the NSF grant involved a collaboration that mirrors the efforts of fictitious countries in one of the project’s video games. At first Crocco, then on faculty at BMCC, and Offenholley sought but were not awarded NSF funds for their own individual projects. John Montanez, Dean of Grants and Research at BMCC, then suggested they shift strategy and join forces with Wei, to secure an NSF-sponsored Advanced Technological Education (ATE) grant. “This is the first large-scale effort that I’m aware of, to create a digital, game-based learning platform for algebra and trigonometry at the community college level,” says Offenholley.

The project aims to impact STEM education across the country by providing free, open-source gaming materials to secondary and post-secondary institutions through downloadable curricula, game software, video tutorials and professional development materials for faculty and staff. “The games will help students be less fearful of mathematics,” says Offenholley. “Fear interferes with thinking. When students have fun, they relax and are able to do the math much more easily.”

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Game Plan for STEM Majors

Through $875,000 from the National Science Foundation, professors create games that build algebra skills for GIS and STEM majors.

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Theatre is big business, and theatre majors need to be as business savvy as any other entrepreneur. “It’s important to be business savvy even if you stay on the creative side,” says BMCC Professor of Theatre Lori Kee. “It’s about networking. It’s about managing your time and money, and often producing your own work.”

Kee’s students, including BMCC theatre alumna Quameisha Moreno, have experienced the business of theatre through internships before and after graduating from BMCC, at venues including the off-Broadway Schreiber Studios. Moreno worked closely at Schreiber with assistant director Peter Jensen, serving as both assistant director and stage manager on a production of The Hot L Baltimore. She credits her awareness of careers in theatre to that experience as well as to having worked with BMCC Theatre Professor Katherine Kavanagh, who “made us go to different theaters and interview their management staff,” she says.

Most recently, Moreno found a position at The Juilliard School. “I’m very tenacious,” she says. “I can dye clothes, hand sew, machine sew. I’m on the wardrobe crew for Cabaret at Julliard, a performance with 3rd-year students.” Moreno is a licensed cosmetologist, as well as costume designer and stage manager. She wants to create her own line of cosmetics one day and plans to complete her bachelor’s in theatre, with a minor in business, at Lehman College, CUNY.

Lucy Caraballo completed two costume practicums while finishing her Associate in Theatre degree at BMCC, and returned to her alma mater to work with Theatre Professor Arnold Bueso as assistant costume designer on Shakespeare’s Measure for Measure. Like Moreno, she also has worked on productions at Schreiber Studios. “I learned so much about the relationship between the director and the actors,” she says, “including how to deal with the costume designer and stage manager. I learned the work that the actors have to do between rehearsals to bond, so that what they are creating looks real.”

The contacts and productions that characterize the theatre community at BMCC are ongoing. As Professor Kee puts it, “My colleagues and I give students many opportunities to be immersed in theatre, as actors, managers, directors, costume designers. That is why the alumni keep coming back — because those opportunities extend even beyond graduation.”

Putting Careers Center Stage

BMCC theatre professors connect students with internships and production roles that immerse them in the industry.
“There’s an app for that.” We’ve heard this claim so often, it’s easy to take for granted the significance of apps in development, like a gaming app that enables the visually impaired to use online maps, a project led by BMCC Professor of Computer Science Hao Tang.

“Users can download indoor or outdoor maps to the game,” says Tang. “For example, they could download a map of the BMCC campus and floor plans, and the game would interact with that map.”

The app, he explains, will have an audio feature and work with both Android and iOS phones. Its development is a rich opportunity for BMCC Computer Science majors Norbu Tsering, Huang Zou, Tayo Amuneke and Juan Lantigua, who are paid as research assistants through the BMCC Collegiate Science and Technology Entry Program (CSTEP) and BMCC Foundation. They are also learning how to document their work, following in the footsteps of recent BMCC alumnus Jeury Mejia, who worked with Professor Tang on the same project. “He mainly worked on the implementation of algorithms, as well as conducting data collection and analysis, and he presented our work in the Emerging Researchers National Conference in Washington, D.C. in 2015,” says Tang. The two also co-authored a paper, “Omnidirectional Vision-based Indoor Autonomous Localization Using an iPhone,” along with colleagues from City College of New York/CUNY, and are submitting it to peer-reviewed journals.

