



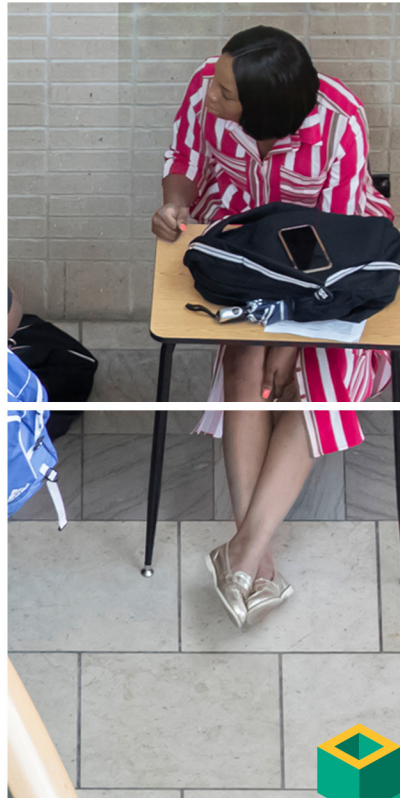
XAVIER
UNIVERSITY *of* LOUISIANA



PROJECTS PATHWAYS

Building Infrastructure Leading to Diversity

BUILD PROGRAM



**DIVERSITY
PROGRAM
CONSORTIUM**
Supported by the National Institutes of Health

2022





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Core **Infrastructure**



Student Training Core

The Student Training Core (STC) expands the number of hands-on mentored biomedical research opportunities offered to Xavier students. This core also coordinates several activities designed to educate freshman and sophomore students about the variety of biomedical research careers they can potentially 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.



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.



Administrative Core

The Administrative Core provides administrative oversight of the other three cores, oversees program evaluation, and ensures that there is on-going communication with the NIH, the CEC, and the other members of the DPC.

Introduction to **BUILD at Xavier**

The BUILD (Building Infrastructure Leading to Diversity) Program is funded by the National Institute of General Medical Sciences (NIGMS) at the National Institutes of Health (NIH). This highly innovative initiative was designed as a set of experimental training awards made to higher education institutions to study and implement practical approaches to engaging and retaining students from diverse backgrounds in biomedical research careers. These awards are part of a larger initiative by the NIH to enhance the diversity of the NIH-funded workforce. The ultimate goal of this NIGMS Training, Workforce Development, and Diversity (TWD) Program is to address the lack of diversity in the biomedical research workforce and prepare a diverse group of future contributors.

Xavier University of Louisiana (XULA) was chosen as one of ten recipients of a BUILD award. Xavier developed Project Pathways, which includes several components targeting students, faculty, and several academic and non-academic offices and centers on campus. Project Pathways, now in its ninth year, focuses on the various pathways to success for students in the biomedical sciences, bringing together academic and scholastic support areas to provide students with a holistic program that better prepares them for graduate studies and biomedical research careers.

The COVID-19 pandemic has highlighted the inequities people of color face, particularly in healthcare. A diverse biomedical workforce provides several key benefits for both the biomedical sciences and society. Such benefits include narrowing the health gap; mitigating health inequities; improving relations between underrepresented groups and biomedical professionals; increasing creativity by tapping into diverse perspectives; broadening the

scope of inquiry into often neglected areas; and promoting and ensuring fairness and understanding.

Xavier University of Louisiana is the only historically Black and Catholic institution of higher education in the United States. U.S. News Media Group has consistently ranked Xavier as one of the top historically Black Colleges and Universities (HBCUs) in the nation¹. Xavier is consistently acknowledged for its excellence in the Science, Technology, Engineering, and Mathematics (STEM) curricula and hosting strong academics in the Liberal Arts. More than 78% of Xavier undergraduates in the 2021-2022 academic year majored in biomedical (Biology, Biochemistry, Bioinformatics, Chemistry, Computer Science, Data Science, Mathematics, Neuroscience, Physics, Public Health Sciences, Psychology, and Sociology) disciplines².

Xavier is nationally recognized for producing health professionals. An American Association of Medical Colleges (AAMC) report recognized Xavier as one of the top producers of Black and African American graduates who complete medical degrees³. Xavier's College of Pharmacy is also among the best pharmacy colleges and programs in Louisiana⁴. OnlineU, a college research resource website, published a report noting that Xavier University of Louisiana tops the list as having the highest financial payoff for its Black graduates⁵. A report by the United Negro College Fund (UNCF) using data from Opportunity Insights, a research institute based at Harvard University, named Xavier as the most successful HBCU in terms of upward mobility⁶. Xavier's bachelor's degree in Biology program has been ranked #1 by Study.com using data from the Department of Education, including tuition, retention, and graduation rates⁷. According to a Georgetown University report



on return on investment, Xavier University of Louisiana is the highest-ranking HBCU regarding students' 15, 30, and 40-year ROI. The Georgetown study was based on an annual ranking of over 4,000 colleges and universities, measuring the share of students whose earnings 10 years after enrollment are higher than those of workers with a high school diploma as their highest level of education⁸.

