Project Pathways
BUILDING INFRASTRUCTURE LEADING TO DIVERSITY (BUILD)
PROGRAM AT XAVIER UNIVERSITY OF LOUISIANA
Institutional Development Core

“The Institutional Development Core (IDC) provides resources for key offices and centers across the campus that assist with students’ academic support, professional development and undergraduate research activities.”

Student Training Core

“The Student Training Core (STC) expands the number of biomedical research opportunities offered to Xavier students. This core also coordinates a number of activities designed to educate freshman and sophomore students about the variety of possible biomedical research careers they can pursue.”

Research Enrichment Core

“The Research Enrichment Core (REC) strengthens the supportive environment needed for Xavier students to overcome barriers to success through curriculum enhancement, mentor training, and post-baccalaureate research training for recent graduates.”

Administrative Core

“The Administrative Core provides administrative oversight of the other three cores and provides support to enhance faculty research competitiveness. It ensures that there is on-going communication with the NIH, implementation of the activities with input from external and internal evaluators and recommendations for best practices.”
Welcome from the Provost

The NIH NIGMS BUILD Program at Xavier University of Louisiana, Project Pathways, is a holistic initiative aiming at increasing diversity in the biomedical workforce. As an HBCU, Xavier has a long history of activism in educating individuals from underrepresented groups in the sciences for successful pursuit of graduate and professional degrees and productive careers. Xavier also prides itself in training students in a manner that provides them with leadership skills and global and human rights awareness. The BUILD program lifts all of us up, enabling our faculty to fulfill their talents as it gives us the means to provide a more research-centered education to our students.

Anne McCall,
Provost and Senior Vice President for Academic Affairs
Xavier University of Louisiana

A Note from the President

The BUILD Project Pathways has extended the capacity of Xavier University of Louisiana to prepare its students for advanced study and careers in the biomedical science through rich biomedical research experience as undergraduates. A key dimension of excellent education is that practical experience as scientists in our laboratories and those of our collaborators, whereby Xavier students grow as junior colleagues in the enterprise of discovery and problem solution. The BUILD Program allows this faculty to innovate imaginatively on behalf of its students.

The faculty has strengthened academic support in recognition that not all students have received the pre-collegiate education that they deserved. We at Xavier have long recognized it as our task and commitment to cultivate talented students and resolve any deficits that impede such talent. The faculty has enhanced the curriculum to broaden the experience and horizons of our graduates, so that they may stand with the best minds of the nation and contribute to its achievement.

Xavier University of Louisiana has demonstrated the ability to educate African-American STEM students and to do so very well. Through BUILD, Xavier will share with sister institutions pathways to educate STEM students at the highest level. Through shared knowledge, we will expand the capacity of this nation to educate its talented minds and to realize the full benefits.

C. Reynold Verret,
President
Xavier University of Louisiana
Institutional Development Core

St. Joseph’s Hall: Home to Center for Undergraduate Research and Graduate Opportunity (CURGO), Student Academic Success Office (SASO), Office of Career Services (OCS), Counseling and Wellness Center, Math Resource Center, Student Health Services, and Writing Center.
HIGHLIGHTS

Festival of Scholars

The Center for Undergraduate Research and Graduate Opportunity (CURGO) hosted Xavier’s 14th annual Festival of Scholars event on April 20-April 21. Since 2004, the Festival of Scholars (FOS) has showcased the vast array of student research and creative work achieved with the support and guidance of faculty. The 2017 FOS program featured student exhibitions representing all six of Xavier’s academic divisions, as well as the College of Pharmacy.

This year’s event featured a keynote speaker, Dr. Olayiwale Sulaiman MD, PhD. Dr. Sulaiman serves as the chairman for the Neurosurgery Department & Back and Spine Center at Ochsner Hospital. In addition to Dr. Sulaiman’s clinical experience, he also has extensive research experience in both nerve and spinal cord injury and regeneration. Dr. Sulaiman’s talk was entitled “Clinician Scientist-Myth or Reality, Reflections of an Academic Neurosurgeon.”