Each student on the project has a different role. “I am trying to integrate an algorithm into the app which can detect, or access, an image from a camera stream and convert it to a vibration and sound,” says Huang Zou. “The color, the shape; all of this 3D information will be converted so that people who are blind or visually impaired can understand it.” The next step, he says, is conducting trials with users and getting their feedback.

Professor Tang explains that the students’ contribution in the lab frees up faculty to develop new algorithms, write technical papers and pursue funding support. Not only that, he says, “I really enjoy mentoring students. It’s rewarding to see them grow by leaps and bounds, and become more independent.”

Virtual Navigation for the Visually Impaired

Professor Hao Tang leads students in developing a phone app to make maps more accessible to the blind and visually impaired.
Among BMCC’s 62 Study Abroad students in Summer 2015 were nine Gilman Scholars, recipients of the Benjamin A. Gilman International Scholarship to study abroad — more than with any other community college in the nation. One Gilman Scholar, BMCC Liberal Arts major Gabriel San Emeterio, went on to graduate from BMCC and apply what he learned through Study Abroad, in the CUNY Baccalaureate Program for Unique and Interdisciplinary Studies at Hunter College, CUNY.

San Emeterio traveled to India with a Study Abroad group led by BMCC Business Management Chair, Professor Mahatapa Palit, who taught a credit-bearing course, “Social Entrepreneurship in Emerging Economies,” as part of the four-week experience. “The class focused on local social ventures,” said San Emeterio. “We learned about specific social welfare problems and creative solutions implemented to solve them.”

From Professor Palit’s perspective, it was exciting to see the BMCC students grow from the experience. “We had really great conversations about what they were seeing; entrepreneurs using business principles to solve social problems; to put in place sustainable solutions that are also sensitive to the culture,” she says.

With Professor Palit as their guide, the students travelled to Mumbai and nearby rural villages. One of the non-profit ventures they visited, says San Emeterio, brought a vaccination program to a village where most of the residents do not read or write.

“They recruited a few young people in the community to talk with others about who needs to be vaccinated and why,” he says, “and now almost 90 percent of the village is vaccinated.”

Eventually, San Emeterio will apply that model of community buy-in to a social problem in New York City. As part of the CUNY Baccalaureate Program, he is creating his own major with that goal in mind.

“My degree program will combine psychology, anthropology, sociology, linguistics and gender studies within the LGBT community, especially focusing on youth and homelessness,” he says. “To get youth off the street and address the substance abuse and violence they encounter. I would first get them to do their own research and come up with their own solutions, instead of us telling them how to fix their situation. It helps them and it broadens our view, too.”
Professor Jun Liang wins an NIH grant with BMCC as the lead institution, and student research assistants gain skills for further science degrees.

BMCC Science major Lizette Flores knows her way around a biology lab. “We use equipment like the DNA imaging machine and the PCR [thermocycler] machine, to help us understand how the C. elegans, the pond worms in our experiments, are affected by heat and other stressors, and if their DNA shows a genetic response,” she says, referring to her work assisting microbiologist and BMCC Professor of Science Jun Liang. "I was awarded a research grant from the National Institute on Aging, part of the NIH [National Institutes of Health],” says Professor Liang. “This is the first time an active research grant has been awarded to a community college as lead institution." The project’s co-investigator is Professor of Science Cathy Savage Dunne of Queens College, CUNY, and its goal is to investigate molecular mechanisms that respond to stress and impact on aging.

"The global population age 65 and over is rapidly growing,” says Professor Liang. “It is critical for us to understand the nature of aging and define the mechanisms that extend what we call ‘healthspan’, the length of time an individual is able to maintain good health.”

Liang has mentored several generations of BMCC students who serve as research assistants in the lab. Flores is on a team with fellow Science majors Moufoutahatou Mohamadou, Romario Denoon, Malintha Chathukaka Abeyratne and Keresser Leo, as well as recent alumni Wingmei Leung and Ying Ying Cai.

"The worms have 80 percent of our DNA. It’s amazing,” says Mohamadou. "Part of what I do is select the adult worms with a sterilized needle and transfer them to another plate, which has the bacteria they eat.” Flores adds, "We have to prepare the worms’ DNA, using gel to identify the genes we’re looking for and to determine whether the missing gene is a contributor to the specimen’s survival or not.”

