

ASCEND

Center for Biomedical Research

YEAR 2: Focused and Inspired



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A FEW WORDS FROM MEMBERS OF THE ASCEND EXTERNAL ADVISORY BOARD

I was delighted to host ASCEND Scholars in collaborative leadership, research, and health policy advocacy activities. These integrated learning experiences provide rich opportunities across federally funded pipeline programs. The Scholars are bright, enthusiastic, innovative, and fully engaged. The world will be a better place because of them.

Harolyn Belcher, MD, MHS

Director of the Center for Diversity in Public Health Leadership Training, Kennedy Krieger Institute & Professor of Pediatrics, Johns Hopkins University School of Medicine



Youth is the age of creativity. The most successful programs to train future leaders and scientists foster creativity. This is indeed what Morgan State University's ASCEND Program and Brown University's Initiative to Maximize Student Development (IMSD) have in common.

Andrew Campbell, PhD

Dean of the Graduate School & Professor of Medical Science, Brown University



One of our country's greatest assets is our diversity. Programs like ASCEND are invaluable because they nurture students' unique ideas and talents and bring the richness of diversity into biomedical and behavioral research.

Kim Nickerson, PhD, MS

Assistant Dean for Diversity, College of Behavioral and Social Sciences, University of Maryland, College Park

The present was an
egg laid by the past
that had the future
inside its shell.

—Zora Neale Hurston



Dr. David Wilson, President



Dr. Gloria Gibson, Provost and Senior Vice President for Academic Affairs



Dr. Victor McCrary, Vice President for Research and Economic Development

MESSAGE FROM THE MORGAN STATE UNIVERSITY ADMINISTRATION

Morgan State University (MSU) will celebrate its sesquicentennial in 2017. Over the past 150 years, the institution has witnessed significant growth, from a biblical institute aimed at training young black men in 1867, to a Carnegie classified doctoral research institution today that embraces women and men from around the globe.

We are determined to continue on this upward path, and make this great institution even greater. Our strategic goals include plans to elevate the University's status to the Carnegie classification of Doctoral Research University Higher Research Activity (R2). We will provide the best possible research training for our students. We will empower our faculty to conduct leading-edge research.

We will go beyond the conventional boundaries of our academic disciplines to make the University's research more interdisciplinary and transformative. We will strengthen and improve our teaching facilities, laboratories, and libraries. As the State of Maryland's designated Public Urban Research Institution, we also are dedicated to conducting health research that ensures a better life for all of our citizens. ASCEND is an integral part of this evolving research ecosystem.

We invite you to read this report to get a glimpse of what we have done and of our plans for the future. We are determined to pursue our mission of *Growing the Future, Leading the World.*



Dr. Farin Kamangar



Dr. Payam Sheikhattari

MESSAGE FROM THE PRINCIPAL INVESTIGATORS

It has been two years since the National Institutes of Health announced that Morgan State University was one of the recipients of the Building Infrastructure Leading to Diversity (BUILD) cooperative agreements.

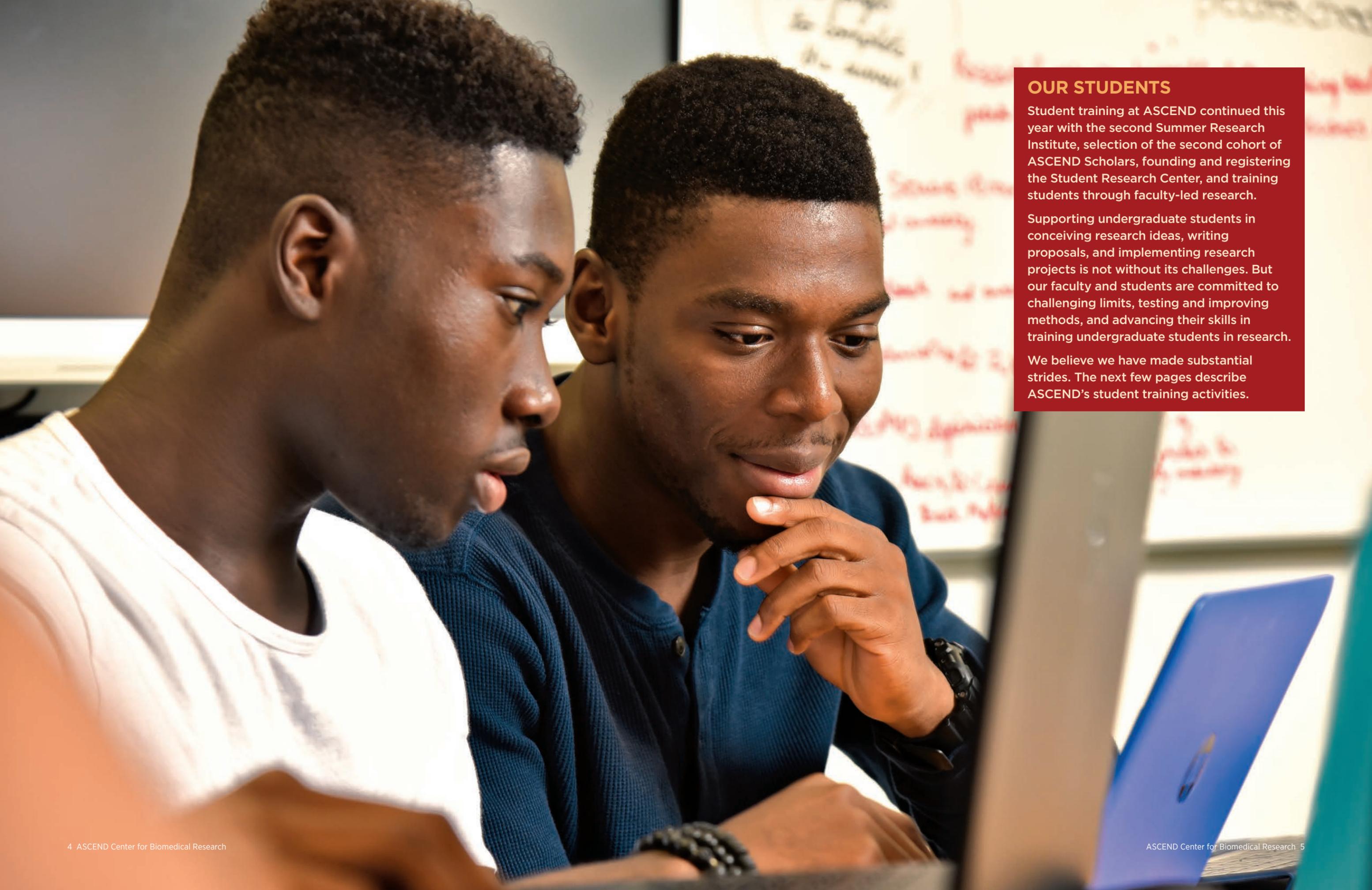
ASCEND, Morgan State University's BUILD program, has made substantial progress over this time. ASCEND's activities have included research training for students, faculty development, institutional development, evaluation, and community collaborations. ASCEND's programs have included two Summer Research Institutes for 55 students, training activities for two cohorts of ASCEND Scholars, establishing a Student Research Center with 76 members, funding research proposals for six faculty members, and