¹U.S. Media Group. Best Colleges Rankings: Xavier University of Louisiana. Available at <https://www.usnews.com/best-colleges/xavier-university-of-louisiana-2032/overall-rankings>

²Institutional Research, Institutional Research & Decision Support: Xavier University of Louisiana Profile 2020-2021. Available at <https://www.xula.edu/opira/2021-2022-university-profile.pdf>

³Student Data, Applicant and Matriculation File, 2021-2022. In: AAMC Data Warehouse. Available at <https://www.aamc.org/download/321446/data/factstablea2-1.pdf>

⁴Best Pharmacy Programs. Available at <https://www.cappex.com/best-colleges/major/pharmacy/state/louisiana>

⁵OnlineU. (2022). Alumni from these HBCUs Earn More Than Other Black Graduates in Their States. Available at <https://www.cnn.com/2022/03/13/alumni-from-these-hbcus-earn-more-than-other-black-graduates-in-the-same-state.html>

⁶United Negro College Fund (UNCF) HBCUs Transforming Generations: Social Mobility Outcomes for HBCU Alumni (2021). Available at https://cdn.uncf.org/wp-content/uploads/Social-Mobility-Report-FINAL.pdf?_ga=2.225610650.1203443287.1637257494-1067485201.1637257494

⁷Study.com. (2021). Best Bachelor's Degrees in Biology. Available at <https://bestaccreditedcolleges.org/degrees/bachelors-degrees-in-biology.html>

⁸Georgetown University Center on Education and the Workforce (2022). Ranking 4,500 Colleges by Return on Investment (ROI) 2022. Available at <https://cew.georgetown.edu/cew-reports/roi2022/>



Basic Overview of Project Pathways

Project Pathways at Xavier is an NIH-funded program that seeks to increase diversity in the biomedical research workforce through providing research experiences, enrichment activities, and academic support for Xavier undergraduates. Project Pathways is one of ten grants funded through the NIH-BUILD mechanism that, together with the NRMN (the National Research Mentoring Network) and the CEC (the Coordination and Evaluation Center), make up the Diversity Program Consortium (DPC). The DPC provides a data-rich experiment to identify and address the major barriers to success for students from populations underrepresented in the biomedical workforce.

At Xavier, the activities in Project Pathways are carried out through the combined and collaborative efforts of four cores: the Institutional Development Core (IDC), the Student Training Core (STC), and the Research Enrichment Core (REC), in addition to the Administrative Core which oversees the activities of all Cores and provides support to enhance faculty research competitiveness. The STC, REC, and IDC have worked together to develop a series of activities designed for students from their first to senior year and select recent Xavier graduates. These activities were developed to address the challenges and barriers Xavier students often encounter as they move towards careers in the biomedical workforce.



A Note from the **President**



The BUILD Project Pathways has continued extending the capacity of Xavier University of Louisiana in preparing its students for advanced study and careers in the biomedical sciences through rich biomedical research experiences as undergraduates. A key dimension of excellent education is that practical experience as scientists gained in our laboratories and those of our collaborators, whereby Xavier students develop as scientists by engaging in the enterprise of discovery and problem-solving. The BUILD Program brings rich opportunities for this faculty to innovate and prepare the next generation of researchers. The faculty recognize that not all students, in spite of talent and ability, have received the pre-collegiate education needed to achieve their promise.

We at Xavier have long committed to our calling to cultivate talented students and resolve any deficits that impede such talent. We have improved and deepened academic support. 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 advancement. 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 levels and to meet an important societal need. 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



A Few Words from the **Provost**



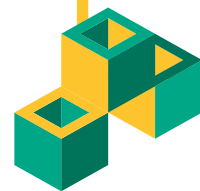
As part of the NIH's National Institute of General Medical Sciences-funded Diversity Program Consortium, Project Pathways aims to increase diversity in the biomedical research workforce through strengthening student growth in STEM. The BUILD program forges pathways to success for students, providing the vital support necessary to best prepare them for biomedical careers. The program aligns with our mission at Xavier to develop students as the next generation of leaders.

Our students are provided exceptional curricula, enhanced instructional and research, academic and career support, hands-on research skills development, opportunities for research

programs and graduate studies through a national network of student researchers, and much more. The faculty have also benefited, including pedagogical and research seminars and workshops and funding for curriculum development and research.

As an HBCU, Xavier's has a prodigious desire to prepare students from underrepresented backgrounds for success. The BUILD program allows us to expand our legacy and build upon our already solid foundation in the biomedical field. We are grateful to give our students wonderful avenues to excellence and continue providing students with quality opportunities for success.

Anne McCall,
Provost
Xavier University of Louisiana





Student Training Core





Student Training Core

The Student Training Core (STC) expands the number of hands-on mentored biomedical research opportunities offered to Xavier students. This core also coordinates several activities designed to educate freshman and sophomore students about the variety of biomedical research careers they can potentially pursue.

The NIH Diversity Program Consortium (DPC) research training community came together to celebrate inclusive excellence in STEM with the second annual #FaceofScience campaign. Led by

the DPC and CEC's Enhance Science project, the social media campaign featured BUILD students, alumni, as well as many other leaders across the NIH and scientific community.