This year, there were over 200 poster and oral presentations as well as performances and art exhibitions from students in a variety of fields. A total of 320 students attended this year’s event with 75% of those students being from STEM fields. Faculty, administrators, family and other guests from local universities also attended this event.

A part of Xavier’s mission is to prepare its students to assume roles of leadership and service. Through meaningful participation in faculty-mentored research projects, students learn common characteristics of leaders, such as how to think critically about problems, design and implement solution strategies, think creatively and produce new ideas or materials, as well as learn to overcome challenges and obstacles.

Institutional Development Core

Summer Research Symposium

The Summer Research Symposium, hosted by the Center for Undergraduate Research and Graduate Opportunity (CURGO), offers an opportunity to recognize the ongoing pulse of research that happens year-round at Xavier. During the 2016 symposium, NIH BUILD students presented their project designs and updates to an interdisciplinary group of students and faculty. There were 52 student presentations and the event was open to the public and families. The 2017 symposium is scheduled for July 26, 2017.

Office of Career Services

Each February, the Office of Career Services (OCS) brings to campus a team of 50 or more representatives from a variety of career fields including business, government, pharmacy, medicine, public relations, law, clergy, math, military, non-profit, education and health science. The 2017 Youth Motivation Task Force (YMTF) Program featured 51 consultants, 29 of whom were alumni, to visit classrooms to give advice to students about what they need to do to be successful when they leave Xavier. Program activities also included a panel on Careers in Science, a study skills session, and a Speed Networking event.
Student Training Core
Kendale Watson

BUILD has done so much for me as a student! I've been able to connect with other like-minded individuals from the many conferences as well as being able to improve as a student. BUILD also helped me with time management. Having to complete at least 10 hours of research a week along with classes was a bit strenuous, but after awhile I was able to do both. My mentor, Dr. DiMaggio and post-doc, Dr. Janet Manono, have been great to me while being in the DiMaggio lab. They helped me achieve my goal of completing my thesis as well as being there for me if it was something other than research. My overall experience in the program has been wonderful. I believe this is an amazing program and I would not change any of my experiences.

Veronica Miles

I first applied to the BUILD Scholar Program after being denied from several other research programs following my sophomore year. The common response was that I needed more research experience. BUILD took a risk giving me, a Pre-Med Chemistry student, the opportunity to conduct biomedical research. I was assigned Jayalakshimi Sridhar, Ph.D., an Organic Chemistry professor under whom I conducted medicinal chemistry research focusing on the role of Cyclin-Dependent Kinases and for that I will always be grateful.

It had been a long-time desire of mine to discover what research was truly like, as I had personally experienced how inconclusive medicine could be through the passing of my great grandmother; I refused to accept that there was not a solution for every problem. I had always had a liking for science, however I desired to be a physician in order to heal others. Through BUILD, I discovered that I did not have to choose between medicine and science, but could truly have it all as a Medical Scientist. In fact my first conference through BUILD was to the 2015 South Eastern Medical Scientist Symposium (SEMSS) in Nashville, TN. There I was inspired by the vastness of the medical scientist community; it was at this conference I made the decision to pursue a dual M.D./Ph.D. degree.

During my second summer, I attended the Summer Medical And Research Training (SMART) Program at Baylor College of Medicine in Houston, TX. As a part of the SMART Program I conducted pancreatic cancer research under the direction of Qizhi "Cathy" Yao, M.D., Ph.D. and Ethan Poteet, Ph.D. Baylor College of Medicine broadened my horizons, as I was given the opportunity to be in the midst of biomedical innovation. BUILD also afforded me with opportunities to meet professionals and leaders in the biomedical field. In 2015, I presented before NIH representatives during a Xavier BUILD campus visit, and in 2016, I represented Xavier during a student luncheon with current NIH Director Dr. Francis Collins during his visit to New Orleans.