renovating three physical spaces in the University. (For more details, see page 28.)

The major goals of ASCEND's student training program are to foster ownership of projects, nurture creativity, and instill a sense of biomedical science identity. ASCEND strives to empower students to rise to Alvin Toffler's challenge to "learn, unlearn, and relearn." Students who perceive themselves as biomedical scientists are much more likely to follow that career path and become highly successful in biomedical research.

This report provides a summary of our activities over the past two years. We hope you enjoy reading it.





OUR STUDENTS

Student training at ASCEND continued this year with the second Summer Research Institute, selection of the second cohort of ASCEND Scholars, founding and registering the Student Research Center, and training students through faculty-led research.

Supporting undergraduate students in conceiving research ideas, writing proposals, and implementing research projects is not without its challenges. But our faculty and students are committed to challenging limits, testing and improving methods, and advancing their skills in training undergraduate students in research.

We believe we have made substantial strides. The next few pages describe ASCEND's student training activities.

Summer Research Institute 2016

What do prenatal sleep deprivation in rats, anti-cancer drugs, the use of stimulants, algacides, and divorce all have in common? They are among the topics that were proposed and selected for research by participants in Morgan State University's 2016 Summer Research Institute (SRI).

In the SRI, students receive their first exposure to the broadest definition of health research, the scientific method, and the nuts and bolts of writing a proposal. In choosing their own research topics, students are encouraged to be creative and think expansively. They also learn that a good scientist must be very skeptical and sometimes rule out many alternatives before reaching an explanatory conclusion.

This year, the SRI's 26 students organized into five groups and presented their research pre-proposals on July 20, at the conclusion of the eight-week residential health research training program on Morgan State's campus. The presentation was attended by family members, Morgan State University faculty and administrators, the NIH Program Officer and Program Scientist, faculty from Johns Hopkins University, University of Maryland, and the National Cancer Institute, and representatives from Baltimore City Community College and Prince George's Community College.

Dr. Christine Hohmann, Director of the SRI program, remarked, "The creativity and drive of our ASCEND SRI students continues to amaze and uplift me. With the right mix of training, challenge, and support, our students can soar."

I'll lift you
and you lift
me, and we'll
both ascend
together.

—John Greenleaf Whittier



TYRA SELLERS (HEALTH EDUCATION)

My ASCEND SRI experience was amazing. It taught me a lot about myself and the world around me. I didn't know that I could choose a problem from my own community, turn it into a research question, and then find solutions for it. I also learned how to work effectively with others. I feel like I have really grown.



THELMA EJIMOFOR (BIOLOGY)

I loved the SRI! I was expecting to be in a lab washing instruments and helping with some experiments. But it was totally different. We were the ones leading the process. The experience opened my eyes to the opportunities in health research, and gave me a sense of purpose. I am so much more motivated now to go to graduate school and find a research career.



DOROTHY UCHEOMUMU (BIOLOGY)

I learned to think for myself. I learned how to think critically about science and to how write a proposal. The members of our group came from various backgrounds and that was important—everybody had something different to offer, and we all worked well together.



LETISHA VINCENT (PSYCHOLOGY)

The SRI was great! I am a very shy person, and speaking in front of other people was never my strength. I learned how to work with others, how to write a proposal, and how to speak in front of a large crowd—including scientists from the NIH and Johns Hopkins!

ASCEND Scholars 2015 & 2016



ASCEND Scholars and faculty attending ABRCMS 2015.

In August 2015, the first cohort of 20 students were selected as ASCEND Scholars. Under the leadership of Drs. Jocelyn Turner-Musa and Cleo Hughes-Darden, these students received training and mentorship on how to write and polish their research proposals and submit them to MSU's Institutional Review Board (IRB). Several of these projects have received IRB approval and are ready to begin.

Students also were engaged in a host of other activities including: producing their Individual Development

Plans; attending weekly interdisciplinary seminars; attending the Annual Biomedical Research Conference for Minority Students in Seattle, Washington; participating in writing seminars; taking Graduate Record Examinations preparation classes; and participating in critical thinking workshops. They also participated in a Summer Research Internship at MSU or one of our partnering institutions.

The second cohort of ASCEND Scholars were selected and started their two-year training in August 2016. Based on lessons learned from the first cohort, the Training Directors adjusted and improved the program to make it more effective and efficient. For example, the entire cohort is enrolled in a course that meets every week to advance their research proposals. Also, the first cohort will serve as mentors for the second cohort.

We hope that through group activities, shared classes, and near-peer mentorships by junior and senior ASCEND Scholars, we create an environment where participants support and sharpen each other's skills and talents.



GIVANNIA GRIFFIN

My summer internship was in Dr. Jennifer Swann's laboratory at Lehigh University, studying how the brain regulates sexual behavior in male and female Syrian hamsters. I read a lot of scientific articles and then wrote summaries that explained what I learned. Initially I had a hard time understanding the articles; but over time, with help from my mentor, I learned how to break down the key elements and appreciate the main points. The experience at Lehigh was very rewarding. I enjoyed being in a new environment and around people who motivated me to work hard and reach my full potential.



FUNMI AYENI

This summer I worked as a Research Assistant in Dr. Michael Dougherty's Decision, Attention and Memory lab at the University of Maryland, College Park. I was responsible for recruiting participants, running them through the research protocol, and analyzing and reporting the resulting data. In addition to enhancing my research skills, I became a better writer (including grant writer) and public speaker. I gained computer skills and experience with a variety of software programs. And I developed a network of supportive peers and renowned professionals. The experience included all the important elements to help me succeed in a research-oriented career.