The National Research Mentoring Network (NRMN) also celebrated mentors with their annual National Mentoring Month campaign. XULA BUILD scholars had the opportunity to celebrate Thank Your Mentor Day with personalized thank you notes to their mentors.

Ashley Mello ('20)



What do you love most about being a scientist? "I am able to satisfy my curiosity by asking questions and formulating ways to solve them myself." — Ashley Mello, alumna of @XULA_BUILD.

I AM THE
#FaceOfScience

Join the campaign at EnhanceScience.org





Tyler



HAPPY
NATIONAL MENTORING MONTH

"Thank you, Dr. Gross, for being an outstanding mentor supporting me through my personal and academic endeavors over the last three years. You have helped me grow into a more confident, Black woman in science!"

Thank you for all the advice and encouragement you share every time I see you. I will not forget them as I move into the next step of my academic career."



Xandrea



HAPPY
NATIONAL MENTORING MONTH

"Thank you, Dr. Cohen, for your support in my final days as a research student. You pushed me in more ways than one and got me to the finish line. For that, I am forever grateful."



Rion



TO MY MENTOR
Dr. Sridhar

THANK YOU

FOR

giving me the opportunity to experience undergraduate research with you that will ultimately help me in my career.

#ThankYourMentor



Cassius



TO MY MENTOR
Dr. Turner

THANK YOU

FOR

all that you do, your work and presence is vital to us all.

#ThankYourMentor



BUILD Scholars

Cohort 7, 2021-2022



Tyler Alexander

Bowie, Maryland

Major: Chemistry

Research Project: "Black Women and Fibroids"

Mentor: Dr. Tyra Gross (Public Health Sciences)



Jala Brooks

Philadelphia, Pennsylvania

Major: Neuroscience

Research Project: "Meditation & Mindfulness: Insular Clustering & Functional Connectivity Patterns during Meditation"

Mentor: Dr. Jeremy Cohen (Neuroscience)



Zaire Bellamy

Temple Hills, Maryland

Major: Biology Pre-Med

Research Project: "Synthesis and Biological Evaluation of New Ceramide Analogs"

Mentor: Dr. Navneet Goyal (Chemistry)





Cassius Harper

Chicago, Illinois

Major: Psychology

Research Project: "Help Seeking Behaviors in African American College Students"

Mentor: Dr. Brian Turner (Psychology)



Mitchell Jackson

Bowie, Maryland

Major: Psychological Science

Research Project: "Transferring Socially Inappropriate Stereotypy to Acceptable Behaviors"

Mentor: Dr. Stephanie Grant (Psychology)



Shannon May

Detroit, Michigan

Major: Psychology

Research Project: "Characterization of Cotinine Levels Following E-cigarette Vapor Administration"

Mentor: Dr. Erika Perez (Psychology)



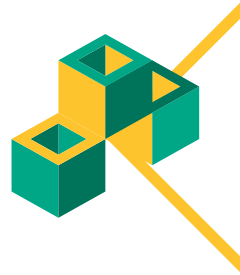
Laini Tuboku-Metzger

Atlanta, Georgia

Major: Public Health

Research Project: "Evaluating Literature on the Incidence of Leiomyoma (Uterine Fibroids) in Black Women"

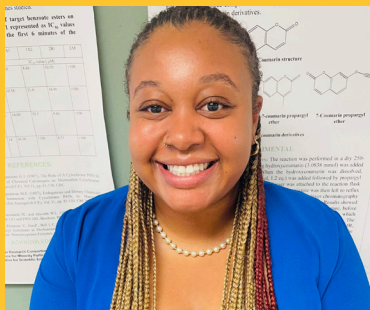
Mentor: Dr. Tyra Gross (Public Health Sciences)





BUILD Scholars

Cohort 7, 2021-2022



Enasia McElvaine
Oakland, California

Major: Chemistry
Research Project: "Inhibition of Human Cytochrome P450 Enzymes"
Mentor: Dr. Maryam Foroozesh (Chemistry)



Shamari Pitts
Mansfield, Texas

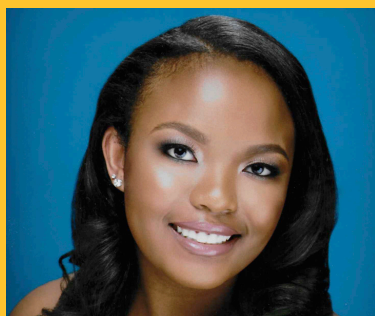
Major: Neuroscience
Research Project: "Characterizing the Role of Neurokinin 1 Receptor Antagonist in Modulating Nicotine Withdrawal"
Mentor: Dr. Erika Perez (Psychology)



Lourdes Rodriguez
Westwego, Louisiana

Major: Psychological Science
Research Project: "Teacher Response Latency as a Predictor of Teacher Bias"
Mentor: Dr. Stephanie Grant (Psychology)