Flores, who receives a stipend through the NIH grant, plans to transfer to Hunter College, CUNY. Working with Professor Liang, she says, will help her feel more confident working alongside third-year college students in a science lab. "If I can help students achieve what they want, academically and in the science field,” says Professor Liang. "I am both a researcher and a teacher. That is also a goal of the project.”

"Building Confidence for Careers in Science"
Community college students don’t often get to apply technical skills learned in a classroom or lab to one of the world’s most cutting-edge events. This is exactly what happened, though, when three Video Arts and Technology majors at BMCC participated in the production of the 2015 TEDxFultonStreet conference held in BMCC’s Theatre II in September 2015. Eriq Ortiz, Hrvoje Bekan and Olga Campbell captured on video, both the action backstage and audience response to a live TEDx event, Charge, featuring brand identity specialists, political theorists and other speakers from around the world.

The three students videotaped the two-day event as part of a BMCC class assignment intended “to help them learn lighting and editing skills, as well as how to operate the video camera,” says Media Arts and Technology Professor Anastassios Rigopoulos. “They leave the program as trained, self-contained production units, and the TEDxFultonStreet project acquainted them with client deadlines and specific content demands.”

TEDxFultonStreet, in Lower Manhattan, is a franchise of the world-famous TED Conferences. Media Arts and Technology Professor Janet Esquirol connected students with the opportunity. “Students made their own videos, then edited their footage with the TEDxFultonStreet production team, to create the final piece,” she says. “They had to get the shot. It was live, which doesn’t allow for a retake.”

The video of the conference, explains TEDxFultonStreet Executive Producer Aaron Sylvan, “details what goes on backstage, as well as audience and presenter interaction. The students’ job was to shoot B-roll, the speakers arriving and audience members meeting the speakers. They then edited that down to a short piece that conveys what it was like to be at the event. My editor took the best of the student pieces and edited them into a three-minute video that wraps up the event.”

Eriq Ortiz, who moved to New York from the Dominican Republic at age three, said he was happy to get hands-on TEDxFultonStreet experience that he can now list on his resume. “It’s a taste of the real world. You have to show an extra layer of diligence, poise and self-reliance with a real client,” says Ortiz. “You can’t just raise your hand and ask for help — you have to think and act on your feet.”

Starring Roles, Behind the Scenes

Three Media Arts and Technology students apply their new videotaping and editing skills to a TEDxFultonStreet conference.
“Conflict is something I think of as intimately related to a person’s health outcome,” says Michael Clark, a Health Research and Conflict Studies major in the CUNY Baccalaureate Program for Unique and Interdisciplinary Studies (CUNY BA program), based at BMCC. In Fall 2016, Clark will head to Uganda to study the role of conflict and stigma in public health, primarily as it relates to HIV. The trip will be funded by two awards Clark received in March 2016: the Access Africa scholarship from the School of International Training (SIT), and a Fund for Education Abroad (FEA) scholarship.

Clark was one of 25 scholars nationwide, the only applicant in New York State and first-ever BMCC student to win the FEA scholarship. In Uganda, he will spend three months in the northern city of Gulu, then conduct research in Kampala. In both places, he will focus on the role of stigma on HIV infection rates.

As Clark explains, “With increased stigma, HIV infection rates increase among both LGBT individuals and heterosexuals.” Making matters worse, in 2014, Ugandan President Yoweri Museveni signed a law that called for gay people to be put to death. Worldwide condemnation led to a court invalidation of the law, but oppression and violence to the LGBT community remain.

“Conflict can be war, epidemics, environmental or situations such as collective homophobia,” says Clark, a former Army medic and wellness coach who worked with people with chronic diseases such as HIV and diabetes, then enrolled at BMCC in Fall 2015. He completed a Community Health class with Professor Lesley Rennis, who advised him on an honors project on sexuality among community college students. Soon after, he was accepted into the CUNY BA program and began working with his mentor Christian Grov, a professor at the CUNY School of Public Health and faculty investigator at the Center for HIV Educational Studies and Training.

Eventually, Clark plans to earn a Master of Public Health. “Ideally, I would like to attend the Columbia University, Mailman School of Public Health because of the program’s global focus,” he says. “Long term, I’d like to work for an organization like the United Nations High Commission on Refugees, or the World Health Organization, focusing on sexual health and vulnerable populations in post-conflict settings.”