BUILD has given me an avenue to express my passion for science and medicine while preparing me for a career in science through education and real-life experiences.
HIGHLIGHTS

Connecting the Pathways

Yale University Office for Graduate Student Development and Diversity (OGSDD) invited students from Xavier’s BUILD Project Pathways to visit their campus. The OGSDD aims to enhance the academic experience at Yale University by diversifying the student body. The Office collaborates with departments and programs to recruit students and foster an environment of inclusion for diverse students in their programs. Dr. Michelle Nearon, Associate Dean for Graduate Student Development and Diversity welcomed Ms. Amy Billizon, Program Manager for the Student Training Core (STC) and Research Enrichment Core (REC), and eight students including five BUILD participants.

The students toured the campus, and Dr. Nearon provided them with an overview of OGSDD’s mission and the role of her office in ensuring diversity at the University.

The students also received some insightful information on the biomedical graduate programs offered and the admissions process.

Annual Biomedical Research Conference for Minority Students (ABRCMS)

ABRCMS is a professional conference for underrepresented minority students interested in pursuing advanced studies and training in biomedical disciplines. The conference was held on November 9-12, 2016 in Tampa, FL. The conference provided many valuable resources to students, faculty, student training program directors and staff to prepare students for careers in biomedical fields. Xavier University had a group of 39 students attend the conference. ABRCMS allowed the students to present their research and network with representatives from graduate programs, and STEM professionals about research opportunities and funding sources.
Faculty Development Spotlight: P-MAX, SERG & SPWS

It has been demonstrated that supporting faculty in improving their teaching skills has a positive impact on student learning. In working toward the ultimate goal of BUILD to increase the participation of underrepresented individuals in the biomedical workforce, Xavier’s Project Pathways Program helps to support three faculty development initiatives that work to assist faculty in their teaching, mentoring and many other aspects of their professional lives. Preparing Mentors and Advisors at Xavier (P-MAX) is a training program that is designed to provide participating faculty with the knowledge and skills needed to effectively mentor and advise undergraduate students, especially those engaged in research. The Science Education Research Group (SERG) meetings are informal, pedagogical forums where interested faculty members can discuss their teaching experiences, pedagogical issues, and lessons learned with other faculty. The meetings are designed to improve interdepartmental communication and increase the ease of access to innovative resources on best practices and relevant educational research for the faculty involved. Each summer, the faculty involved in course development/improvement projects supported by BUILD and other research education grants participate in the Summer Pedagogical Workshop Series (SPWS). During the two-week workshops, each faculty member presents his/her curricular project and exchanges ideas and experiences with workshop participants. Faculty are also provided workshops on assessment and pedagogical topics, including best practices.

BUILD Technicians

Our BUILD Post-Baccalaureate Technician program is open to recent Xavier graduates in biomedical disciplines who still need additional training to successfully continue along their career path. BUILD Technicians receive one-year of full-time research experience with a faculty mentor focusing on the skills needed for success in biomedical research careers and assistance in identifying and being placed in graduate programs. All seven of the first cohort of BUILD Technicians were successfully placed in a graduate program.

BUILD Technicians pose with signs of the graduate schools they have just entered. Top (l to r) Peter Pham (UT Knoxville), Justin Grennell (LSU), and Davon Carter (UCLA); Bottom (L to R) Kyna Dodson (Ole Miss), Brianyell McDaniels (Texas Tech Health Science Center), and Jade Meyers (Tulane University). Faith Joseph, who is not in the picture, entered Baylor College of Medicine SMART Prep Program in Molecular Biology.
Dr. Krista D. Mincey

For my BUILD project, I looked at prostate cancer knowledge and risk in college age black men. As a public health professional, I am interested in understanding how to prevent groups from getting certain diseases or adverse health outcomes. With my BUILD project, I wanted to learn what knowledge young Black men have about their prostate and prostate cancer. Additionally, I was interested in their perception of risk of getting prostate cancer along with their thoughts on prostate cancer. I also wanted to know about their health behaviors and elements that could improve their health.