Morgan Sinkfield

Bowie, Maryland

Major: Biology

Research Project: "Testing Novel Compounds as Therapeutics for Alzheimer's Disease"

Mentor: Dr. Thomas M. Huckaba (Biology)



Rion Sam

Slidell, Louisiana

Major: Biochemistry

Research Project: "The Design and Synthesis of S6K1 Molecules That Can Potentially Inhibit the Growth of Breast Cancer"

Mentor: Dr. Jayalakshmi Sridhar (Chemistry)



Lazarus Sutton

LaPlata, Maryland

Major: Biology

Research Project: "Drug Discovery for Alzheimer's Disease (AD)"

Mentor: Dr. Jayalakshmi Sridhar (Chemistry)



Trinity Wilson

Rochester, New York

Major: Neuroscience

Research Project: "Use of the Water Y Maze to Measure Nicotine Withdrawal Induced Cognitive Flexibility Deficits"

Mentor: Dr. Erika Perez (Psychology)



Alumni Highlights

Ashley Mello ('20)

Ashley Mello received her B.S. in Biochemistry from Xavier in 2020. As a XULA BUILD Project Pathways scholar, she worked in Dr. Thomas Huckaba's lab. Mello studied the neuronally enriched kinesin motor protein KIF5A, one of 87 genes known to cause a progressive neurodegenerative disease called hereditary spastic paraplegia (HSP) when mutated. She also studied functional relationships between all 87 HSP-related genes and the microtubule-associated protein tau and protein kinase casein kinase 1 in the context of Alzheimer's disease. Mello joined the University of Michigan's Graduate Program in Immunology in the fall of 2020. She is currently a third-year Ph.D. candidate working in the lab of Dr. Kyoung Eun Lee in the Department of Pharmacology.

Her research in Dr. Lee's lab focuses on understanding how hypoxia, or low oxygen availability, regulates tumor immune microenvironments through the crosstalk between tumor cells, fibroblasts, and immune cells. She is also involved in initiatives at the University of Michigan aimed at increasing diversity in graduate programs through outreach, networking, and recruiting programs designed for undergraduate students underrepresented in STEM.



Mello enjoyed every aspect of the XULA BUILD experience—her colleagues, the research lab, and the opportunities she received in part to the program. XULA BUILD was her first introduction to research and set her on her current path to becoming the scientist she is today. It also helped her learn how to successfully conduct research in fields outside of her expertise and taught her how to thrive in research-intensive environments.

After graduate school, she plans to pursue a postdoctoral fellowship. She hopes to teach at a teaching-focused institution to continue the K-12 STEM education outreach in minority communities she already takes part in.



Jessica Anderson ('20)

Jessica Anderson received her B.S. in Chemistry from Xavier in 2020. She's currently a third-year medical student at Louisiana State University Health Sciences Center (LSUHSC) School of Medicine and is completing her surgery clerkship. She is also an LSUHSC Honor's Research Program student, conducting research in the Gynecologic Oncology department as she pursues her medical degree. Anderson serves in numerous leadership roles, including New Orleans Women and Children's Shelter Outreach Group Co-President, SGA Intramurals Co-Chair, and Edgar Hull Society President.

As a XULA BUILD Project Pathways scholar, Anderson valued the BUILD faculty's mentorship and guidance as the program provided her with experience to pursue her career path. She participated in the Leadership Alliance MD/Ph.D. summer program at Brown University through their partnership with BUILD. BUILD also solidified her love of medicine and her desire to integrate research into her medical career.

Anderson is thankful for XULA BUILD, as the program prepared her for success and helped build her confidence as a young, African American woman entering the science field. She learned scientific research, had opportunities to present her research at conferences worldwide, and was provided with the resources and support necessary to excel in the science field. She is among members of the Class of 2024 and the Class of 2025 at LSUHSC School of Medicine who received their white coats as future health professionals. New medical students were