CHEY HARRIS

Over this past summer, I worked in the lab of Dr. Shawn Bediako at the University of Maryland Baltimore County (UMBC). I analyzed data from a study he had conducted on African American Adults with Sickle Cell Disease. Key elements of the research included a communalism scale, a racial centrality scale, and a survey that measured how frequently participants utilized emergency room services. This experience was very eye-opening. I look forward to working with Dr. Bediako throughout the academic year to produce a publication based on this work.



JOY BARNES

For my internship I worked on the Baltimore City Youth Works project with Drs. Lorece Edwards and Sabriya Dennis at Morgan State University's School of Community Health and Policy. I served as a Team Leader for adolescents who learned how to research substance use, sexual health, and violence, and how to use that information to develop age-appropriate health messages. The experience was life-changing. It gave me the ability to reach kids at a level I had never known. It also gave me an appreciation for the importance of public health research and interventions that has solidified my desire to pursue this work for the rest of my life.

Student Research Center

In 2015, 41 individuals met for the first time to create the Student Research Center (SRC), the first MSU student organization dedicated to promoting undergraduate health-related research through peer collaboration, peer support, mentorship, and networking. Nine interim Executive Board (E-Board) members wrote the SRC's constitution and bylaws. In collaboration with these inaugural members, the E-Board registered the SRC as an MSU undergraduate student organization in February 2016. The E-Board and the general membership have met several times to plan SRC activities. So far, the SRC has 76 members and many interesting ideas that are ready to be launched. One example is the Big Bear Little Bear initiative. The "bear" is MSU's mascot, and the name of the project reflects the fact that SRC members want both to be mentored and to mentor Baltimore City middle and high school students.

This and several other collaborations require a space for the many participants to meet. With support from ASCEND, the SRC has renovated a state-of-the-art student lounge in Key Hall (suite 200), where the students and their peers can collaborate to develop and advance their research projects.

The wait is over! Join the club and surround yourself with people who lift you higher.



Student Research Center members in their newly renovated space.

Community, Design, and Health (CDH) Forum

Health can be "designed" in many ways, including the creation of "designer babies" produced through genetic screening or genetic modification. In the context of ASCEND, the term refers to enhancing well-being through health-promoting architectural design.

In August 2015, with support from ASCEND, Dr. Mohammad Gharipour, a faculty member in the School of Architecture and Planning, founded the Community, Design, and Health (CDH) Forum at Morgan State University. This interdisciplinary forum includes student members from the fields of architecture, landscaping, planning, public health, sociology, nursing, and psychology.

The CDH Forum became part of the American Institute of Architects' (AIA) Design-Health Consortium in November 2015. Morgan State University was one of six universities, and the only Historically Black College and University (HBCU), to be accepted into the second cohort of this Consortium.

The CDH Forum and AIA Baltimore have partnered with several architectural firms in the Baltimore–Washington metropolitan area that are active in healthcare design. The Forum organized and hosted a panel on "Innovative Approaches to Healthcare Design" in April 2016. In May of this year, the Forum became the first club in Morgan's Student Research Center. The club, which will promote health research from its base at the School of Architecture and Planning, includes members from several different schools at Morgan State University.

University Innovation Fellows

For several years, Morgan State University has participated in the University Innovation Fellows program, structured to empower students to become agents of change at their schools. The Fellows are a national student movement working to ensure that all students gain the knowledge, skills, and attitudes required to compete in the economy of the future. Fellows from schools around the country create opportunities to help their peers develop an entrepreneurial mindset, build creative confidence, define problems and challenges in ways that can be solved, and seize opportunities to do so. The program was created by the National Center for Engineering Pathways to Innovation (Epicenter) with support from a five-year National Science Foundation (NSF) grant.

With support from ASCEND, the program at Morgan State emphasizes health research-related innovations. Dr. Mary Foster, Associate Professor at the Earl G. Graves School of Business and Management, is the champion for and leader of the University Innovation Fellows program at Morgan State. For the 2016–2017 academic year, Morgan has expanded its participation from one to five leadership circles, each including a team of four students and a faculty mentor. Fellows participate in six weeks of training (about four to six hours per week) and graduate in a pinning ceremony. In Spring 2017, the Fellows will attend a four-day meeting in Silicon Valley with other Fellows from around the country. On their return, they will continue to work for healthy change at Morgan State by creating innovation spaces, founding and supporting entrepreneurship organizations, hosting experiential events, and advocating long-term institutional improvements.



SRI 2016 participant presenting her proposal.

ASCEND Program Evaluation

ASCEND's evaluation activities have three main goals: 1) provide data to contribute to the national evaluation of the BUILD program by the Coordination and Evaluation Center (CEC); 2) conduct timely formal and informal evaluations that might not have been included in CEC requirements, but are relevant to the local BUILD program at MSU; and 3) develop tools (e.g., scales) that are tailored to evaluation of ASCEND-related activities.



Drs. Sheikhattari, Belcher and Aguila discussing ASCEND's progress.

ASCEND continues to collect data in association with the CEC and partner institutions. To facilitate consortium-wide evaluation efforts, Morgan has implemented a number of annual surveys developed by the Higher Education Research Institute (HERI) as well as interim surveys developed by consortium members in collaboration with the CEC and HERI.

At the local level, we have collected data on the success of our Summer Research Institute (SRI) and the ASCEND Scholars program. While students were engaged in training and research opportunities, our evaluation team was hard at work studying what worked and what needed to be improved. Based on participants' comments, instructor and mentor feedback, and the data we have collected, ASCEND made significant revisions to the SRI under the direction of Drs. Christine Hohmann and Avis Jackson. Similar improvements have been made to the Scholars program.

By continuing the evaluation process, ASCEND programs will continue to improve and expand our goal of preparing students for careers in biomedical research.

Measuring Science Identity

One of the aims of ASCEND is to instill a sense of "biomedical science identity" in our students. But can we measure biomedical science identity?

Felicia Wright and Subin Hona, psychometric doctoral students, and Ayize Sabater, an urban educational leadership doctoral student, all from Morgan State University, have embarked on a project to develop a scale for assessing science identity in undergraduate students. They have developed a questionnaire with 20 items that encompass five aspects: a sense of who the students are (self-belief); what they believe they are capable of (self-efficacy); what they want to do and become in the future (aspirations); how they plan to contribute to the biomedical research community (contributions); and their sense of belonging to the biomedical research community (sense of belonging).