To assess and get answers to these questions, my co-researcher, Dr. Brian Turner, moderated and conducted interviews and focus groups with college Black men. From this research, we reported that there was a lack of prostate and prostate cancer knowledge among college Black men. We presented 4 abstracts from this research at local and national conferences. We have one article under review and an additional article that received a revise and resubmit. Additionally, I have carried findings from this project into another study with Dr. Tyra Gross looking at health and college Black women.

Dr. Zhe Wang

Dr. Zhe Wang's research centers on bioanalytical, electroanalytical and electrochemistry at electrode/liquid/gas interfaces with two active research areas: 1) Bioanalytical chemistry for clinical diagnosis and therapy; 2) Fundamental and applied electrochemistry for miniaturized sensor array and energy conversion plan applications.

The research direction in Wang's lab is motivated by the increasing needs of new sensor technology for a broad range of applications relating to national security, health care, the environment, energy, food safety, and manufacturing. Current projects in Wang lab are:

1. Designing and fabricating functional surfaces for bio-recognition in early cancer diagnosis. This project is applying the principles from chemistry, biology and material science to obtain smart interfaces selectively targeting biomarkers and small drug molecules, which serve in a perfect sensor array system for clinical cancer diagnosis.
2. Developing miniaturized analysis platforms that combine high performance, chip-scale instrumentation electronics with multi-transduction-mode sensor array devices.
3. Understanding the interfacial composition, structure and properties of ionic liquids and nanomaterials for sensor and energy conversion applications.
Dr. Harris E. McFerrin

My research over the last ten years has focused tangentially on a number of topics: Human Immunodeficiency Virus (HIV), Human Herpes Virus-II (HHV8), Herpes simplex virus-1 (HSV-1), Tumor Angiogenesis, Diabetes and Adult Human Mesenchymal Stem Cells (hMSC). These topics are all linked by their interaction with the vasculature by up-regulating or down-regulating the survival and growth of blood vessels. Currently, my laboratory is investigating the role of cyclin-dependent kinases in pathological blood vessel growth.

HSV-1 infects greater than 90% of humans worldwide and produces inflammation and angiogenesis of the cornea during ocular infection that can lead to blindness. In the United States, HSV-1 infection is the leading cause of infection-induced blindness; nearly 40,000 new cases are reported, and 300,000 cases are treated yearly. HHV8, also known as Kaposi’s sarcoma herpes virus, causes tumors of blood vessels referred to as Kaposi’s sarcoma. Based on research that was supported in part by the BUILD grant, we have shown that cyclin-dependent kinase inhibitors reduce pathological blood vessel formation in the context of viral infection with HSV-1 and HHV-8 as well as in an ocular alkali burn model.

Dr. Stassi DiMaggio

The multibillion dollar chemical and polymer industry across Louisiana and Mississippi represents a sizable fraction of total U.S. chemical manufacturing and accounts for a significant fraction of the total regional economic output. Polymerization processes are fraught with problems of waste, inefficiency, and failed products with a large environmental footprint. These problems can be traced in large part to lags in polymerization process monitoring, which traditionally relies on laborious manual product sampling and slow lab turnaround. As next-generation stimuli responsive polymers, with applications in medicine, coatings, environmental remediation, etc., enter commercial production these issues will be exacerbated as a result of the more stringent processing constraints required to maintain desired polymer responses. Quantitative decision-making enabled by polymerization reaction monitoring and control technologies could thereby provide significant returns across all sectors, and represents a strategic opportunity for research investment that will sustain and enhance regional competiveness into the future. To this end, we have synthesized Generation 1 and 2 bis-MPA polymers to act as a core nucleation site for eventual conjugation to stimuli response block copolymers.

Stimuli-responsive polymers (SRPs) substantively alter their physical properties (e.g., shape, viscosity, etc.) in response to environmental triggers (e.g., pH, solvent quality, etc.). Materials that are responsive to solution environment (e.g., pH, ionic strength, temperature) are poised to transform applications in biocompatible materials, sensors, actuators, and delivery vehicles. Block copolymers are polymers where two or more chemically distinct chains are covalently attached. When a block copolymer is placed in a solvent that preferentially solvates one block over another, the polymers assemble to minimize interfacial energy. In addition, the responsive nature of these materials can allow for morphological transitions (e.g., spherical micelle to vesicle), that give them great potential as drug encapsulation and delivery materials.