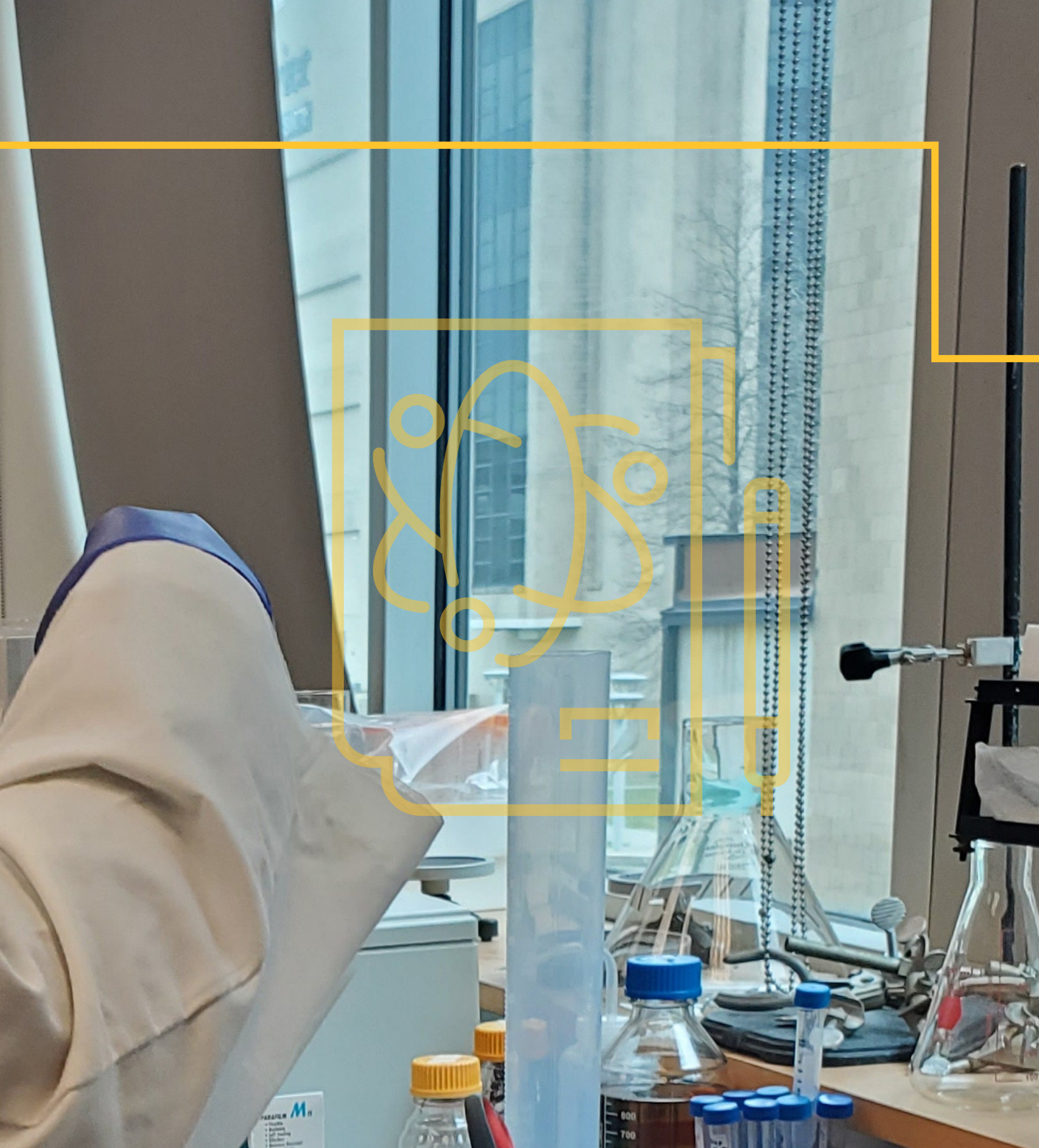
welcomed into the medical profession through a white coat ceremony, a meaningful rite of passage for students as they begin the next step in their careers and education. Upon receiving her Doctor of Medicine in 2024, Anderson plans to continue conducting research and hopes to start a primary care career in underserved areas.





Research Enrichment Core





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, faculty development, research project funding, and post-baccalaureate research training for recent graduates.

HIGHLIGHTS

In year 8 of the BUILD grant (July 1, 2021- June 30, 2022), the BUILD Program funded the following research pilot projects:

- **Dr. Matthew Hayes**, Department of Physics and Computer Science: Complex Structural Variation Discovery in Cancer Genomes
- **Dr. Stassi DiMaggio**, Department of Chemistry: Design of a Smart Dual Acting Drug Delivery System
- **Dr. Felicia Wheaton**, Department of Public Health Sciences: Disparities in the Impact of the COVID-19 Pandemic on Older Adults
- **Dr. Hector Biliran**, Department of Biology: Role of the Transcriptional Corepressor TLE1 in the Lung Adenocarcinoma Aggressiveness and Progression
- **Dr. Ian Davenport**, Department of Biology: The Role of Follicle Cell Processes During Oocyte Development
- **Dr. Joanna Haye**, Department of Biology: Regulation and localization of Mismatch repair Proteins



Matthew Hayes, Ph.D.

Dr. Matthew Hayes's research focuses on cancer, a complex disease that is often engendered by the gradual accumulation of genome mutations. Some of these mutations include large structural variants like deletions, inversions, translocations, and tandem duplications. However, research has shown that some of these mutations are more complex, involving multiple structural variants that occur within a very short range; such mutations include chromothripsis, chromoplexy, and eccDNA. Furthermore, these complex structural variants (CSV) are more difficult to detect, so simple structural variant algorithms may fail to properly classify them, especially in cancer genomes.

The goal of this project is to continue the development of an algorithm called CleanBreak, which identifies complex structural variants in the human germline. Currently, CleanBreak is not designed to detect CSVs in cancer genomes; such an enhancement requires more sophisticated computational methods. This project will oversee the extension of this algorithm to perform the following tasks: read depth correction, distinguishing heterozygous and polyclonal variants from CSVs, interchromosomal variant detection, germline filtering, and detecting multiple variants that span the same interval. After implementing these changes, we expect that CleanBreak will be fully optimized to detect complex structural variants in cancer genomes, an advance over many algorithms for this problem.