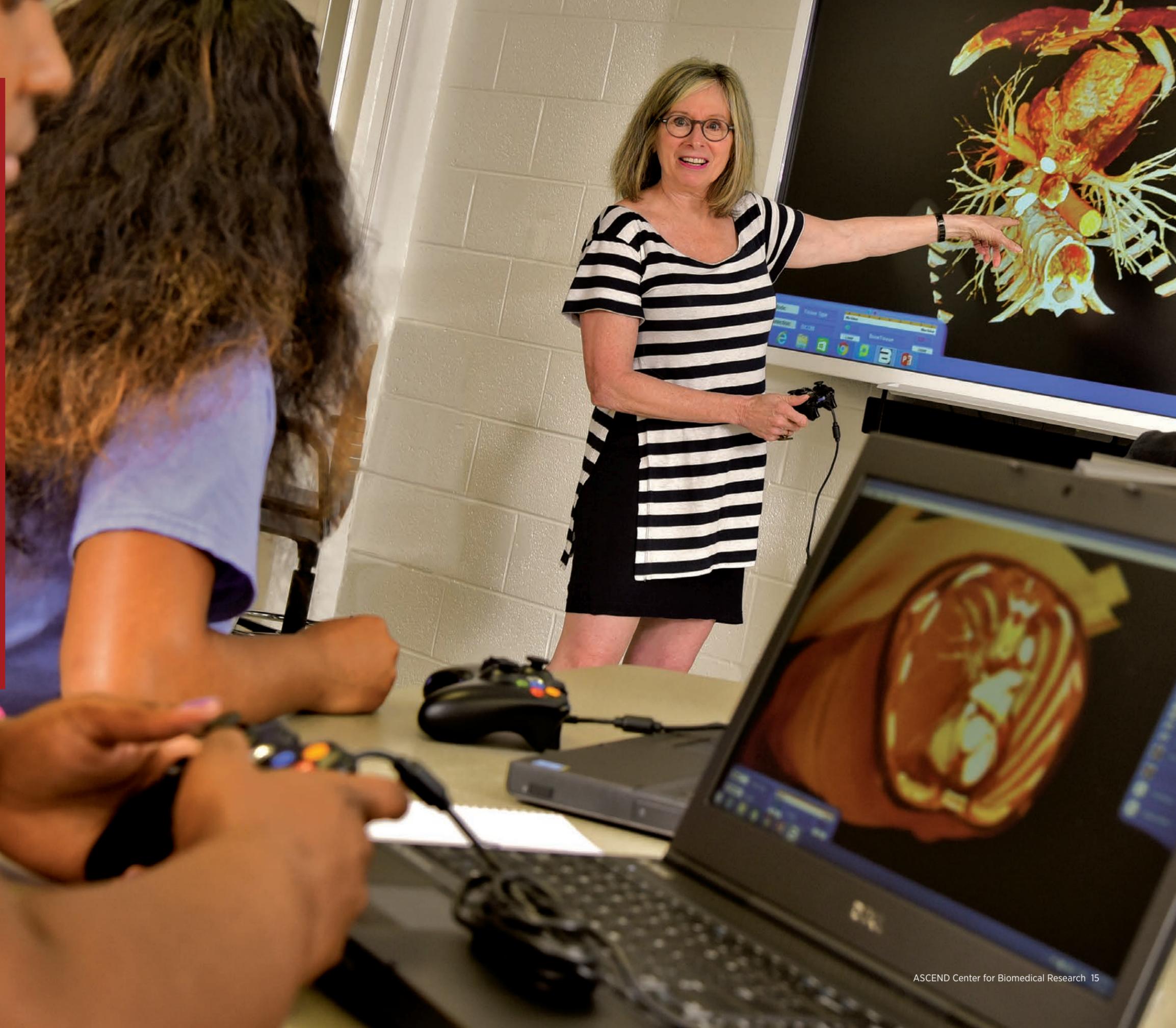
These researchers are developing and conducting item analyses using the Rasch Measurement Model. So far they have tested the questionnaire with approximately 30 undergraduate students at Morgan State University, and have found excellent reliability (Cronbach's alpha = 0.95). They will continue developing the scale and will compare the results from ASCEND Scholars and a suitable control group. More to come!

OUR FACULTY

Morgan State needs highly developed and talented faculty to train students who graduate ready to improve the world around them and to ensure that research funding will continue when the NIH BUILD award ends. This is why ASCEND includes faculty development as one of its chief missions and offers grant writing workshops, pilot research project grants, community-based participatory research grants, course redesign awards, statistical support, sabbatical support, and funds for travel to conferences and other learning experiences.

Over the past year, ASCEND pilot awards have helped six faculty members advance their research. Course redesign awards resulted in the successful implementation and improvement of several courses. Travel awards helped faculty enhance their research and pedagogical skills and build their national and international networks. A new initiative — the Community-Based Participatory Research Small Grants Program — has made funding available for research that connects academia and communities.

The next few pages include examples of these activities.



We are what we repeatedly do. Excellence, then, is not an act, but a habit. —Aristotle



VIJI SITHER
ASSOCIATE PROFESSOR OF BIOLOGY

The ASCEND Course Redesign Award helped me substantially improve the curriculum for Biology 408, a project-based course for biology majors.

Under my supervision, a doctoral student and an undergraduate student worked

together to standardize protocols and test run the methods. We purchased a state-of-the-art polymerase chain reaction (PCR) cyler machine, which is critical for the project-based labs in this course. We procured cyanobacterial strains, oligonucleotide primers, and DNA kits that supported development of techniques in the course. (Protein markers are now included in the course.) A new projector and cart were also purchased for classroom teaching.

After the protocols were thoroughly tested, we wrote a lab manual for students and developed scenarios to promote critical thinking. The lab manual is expected to be published soon for use by students in future semesters. The grant has improved the course greatly and makes me feel certain that students will learn much more.



KESHA BAPTISTE-ROBERTS
ASSISTANT PROFESSOR OF EPIDEMIOLOGY

As a new junior faculty member, I was awarded an ASCEND travel grant to attend the Teaching Professor Conference held in Atlanta. I had completed a rigorous doctoral program in epidemiology, but I hadn't received adequate training in pedagogy, which could limit my ability to teach.