These biologically relevant SRPs will be attached to dendritic cores via ligands used to facilitate material population purification so that precisely defined and quantified materials can be studied. We propose to study material behavior and properties as a result of conjugate number with the Stimuli Responsive Automatic Continuous Online Monitoring of Polymerization Reactions (SR-ACOMP) analysis platform at Tulane University. This will result in the ability to monitor and record in real time material properties and property changes as a result of external stimuli.
and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.

Dr. Florastina Payton-Stewart

The main goal of Dr. Payton-Stewart’s research project is to design and synthesize analogs of known phytochemicals as anticancer agents for triple negative breast cancer. Studies have found that phytochemicals, such as curcumin and berberine have been extensively used for many centuries in traditional Chinese and Native American medicine. Berberine and curcumin have been found to suppress a wide variety of tumor cells including breast, leukemia, melanoma, pancreatic, tongue, prostate and gastric cancers. Studies have shown that berberine and curcumin are radiosensitizers of tumor cells but not normal cells. Studies suggest that known phytochemicals such as berberine and curcumin would be effective candidates as anticancer agent. We hypothesize that structural modifications of phytochemicals (berberine and curcumin) may lead to effective anticancer agents against triple negative breast cancer. Specifically, we plan to 1) develop/design new analogs of known phytochemicals using molecular modeling, 2) synthesize berberine and curcumin analogs using traditional organic chemical reactions, 3) evaluate the structural activity relationship of the synthesized analogs. Once analogs have been synthesized we will 4) evaluate the biological activity/mechanism of action of analogs.
Visit from Dr. Hannah Valantine

Dr. Hannah Valantine is the NIH Chief Officer for Scientific Workforce Diversity. In that role, she leads NIH’s charge to diversify the biomedical research workforce by developing a strategy that promotes expansion of recruitment, retention, and inclusiveness in the biomedical research field.

During her visit to Xavier, she inspired students in the seminar “Career Path to Becoming Researcher and Beyond”. She also gave a presentation for faculty and staff highlighting the NIH initiatives for increasing workforce diversity.

Renovations

Leveraging NIH BUILD funds, Xavier University has renovated and updated a number of classrooms and labs such as the NIH BUILD Room in the Administration Building, Room 305. The Program also purchased needed equipment, software and supplies. The following labs were renovated and upgraded:

NCF 272, 274, 276 were reconfigured to create one large and more functional Biochemistry and Biophysics research space.

For NCF 316 (the Biochemistry teaching lab), the following equipment were purchased: High Speed Centrifuge, Tabletop Centrifuge, Microplate Reader, and a 3-D Printer. In addition, minor cosmetic renovations were needed to properly store equipment within the spaces allocated.

NCF 319, the Analytical Chemistry research lab, was reconfigured to increase functionality and research space by removing unused cabinets, non-functional flammable storage cabinets, and sinks. An emergency outlet for use with the backup generators was installed.

The existing classroom space in NCF 273 was converted into an Organic Chemistry research lab. Research benches, storage cabinets, fume hoods, new plumbing, vacuum and gas lines, flammable storage cabinets, sinks, electrical power outlets, and work desk space/book shelves for students and research staff were installed.
**BUILD Cultural Responsiveness Task Force**

BUILD Cultural Responsiveness Task Force (CRTF) is a committee composed of Xavier Faculty, Staff and Administrators. We are working to help the Xavier community recognize existing cross cultural implicit bias, and to propose strategies that will help eliminate such bias in an effort to improve mentoring and advising of underrepresented groups within STEM. The CRTF has two main goals: 1) The development and execution of the BUILD cultural responsiveness survey and the cultural responsiveness components of the survey of graduate school alumni seeking a Ph.D. in biomedical fields; 2) The development and implementation of programs to better understand and enhance cultural responsiveness on campus.