Stassi DiMaggio, Ph.D.

Dr. DiMaggio's research focuses on the present-day challenge of delivering anti-cancer agents selectively to tumor cells to mitigate systemic toxicity has led to a broader focus on drug delivery research using nanoscale carriers. Despite progress in pre-clinical studies, the therapeutic effects have not lived up to their expectations in the clinical setting. Though promising, these systems typically exploit passive delivery of a single therapeutic to the target tissue, for example, by the encapsulation of drugs in carrier systems followed by drug release under an external trigger. The current technologies suffer from issues of stability, large scale synthesis, distribution control, drug loading efficiency, and ease of transport across cell membranes. This project will address this issue through the design and synthesis of the two components of a Smart Dual Acting Drug Delivery System (SDADDS), consisting of bifunctional nanocarriers capable of synergistic targeting of multiple drivers of cancer, thereby overcoming current limitations to treating cancers. The dual components will consist of, first, extracellular receptor targeting through



polyvalent binding to increase selective binding to cancerous cells; and secondly, intracellular targeting by delivering chemotherapeutics selectively through controlled photorelease. A designed bifunctional nanocarrier will have a targeting agent that binds to and inhibits a cell surface receptor highly overexpressed in tumor cells, coupled to a multiplexed anti-tumor drug that can be released locally by photolysis, affecting high spatiotemporal control for delivering the drug at high concentration.



Hector Biliran, Ph.D.

Dr. Biliran's research focuses on human lung adenocarcinoma. Human lung adenocarcinoma (LUAD) is the most commonly diagnosed histological subtype of lung cancer, with a mere 15% five-year survival rate. Dr. Biliran's laboratory is investigating the utility of targeting the pro-oncogenic and molecular function of the transducin-like enhancer of split 1 (TLE1) corepressor as a therapeutic target for LUAD. This project's molecular, cellular and in vivo studies, which are performed by undergraduate research students together with the PI and a Research Assistant, may yield novel mediators of LUAD aggressiveness that are potentially druggable targets.





Joanna Haye, Ph.D.

Dr. Haye's research focuses on DNA mismatch repair. DNA mismatch repair (MMR) is a highly conserved process. A functional MMR pathway is essential for maintaining genome integrity. Loss of MMR results in genome instability and cancer in higher eukaryotes. For example, defects in MMR genes result in Lynch Syndrome, a common hereditary cancer syndrome resulting in early onset cancers of the colon, endometrium, ovaries, small intestine, hepatobiliary tract and upper urinary tract, as well as other tissues. In the most recent publication by the team, it was explained that deletion of Modulator of Transcription (Not4) and General Control Nonderepressible 5 (Gcn5) modulate the levels of MutSa (consisting of Msh2 and Msh6), the major complex involved in MMR. Not4 and Gcn5 are proteins that ubiquitylate and acetylate various proteins, respectively. Dr. Haye and her team hypothesize that these proteins modify MutSa and that the modifications affect the stability and localization of the complex.

Further studies need to be conducted to gain a better understanding of how Not4 and Gcn5 regulate these MMR proteins. Additionally, previous experiments have shown that yeast MutSa is in the vicinity of the replication machinery during DNA replication. Human MutSa interacts with the replication machinery by binding PCNA and also recognizes specific histone modifications. How yeast MutSa is recruited to chromatin remains elusive. Using the yeast *Saccharomyces cerevisiae* (*S. cerevisiae*), this project aims to further examine the role of Gcn5 and Not4 in the regulation of MutSa stability and determine the effect of post-translational modifications on MMR protein recruitment to chromatin.



Ian Davenport, Ph.D.

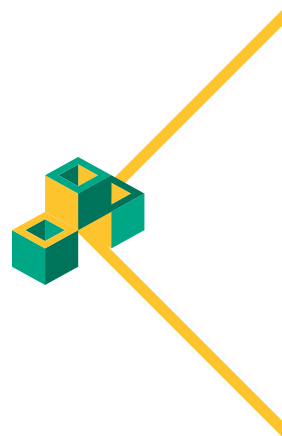
In the recent past, there has been a lot of research focused on understanding the mechanisms of oocyte and follicular development. Much of this work has been related to in vitro fertilization (IVF) for clinical as well as agricultural applications (Canipari, 2000). With the current biodiversity crisis due to anthropogenic activities, many terrestrial and aquatic animals are becoming severely endangered (Payne et al, 2016). Any information that can lead to greater success in areas related to artificial reproductive technologies may be our only way to ensure their survival.

It is imperative to understand the complex interactions during oogenesis. It is now accepted that the ovarian follicle is a morphological, functional unit in which the germ cell and somatic cells are interdependent on each other and are, thus, intimately associated with each other. Recent studies highlight the complex interactions between the oocyte and the follicle cells, such as: that oocytes regulate follicle cell differentiation, ovulation rate and overall fertility (Gilchrist, 2011), and communication pathways between the oocyte and the follicle cells are very dynamic processes and change throughout oogenesis (Albertini and Barrett, 2003).