My attendance at this conference opened my eyes to many innovative and invigorating

methods of teaching and learning. I adopted some of the tools that I learned in my courses and shared several resources with my colleagues during our faculty retreats.

My attendance at this conference also sparked my interest in innovative teaching methods and student-centered learning. I used what I learned to write a proposal and win a workshop award from the Morgan State University Office of Academic Affairs. This allowed me to lead a team in planning, organizing, and executing a two-day workshop entitled "Revitalizing Your Teaching for the 21st Century." The workshop was well received and highly rated by faculty from the entire University.

I now see myself as a "change agent" working to implement the University's vision of excellence in teaching. We have established a repository of teaching and learning resources available to all workshop attendees.



PUMTIWITT MCCARTHY
ASSISTANT PROFESSOR OF CHEMISTRY

I was awarded an ASCEND Pilot Research Grant for my proposal titled "Optimizing a Fluorescent Assay for a *Neisseria Meningitidis* Capsule Polymerase." *N. meningitidis* is one of the leading causes of bacterial meningitis. The assay I am developing will help to discover an enzyme

from *N. meningitidis* that can be used to develop a vaccine and/or therapeutic drugs.

As a junior faculty member, this grant has been invaluable. I can purchase supplies and reagents that are crucial to my research. Preliminary data obtained during the award period will be cited in future proposals to federal funding agencies. The grant also supported my travel when I was selected to participate in the 2016 NSF Chemistry Early Career Investigator Workshop, which focused on grantsmanship and targeting proposals to NSF.

The grant has helped my students plan and implement more and better studies because supplies and reagents are readily available. I am able to support students attending local and national meetings, including the 2016 American Society for Biology national meeting held this past April in San Diego.

Faculty Study: Using Social Marketing Research to Help Low-SES Minority Smokers Quit

Anne Marie O’Keefe, who is on the faculty of Morgan State’s School of Community Health and Policy, received support from ASCEND to conduct a study entitled “Using Social Marketing Research to Help Low Socioeconomic Status Minority Smokers Quit.” Her work builds on the infrastructure created by and the accomplishments achieved by CEASE (Communities Engaged and Advocating for Smoke-free Environments), a project at Morgan State funded by NIH to reduce tobacco use in underserved populations.

Smoking first became fashionable in this country among middle-class and wealthy white men. During World War II, tobacco companies did our G.I.’s the “favor” of sending free cigarettes with their C-rations. Since theaters of war



are ideal settings for smoking (i.e., short bursts of great excitement interspersed among long periods of boredom), our G.I.’s returned the favor by coming home with life-long addictions to tobacco. Upper-class white women followed men in taking up smoking. Poorer persons lagged behind, but eventually took up the tobacco habit themselves.

Reductions in the prevalence of smoking have followed the same pattern. Wealthier white men began to quit first, followed by females in higher socioeconomic classes, while poor people lagged behind. Since 1997, smoking prevalence has fallen 27% among all adults, but only 15% among the poor. Current data show that 22.9% of those with less than 12 years of education smoke, compared to only 5.4% of those with a graduate degree.

It was because of this health inequity that CEASE was implemented in Southwest Baltimore. The CEASE project has clearly established that community-based settings and Peer Motivators are much more successful in helping smokers quit than clinic-based interventions delivered by medical personnel, but the sheer numbers do not explain why this is true. Dr. O’Keefe’s proposal, funded by ASCEND, was designed to use qualitative research to explore and discover what specific ingredients CEASE brings to the Herculean task of helping poor smokers of color kick their deadly habits.

In 2008 the New England Journal of Medicine published a remarkable study by Christakis and Fowler entitled “The Collective Dynamics of Smoking in a Large Social Network.” The results were clear. Smokers stopped smoking in networks. The more closely a smoker was connected to other smokers who quit, and the more ex-smokers in his network, the better were his individual chances of quitting.

To explore what underlies the success of CEASE, Dr. O’Keefe’s project identified individuals who succeeded in quitting and those who did not. In-depth interviews were conducted with persons from both categories, and with some of CEASE’s Peer Motivators. Based on these interviews, focus groups are being assembled where those who succeeded (and failed) in quitting smoking are providing their insights to cessation efforts. Final conclusions cannot be drawn until the research is complete, but early results seem to show that the single most important factor underlying the success of the CEASE intervention is the social support or social capital that the intervention provides for the smokers who benefit. In the words of study participants who quit:

I definitely know I wouldn’t have [done] it without the support.

What really helped me was that [the Peer Motivator] kept popping up at my house like “I know you ain’t smoking. I know you ain’t smoking.”

We look forward to the completion of this study and discovering more about how to help underserved populations quit their deadly tobacco habits.

ASCEND’s Grant Writing Workshops

A mission of ASCEND is to help new researchers at Morgan State University to be more successful in securing grants. In Spring 2016, Dr. Gloria Hoffman, Professor of Biology and Director of ASCEND’s Institutional Development Core, and Ms. Mollie Lange and Ms. Gillian Silver, ASCEND staff, prepared and presented several three-hour workshops on the crucial components of a successful (i.e., funded) research proposal. Specific topics included:

1. Creating your NIH-Format Biosketch;
2. Crafting your Specific Aims;
3. Developing your Research Budget.

The workshops were timed to allow participants to incorporate what they learned into proposals to ASCEND’s Faculty Pilot Research Program.

Faculty participants were enthusiastic and fully engaged. Attendance for all presentations was high (20 to 30 individuals each). Participants were encouraged to seek continuing assistance and feedback from the presenters after the workshops, while preparing their applications to ASCEND.

These workshops will be repeated in the Winter and Spring of 2017. Several new topics will be added, including sessions on NIH review guidelines and the funding process, and a mock review opportunity that allows faculty to evaluate an anonymous proposal according to guidelines. We expect that these exercises will hone applicants’ skills in preparing successful applications.