In the spring of 2017, Dr. Linda Strausbaugh visited Xavier to provide assistance in generating knowledge about increasing diversity in the biomedical sciences. Dr. Strausbaugh plays a lead role in the initiative between the University of Connecticut and the Compact for Faculty Diversity Program (New England Board of Higher Education Division) to increase the number of unrepresented ethnic groups within STEM doctoral programs at New England Universities.

After two semesters of activity, the CRTF has been able to design and administer three surveys to students, alumni, and faculty. The task force members have reached consensus regarding the preliminary findings from these surveys and are formulating suggestions for policy and practice.

**Program Evaluation**

Project Pathways is committed to achieving excellence and to ensure that we are on the right path. Our internal evaluator Dr. Clair Wilkins-Green and external evaluator Office of Educational Innovation and Evaluation (OEIE) work cohesively with the Coordination and Evaluation Center (CEC) to monitor our progress. Our team of evaluators work together and support Xavier University’s vision of becoming a recognized leader for fostering an educational and supportive culture for students pursuing careers in the biomedical fields and achieving PhDs. We also want to provide innovative models that can be disseminated across the nation to successfully engage and educate minorities going on to highly productive biomedical research careers.

As part of the project evaluation, in January 2017, OEIE collaborated with Xavier’s Internal Evaluator to conduct a formative evaluation of project activities. The evaluation encompassed a site visit where focus groups and interviews with students, faculty, and institutional units involved in BUILD activities were conducted. The evaluation provided a comprehensive documentation of the grant implementation processes, lessons learned, and recommendations for moving forward.

**Partner Liaisons**

Our partner institutions have worked tirelessly with Xavier faculty and staff to place students in research programs at their institutions. All 12 of the Cohort 2 BUILD Scholars were placed in summer programs. Ten Scholars worked at a partner institution over the summer either through a summer program or as part of a direct match with a mentor based on an existing collaboration. Two Scholars participated in programs at non-partner institutions.

**University of California, Davis**
- Dr. Steve Lee

**The University of Chicago**
- Dr. Regina Dixon-Reeves

**Boston University**
- School of Medicine
  - Dr. Andrew J. Henderson

**Dartmouth College**
- Dr. Jane B. Seibel

**LSUHSC**
- Dr. Paula Gregory and Dr. Allison Augustus-Wallace

**University of Wisconsin**
- Dr. Janet Branchaw and Dr. Amber Smith

**icahn School of Medicine at Mount Sinai**
- Dr. Matthew O’Connell

**New York University**
- Dr. Joel Oppenheim

**Emory University**
- Dr. Cora E. MacBeth

**Meharry Medical College**
- Dr. Evangeline Motley

**Tulane University**
- Dr. Walter Lee Murfee

**Johns Hopkins University**
- Dr. Juliette Lecomte

**Northwestern**
- Mr. Damon L. Williams

**University of Rochester**
- Dr. Vivian Lewis and Ms. Ashley Anderson

**George Washington University**
- Dr. Jeffrey Brand

**UC San Francisco**
- Dr. Mitchell D. Feldman

**Albert Einstein College of Medicine**
- Dr. Victoria Freedman

**Tulane University Health Science Center**
- Dr. L. Gabriel Navar

**LSU**
- Dr. Gloria Thomas

The evaluation provided a unique perspective of the students experience with BUILD.

Throughout the site visit, students in particular spoke about the opportunities that they had been given due to their participation. Opportunities that students mentioned ranged from becoming interested in and given the chance to participate in research, visiting other institutions such as Yale to meet graduate students and see what life could be like if they too choose a similar path, attending conferences that allowed students to create networks with other aspiring minority scientists, and, overall, the opportunity to prepare for graduate school. One student’s experience provides an example of the impact Xavier and the BUILD opportunity are making in students’ education and career pathways. This student shared, “I am a transfer student. In my former university I was very discouraged and was told I would never do research. I was told nobody would ever let me into a lab. Now I see that person – those people – were wrong. Transferring, coming to Xavier, being in that encouraging environment, an environment where people actually want to help you, and just encouraging me and letting me know I can.”