Researching Stigma to Save Lives

Michael Clark travels to Uganda to research the role of stigma and conflict in HIV infection rates.
"I decided if I was going to go back to school I was really going to do it," says BMCC Liberal Arts major Kathryn Chuber. Her enthusiasm hit a roadblock though, in the form of the CUNY math entrance exam. As is true with more than 75 percent of BMCC students and most community college students nationwide, her scores necessitated that she take at least one developmental, or remedial class, in order to graduate.

To smooth the way for Chuber and other students, BMCC professors including Annie Yi Han, Michael George, Yevgeniy Milman, Johannes Familton, Lianna Erstenyuk and others have developed over the years a hybrid course, Math 041, that combines introductory algebra and quantitative literacy. "It helps students move more quickly from developmental math classes to credit-bearing classes," says Milman, and explains that it is based on the Quantway curriculum developed by the Charles A. Dana Center at the University of Texas in Austin, and the Carnegie Foundation for the Advancement of Teaching.

"The curriculum is open-source," he says, "and the nature of quantitative literacy is that it has to stay current. So we updated the lessons to be more relevant to BMCC students. For example, one problem centers on driving and distance, and we adapted it to be about the subway and the MetroCard our students use."

"Math was something I found difficult my entire life," says Chuber, who went on to make the Dean’s List and join BMCC’s honor society, Phi Theta Kappa. "The Quantway class asks us to experiment with numbers. It really trusts that we have curiosity, and that’s the way we learn; rather than through repetition androte methods. So often in my past math classes, we would be presented with a problem and a certain way to solve it, but with this approach, you appreciate the many ways of doing it."

She plans to continue her higher education with a focus on cultural analysis through the lens of literature and theatre, a bachelor’s degree she will design herself, through the CUNY Baccalaureate Program for Unique and Interdisciplinary Studies. Eventually, she says, "I want to teach at the college level, where I could experiment more with the curriculum, and use some of the pedagogy I experienced first-hand in the Quantway class."

A New Equation for Math Learning

BMCC professors create a hybrid algebra and quantitative literacy class that builds student confidence and comprehension.
“I feel like you could be 80 years old and still need a tutor,” says Nicole Nelson, a ninth grader at the Manhattan Early College School for Advertising (MECA), a partnership between BMCC, The City University of New York (CUNY), the NYC Department of Education, and the American Association of Advertising Agencies (4A’s).

Nelson is on track to start college courses with BMCC professors in the 10th grade, and over a six-year period, earn a high school Regents Diploma and free associate degree from BMCC.

For Nelson and her classmates, one of the perks of the MECA program is access to free tutoring, and working with college students like Ilya Ratner, a volunteer and BMCC Accounting major who helps Nelson with her math. “He’s teaching me the Pythagorean Theorem,” she says. “I finished the Regent’s math book with his help.”

Ratner also tutors fellow Accounting majors in BMCC’s Learning Resource Center, and builds his own comprehension, he says, when he explains concepts to others. For different reasons, he enjoys working with MECA students. “They’re teenagers. They’re not embarrassed to ask questions,” he says. Tenth-grader Moses Parente works with Ratner on his algebra homework, and thinks every student could benefit from tutoring. “It raises your grades and makes you feel more comfortable,” he says.

According to Gregory Bryant, BMCC’s Early College Liaison to MECA, over 70 BMCC students have tutored at MECA since the school’s inception in 2014. “It gives them a sense of how they can build leadership skills through helping others shine and reach their goals,” he says. BMCC Liberal Arts major and MECA tutor Andrew Gunter works with ninth grader Aya Boulhoujat, whose goals are to be a psychologist, lawyer or advertising strategist. She sees these fields as being connected. “To create strategy, you have to find a target market, and that’s psychological,” she says, adding that Gunter helped her revise a written “consumer journey” for class. In fact, Boulhoujat herself now tutors other MECA students. “I started by helping a close friend with her algebra,” she says. “We all learn different ways, and being tutored taught me how to be patient.”

“I’m not surprised that our MECA students have also started tutoring each other,” says MECA Principal Matt Tossman. “They’re learning to network, create learning communities, and give back.”

Tutoring Is a Two-Way Street

BMCC students tutor high schoolers in the Manhattan Early College School for Advertising (MECA).
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