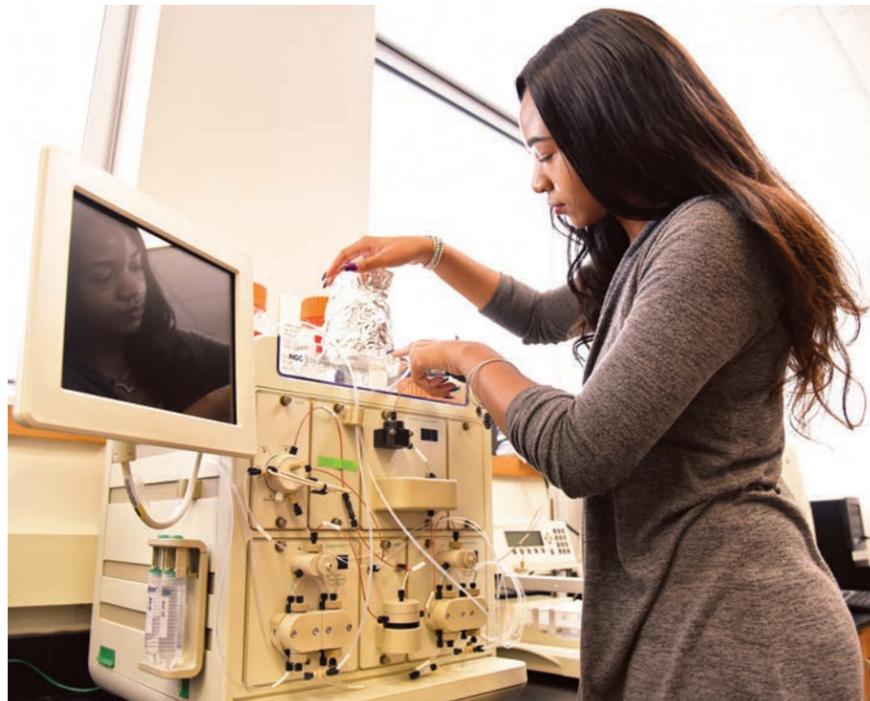


OUR CAMPUS AND BEYOND

Institutional development is one of the important missions of the BUILD awards. Over the past two years, ASCEND has renovated three physical spaces and equipped them with state-of-the-art teaching and communications technology including BodyViz, a 3D MRI visualization software. ASCEND has also supported development of protocols for a Core Laboratory and the purchase of equipment for this laboratory. And ASCEND has purchased subscriptions to valuable databases and journals.

Further, ASCEND engages in activities to improve the health of MSU's neighboring communities, by supporting community-based participatory research, organizing conferences, and more!

Coming together is a beginning; keeping together is progress; working together is success. —Henry Ford



MSU student working with equipment that ASCEND has purchased for its Core Laboratory.

Renovated Spaces and State-of-the-Art Software

In collaboration with Morgan State University's Division of Design and Construction Management, ASCEND has renovated three physical spaces to be used as state-of-the-art classrooms and meeting areas.

The Key Hall G53 classroom has been renovated as an Active Learning Center and equipped with a new 3D-capable projector, 19 Dell laptop computers, four smartboards, and cluster seating. In addition, the anatomy teaching software program BodyViz, which uses 3D magnetic resonance images of the entire human body, has been installed, and faculty and staff have been trained in its use. Drs. Hoffman and Jafar, two of the faculty members who teach Anatomy and Physiology, are using BodyViz in their classes and are developing a related laboratory manual for students.

Biolumida® (MBF Biosciences, Inc.), a virtual histology software program, along with a digital histology collection from the University of Iowa, have been purchased and are scheduled for installation. These software tools will complement and expand the BodyViz collection by adding extensive microscopic anatomical images for teaching and study.

Key Hall 155 is another renovated space used as an Active Learning Center. During the summer, this classroom is used for ASCEND's Summer Research Institute. During the academic year, it is used for a series of ASCEND-specific courses for ASCEND Scholars, as well as for teaching other classes offered by the School of Computer, Mathematical, and Natural Sciences. It is also used as a meeting space.

Key Hall 200 is a 2800 square foot space that has been renovated for the Student Research Center. Key Hall 200 includes a large lounge space, two conference rooms, offices for staff and students, a kitchenette, laptop bars, whiteboard walls, and state-of-the-art telecommunication technologies.

Virtual Imaging Technology for Teaching and Research

The ASCEND program has established a successful partnership with the Northeastern University (NEU) Center for Translational Neuroimaging, in order to develop a virtual functional magnetic resonance imaging (fMRI) lab that MSU faculty and students can utilize remotely for teaching and research purposes.

The virtual imaging technology includes a Vijucloud® cloud infrastructure, four pan-/tilt-/zoom-type high-resolution cameras with microphones, a smart whiteboard for course material delivery, and an LCD panel for interaction with remote students.

In early spring 2016, several MSU undergraduate and graduate students began working with NEU on individual fMRI projects. The intention is that the research will result in data that can be abstracted and submitted to student research forums for presentation and for submission to peer-reviewed journals in neuroscience.

As part of the 2016 Summer Research Institute, NEU introduced students to the basic principles of MRI together with a fully developed research project on traumatic brain injury. Students were encouraged to investigate and discuss the topic of brain injury following concussions as they relate to organized sports, military engagements, and chance accidents in daily life. NEU has generated a model of a mild concussive injury in rats that will be used to follow post-injury changes in brain function and structure with imaging.

continued, next page

Further, NEU and MSU are collaborating to develop four new MRI-related courses:

- Basic Principles of Magnetic Resonance Imaging: a general understanding of the physical principles of magnetic resonance imaging and the instrumentation used to create a magnetic resonance image.
- Advanced Nuclear Magnetic Resonance Imaging: the applications of Fourier transform nuclear magnetic resonance imaging (FTNMR) in medicine, biology, and material science; review of basic concepts of NMR (including Bloch equation); theoretical and experimental aspects of FTNMR; theory of relaxation and relaxation mechanisms in FTNMR; instrumentation; and imaging techniques including different pulse sequences.
- Magnetic Resonance Principles and Applications Toward the Study of the Brain (for non-engineering majors)
- Magnetic Resonance Imaging for Engineering Majors

These course curricula will be submitted to both university administrations for vetting and official approval.