Oocyte growth and development is dependent on a two-way flow of communication between the germ cell and follicle cells. Established processes include paracrine signaling via secreted soluble factors and directly through gap junctions. While investigating the early stages in the evolution of viviparity in chondrichthyan fishes, the Davenport laboratory found a unique set of actin-based, tube-like structures we termed follicle cell processes (FCP). The FCP



seems to form direct cytoplasmic connections between the oocyte and the surrounding follicle cells. The Davenport lab hypothesized their role in producing large egg cells, namely: aiding the transfer of metabolites to the egg and in a structural role providing physical support during ovulation and passage through the reproductive tract (Davenport et al. 2011). This project aims to expand on these early observations and elucidate the role of FCP in the metabolic provisioning of the oocyte, which is essential for oocyte developmental competence and the origin of these structures. The Davenport laboratory aims to: investigate their specific roles in metabolite transport and investigate the evolutionary origin of FCP.





Faculty Development: **P-MAX, SERG, and SPW**

Project Pathways fosters faculty development through initiatives that are tailored to provide faculty with the skills necessary to mentor, teach, and advise students. Supporting faculty in strengthening their skills has been proven to have a significant impact on student learning.

Preparing Mentors and Advisors at Xavier (P-MAX) is a training program that is designed to provide participants with the knowledge and skills needed to mentor and advise undergraduate students, especially those engaged in research. P-MAX's goal is to assist faculty and research staff in developing effective relationships with their mentees. In addition to the Summer P-MAX workshops (July 18-19, 2022), three P-MAX sessions were held in each Fall 2021 and Spring 2022 semesters. The Summer 2022 P-MAX workshops were offered both in-person and remotely.

P-MAX Online, an online, self-paced, asynchronous mentorship education course, was launched in June 2022 and is designed to provide participants with the same necessary knowledge and skills as the P-MAX program. The course takes approximately 6-8 hours and is arranged into eight modules, including: Mentoring Purpose; Effective Communication; Setting and Aligning Expectations; Stereotype Threat, Bias, and Identity; Inclusive Mentoring; Mentoring Portfolio; and Mentor Self-Care. The course includes a variety of activities designed to present and reinforce principles and practices, which are the foundation for effective mentoring. The course is free and open to all, including Xavier and non-Xavier faculty and staff. The first cohort of participants completed the course in Summer 2022.

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. Five SERG meetings were held in each Fall 2021 and Spring 2022 semesters.

Each summer, the faculty involved in course development/improvement projects supporting BUILD and other research education grants participate in the Summer Pedagogical Workshops (SPW). Faculty members present





their curricular projects during the two-week workshops and exchange ideas and experiences with workshop participants. Faculty are also provided workshops on assessment, evaluation, and pedagogical topics. During the Summer 2022's Pedagogical workshops, Dr. Gianina Renee Baker served as the keynote speaker and gave a highly informative presentation on equity in assessment. Xavier presenters provided updates on existing projects and newly funded projects, many of which have excellent

potential to transform biomedical education at Xavier and are well-suited for dissemination to other programs. The workshop highlighted the expectational CURE courses developed by Drs. Abdulahad, Haye, Huckaba, and the Psychology Research Methods workbook by Dr. Grant. The workshops also included robust discussions and exchanges among faculty participants regarding their curricular modifications and improvements.





BUILD Post-Baccalaureate Technicians Cohort 7, 2021-2022



Justin Henderson 2021
Shreveport, Louisiana

Major: Biology
Research Project: "Development and Optimization of In Vitro Kinase to Test Therapeutics for Alzheimer's Disease"
Mentor: Dr. Thomas Huckaba (Biology)



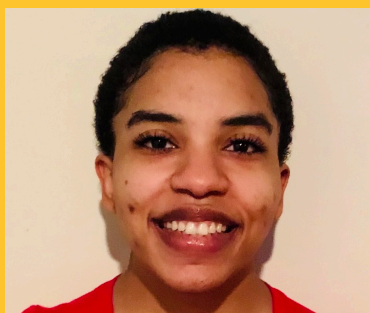
Jennifer Tran 2020
Metairie, Louisiana

Major: Biology
Research Project: "Detection of Chemical Pollutants by Use of Aptamers"
Mentor: Dr. Mehnaaz Ali (Chemistry)



Derrick Mullins 2020
Marrero, Louisiana

Major: Computer Science
Research Project: "Simulating Double Minute Chromosome and Phylogenetic Tree Evolution using Java"
Mentor: Dr. Matthew Hayes (Computer Science)



Samirah Muhammad 2021
New Orleans, Louisiana

Major: Chemistry
Research Project: "PEG-Segmented Phosphonium Ionenes as Solid Polymer Electrolytes for Lithium Metal Batteries"
Mentor: Asem Abdulahad (Chemistry)



Research Enrichment Core



Mya Bold 2021
New Orleans, Louisiana

Major: Computer Science
Research Project: "Detecting Textured Hair in Images"
Mentor: Dr. Nawa Raj Pokhrel (Physics and Computer Science)