Developing a Core Laboratory

ASCEND has purchased equipment for a Core Laboratory designed to increase the ability of MSU's faculty to conduct biomedical research using sophisticated sample purification and analyses. The Core Lab is located in the Dixon Research Building and provides laboratory training and services for faculty and students. Major laboratory equipment purchased by ASCEND includes: ProteinSimple's WES system, a highly efficient, automated Western Blot system; a Luminex MagPix system that uses magnetic bead technology to analyze multiple compounds of interest simultaneously in a single sample; Bio-Rad's NGC Quest 10 FPLC, a fast protein liquid chromatography for protein purification; Ted Pella (Pelco) BioWave Pro microwave system for rapid processing of tissue sections for histological analysis; UVP's BioDoc Gel Imaging System and Peltier cooled CCD (charge coupled device) digital camera that will improve the sensitivity of the existing UVP gel documentation and analysis system; and Bio-Rad's CFX96 Touch Real-Time PCR (polymerase chain reaction) Detection System for quantitative, direct-to-paper data output of nucleic acid levels.

Drs. Gloria Hoffman and Michael Koban direct the Core Laboratory. Ms. Mollie Lange and Mr. Kevin Swinson, research associates with deep experience and impressive accomplishments, manage the facility and provide training and other services. The Core Lab will offer sample preparation, separations technology, sample analysis, and histology services.

SBIR/STTR Workshop at Morgan State University

The NIH Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are two of the largest sources of early-stage capital for technology commercialization in the United States. These competitive programs help U.S.-owned and -operated small businesses break into the federal research and development arena, create life-saving technologies, and stimulate economic growth.

Winning an SBIR/STTR grant is very challenging; only a tiny percentage of applicants, especially first-time applicants, are funded. However, Dr. Jayfus Tucker Doswell, founder of the Juxtopia® Urban Innovation and Cooperative Entrepreneurship (JUICE) Network, one of ASCEND's pipeline partner organizations, has helped many first-time inventors, small businesses and college/university applicants secure SBIR/STTR awards. Dr. Doswell held his four-hour workshop, "The Art of Winning SBIR/STTR Grants" on April 18, 2016, on Morgan State's campus; 14 faculty, staff, graduate students, and community members attended. Participants learned how to win and leverage

these grants to commercialize high-tech innovations. Because the ASCEND program focuses on training future health researchers to embrace entrepreneurship, we were contacted by Dr. Kory Hallett who coordinates a working group at NIH on women and minority-owned businesses. Dr. Hallett is now working with ASCEND to arrange a guest lecture on Morgan State's campus by the NIH SBIR program. The lecture will address non-dilutive government grants for startups, when to seek SBIR support, and will include tips on managing the application process. Dr. Hallett's team also has offered to hold one-on-one discussions with interested Moran State faculty.

Trending Now: Community Health Challenges and Solutions

On December 1, 2016, ASCEND and CEASE will host the interdisciplinary conference "Trending Now: Community Health Challenges and Solutions." The purpose of the conference is to highlight community-based health research needs, priorities, and initiatives. This will be CEASE's third annual conference, and the first in conjunction with ASCEND. We expect to attract 100-200 public health professionals, academicians, researchers, and representatives from community-based organizations in the Maryland/DC region and beyond.

The conference will feature two plenary sessions and four breakout sessions, which will be moderated panel discussions with heavy emphasis on Q&A and interaction with the audience. Two of the breakout sessions will focus on CEASE/tobacco-use-related issues – "Prevention: E-cigarettes, Hookah, and Flavored Cigarettes" and "Interventions to Reduce Tobacco Use." The two other breakouts are on "Baltimore's Major Health Challenges: Epidemiology and Prevention" and "Baltimore's Major Health Challenges: An Integrated Response."

Confirmed presenters and moderators include:

- Dr. Joshua Sharfstein, Associate Dean for Public Health Practice and Training, Johns Hopkins Bloomberg School of Public Health
- Dr. Jonathan Samet, Distinguished Professor and Flora L. Thornton Chair, Department of Preventive Medicine, Keck School of Medicine of USC, and Director, University of Southern California Institute for Global Health
- Mr. Marc Steiner, Host of "The Marc Steiner Show" on WEAA; Founder, President, and CEO of the Center for Emerging Media
- Dr. Neal Freedman, Senior Investigator, National Cancer Institute
- Ms. Kathleen Hoke, Director of the Legal Resource Center for Public Health Policy (LRC) at the University of Maryland Francis King Carey School of Law
- Dr. Darcy Phelan-Emrick, Chief Epidemiologist, Baltimore City Health Department
- Dr. Kelvin Choi, Investigator, NIH Division of Intramural Research
- Dr. Lorece Edwards, Associate Professor, Morgan State University School of Community Health and Policy
- Dr. Janice Bowie, Associate Professor, Johns Hopkins Bloomberg School of Public Health

The conference will include a poster competition and CEASE-related awards. It will also feature a Stoop Storytelling Series special event focused on stories about making communities healthier. The Stoop Storytelling Series is a Baltimore-based live show and podcast that features "ordinary" people telling the extraordinary true tales of their lives.

[CEASE (Communities Engaged and Advocating for a Smoke-free Environment) is an NIH-funded community-based participatory research (CBPR) project to reduce tobacco use. It has been working for several years as a partnership between Morgan State University and Southwest Baltimore.]

Community Hug

On July 8, 2016, a barbecue was organized by CEASE, in partnership with ASCEND and local community groups. We believe that there is no better way to build community than by breaking bread with neighbors and having an opportunity to make new friends.



ASCEND by the Numbers

Students

55 undergraduate students participated in the first and second Summer Research Institute (SRI).

39 undergraduate students currently enrolled in the ASCEND Scholars program.

13 group research proposals developed and presented by ASCEND 2015 and 2016 SRI participants.

76 undergraduate students are members of the ASCEND Student Research Center.

Faculty

5 grant writing workshops offered to Morgan State faculty members applying for ASCEND pilot research grants.

14 travel applications submitted by MSU faculty members to attend conferences to enhance pedagogical expertise, or to attend scientific meetings in their fields of research; 10 awarded.

50 pilot research grant proposals submitted by Morgan State faculty members.

9 faculty members received statistical data analysis support from Dr. Mian Hossain, Professor of Biostatistics in the School of Community Health and Policy.

15 Community-Based Participatory Research (CBPR) Small Grant proposals submitted by Morgan State faculty members in collaboration with community organizations.

4 mentoring workshops held for 40 faculty members and near-peer mentors from Morgan State, Johns Hopkins University, and University of Maryland.

130 faculty and community experts from the U.S. and beyond reviewed ASCEND pilot research grant proposals and CBPR small grant proposals.

7 faculty members and near-peer mentors participated in online or in-person National Research Mentoring Network (NRMN) workshops.

17 course redesign applications submitted by Morgan State faculty members; 9 awarded.

Institution

10 (out of 10) Morgan State Schools and Colleges participated in ASCEND-related activities.

3 highly-advanced technologies (BodyViz, functional MRI, and Bioluminescence) available for student training and faculty research.

3 spaces within the Morgan State Science Complex renovated to form two Active Learning Centers and a Student Research Center.

1000s of journals, previously inaccessible, available online through the Morgan State library.

13 pieces of scientific equipment purchased, upgraded, or repaired for a new Core Laboratory or for ASCEND-supported faculty investigators.

6 research partner institutions (Johns Hopkins University, University of Maryland, National Institutes of Health Intramural Program, Tufts University, Northeastern University, Lehigh University) work with MSU in various ways, including training and mentoring students.

THE ASCEND TEAM

PRINCIPAL FACULTY

Farin Kamangar, MD, PhD
Principal Investigator | SCHP

Payam Sheikhattari, MD, MPH
Co-Principal Investigator | SCHP

Jocelyn Turner-Musa, PhD, MS
Director, STC | CLA

Cleo Hughes-Darden, PhD
Co-Director, STC | SCMNS

Christine Hohmann, PhD
Director, REC | SCMNS

Avis Jackson, PhD
Co-Director, SRI (REC) | SCMNS

Gloria Hoffman, PhD
Director, IDC | SCMNS

Michael Koban, PhD
Co-Director, IDC | SCMNS

R. Trent Haines, PhD
Evaluator | CLA

Catherine Martin-Dunlop, PhD
Evaluator | SEUS

Carrol Perrino, PhD, MS
Lead Mentor, Evaluator | CLA

ADMINISTRATIVE STAFF

Gillian Silver, MPH, CPH
Program Manager

Netta Pinchback
Coordinator, STC & REC

Shamon Shine-Lee
Budget Assistant, STC & REC

Shamara Murphy
Coordinator, SRC

Ryan Mobley
Project Coordinator, AC

Diane Hughes
Project Coordinator, IDC

Kevin Swinson
Senior Research Associate, IDC

Kelley Murphy
Senior Research Associate, IDC

Mollie Lange, MA
Senior Research Associate, IDC

NIH OFFICIALS

H. Nelson Aguila, DVM, Project Scientist, Deputy Director, Center to Reduce Cancer Health Disparities, National Cancer Institute

Anissa J. Brown, PhD, BUILD Program Officer, National Institute of General Medical Sciences

Alison Gammie, PhD, Director, Division of Training, Workforce Development, and Diversity, National Institute of General Medical Sciences

STEERING COMMITTEE EXTERNAL MEMBERS

Harolyn Belcher, MD, MHS, Professor of Pediatrics, Johns Hopkins University School of Medicine

Ashkan Emadi, MD, PhD, Associate Professor of Medicine, University of Maryland School of Medicine

EXTERNAL ADVISORY BOARD MEMBERS

James Anthony, MSc, PhD
Professor of Epidemiology & Biostatistics
Michigan State University

Harolyn Belcher, MD, MHS
Professor of Pediatrics
Johns Hopkins University School
of Medicine

Andrew Campbell, PhD
Dean of the Graduate School
Professor of Medical Science
Brown University

Richard Carmona, MD, MPH
17th Surgeon General of the United States

Casonya Johnson, PhD
Associate Professor, Biology
Georgia State University

Michael Klag, MD, MPH
Dean, Johns Hopkins Bloomberg
School of Public Health

Kim Nickerson, PhD, MS
Assistant Dean for Diversity
University of Maryland, College Park

N. Joyce Payne, PhD, MA
Founder/Advisor to the President
Thurgood Marshall College Fund

Joel Schildbach, PhD
Professor and Vice Dean
Johns Hopkins University

Michael Willis, PhD
Vice President
Kaiser Permanente Information
Technology, Mid-Atlantic States Region

ASCEND SUMMER RESEARCH INSTITUTE FACULTY AND NEAR-PEER MENTORS 2015

Shanai Brown
Near-Peer Mentor | SCMNS

Sherita Henry, DrPH
Instructor | CLA

Kevon-Mark Jackman, MPH
Instructor | SCHP

Sanjeeda Jafar, PhD
Instructor | SCMNS

Niangoran Koissi, PhD
Instructor | SCMNS

Olumayokun Odukale
Near-Peer Mentor | Carnegie Mellon

Emmanuel Quaye, MHS
Near-Peer Mentor | JHSPH

Agnieszka Tarasiewicz
Near-Peer Mentor | SCMNS

Ophelia Ukaegbu
Near-Peer Mentor | SCMNS

Erika Whitney, PhD
Instructor | SCMNS

ASCEND SCHOLARS' NEAR-PEER MENTORS AND OTHER SUPPORT STAFF

Paris Adkins-Jackson, MA, MPH
Program Assistant | CLA

Oluwatoyin Ajai
Near-Peer Mentor | SCHP

Loretta Amankwah
Near-Peer Mentor | SCMNS

Bukky Babalola
Graduate Writing Assistant | CLA

Eric Boorman
Near-Peer Mentor | CLA

Sherita Henry, DrPH
Instructor | CLA

Subin Hona, MA
Graduate Assistant | CLA

Elana Levine
Program Assistant | CLA

Korede Oluwasuji
Academic Coach | ENG

Ebele Oranuba, MBBS, MPH
Near-Peer Mentor | SCHP

Behnam Tabatabaei
Near-Peer Mentor | SCMNS

Agnieszka Tarasiewicz
Near-Peer Mentor | SCMNS

LaLonnice Travenia
Career Guidance Counselor

AC: Administrative Core; CLA: College of Liberal Arts; ENG: School of Engineering; IDC: Institutional Development Core; JHSPH: Johns Hopkins Bloomberg School of Public Health; REC: Research Enrichment Core; SCHP: School of Community Health and Policy; SCMNS: School of Computer, Mathematical, and Natural Sciences; SEUS: School of Education and Urban Studies; SRC: Student Research Center; STC: Student Training Core.



ASCEND CENTER FOR BIOMEDICAL RESEARCH

1700 E. Cold Spring Lane
Baltimore, Maryland 21251
morgan.edu/ASCEND
ascend@morgan.edu
443-885-3541



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Supported by the National Institutes of Health