Kymmia Petty 2021
Memphis, Tennessee

Major: Chemistry
Research Project: "Development of soindoline-1,3-dione Derivatives as S6K1 Inhibitors to Function as Potential Breast Cancer Therapeutics"
Mentor: Dr. Jayalakshmi Sridhar (Chemistry)



Asha Abiade 2021
Chicago, Illinois

Major: Chemistry
Research Project: "Investigating the Relationship between Black Women and Food"
Mentor: Dr. Charity Clay (Sociology)



Olivia Browne 2021
Metairie, Louisiana

Major: Chemistry
Research Project: "Infared Imaging of Cancer Cells"
Mentor: Dr. Samrat Dutta (Chemistry)



Post-Baccalaureate Technician Highlights

Derrick Mullins ('20)

Derrick Mullins graduated from Xavier University of Louisiana in 2020 with a bachelor's degree in Computer Science. Throughout 2021 and 2022, he was a BUILD technician and is currently working as a data analyst and planning to pursue his master's degree in Bioinformatics. Mullins transferred lessons he learned as a BUILD technician into his career, as the BUILD program taught him how to balance his personal life with research in academia. He also learned how to navigate through career and academic challenges.

During his time as a XULA BUILD Project Pathways technician, Mullins had the opportunity to conduct research with his mentor, Dr. Matthew Hayes, in the Computer Science/Bioinformatics Department. He is thankful for Dr. Hayes' supportive mentorship, as his guidance allowed them to conduct clear, concise research and shaped Mullins' educational experience. He's excited about what's to come from upcoming research students and technicians and was grateful to be part of an illustrious program.



Olivia Browne ('21)

Olivia Browne is a 2021 graduate of Xavier University of Louisiana with a bachelor's degree in Chemistry. She's currently applying for graduate doctorate programs in Chemistry as she wants to develop new methods and technologies that will allow people to recycle trash and food waste into fuel and other useful products. During her time at Xavier post-graduation, she was a BUILD technician, where she formulated research interests and gained laboratory research skills.

As a technician working with Dr. Samrat Dutta in the Department of Chemistry, Browne gained new skills working with different spectroscopy instrumentation, and learned how to become a more independent researcher. She enjoyed interacting with BUILD students who shared similar goals and interests as her. Browne was also inspired by XULA BUILD to pursue greater accomplishments beyond her Xavier degree. She noted that BUILD offers great resources and emphasizes preparing students for life and education beyond their four-year degree. By participating in BUILD, she has the experience and resources necessary to pursue graduate education and successfully embark on a scientific career.



Institutional Development Core





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.

HIGHLIGHTS **Festival of Scholars**

Xavier's largest research event is the Festival of Scholars, a two-day university-wide symposium of undergraduate research and creative work by Xavier students. The festival is organized by Xavier's Center for Undergraduate Research and Graduate Opportunity (CURGO), XULA BUILD's Student Training Core (STC), and hosted collaboratively with Xavier's Student Government Association (SGA). The 19th annual event was held April 7-8, 2022. The festival highlights students from all disciplines who participate in research on campus and provides them with an opportunity to present their research and creative work to the entire campus community. Xavier alumni students and guests also presented their work during the festival.

Every year, the Festival of Scholars is open for all Xavier students to attend in support of their fellow Xavierites. Back as an in-person event after being held virtually for the last two years due to the COVID-19 pandemic, the festival remains a way to uplift the community and allow Xavierites to strengthen their bonds with their peers and professors.



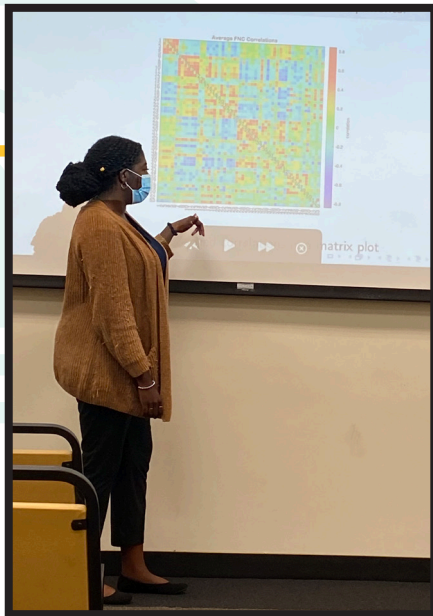
Institutional Development Core



Festival of Scholars



Enasia, BUILD Scholar



Aalliyah Celestine, BUILD Scholar

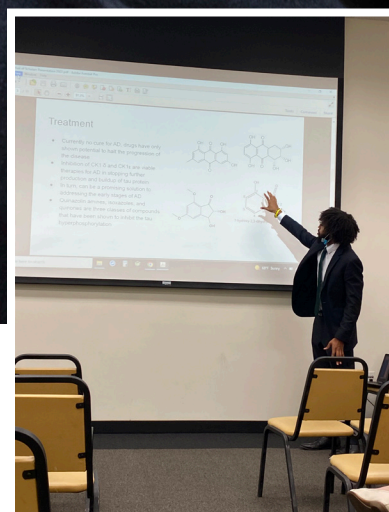
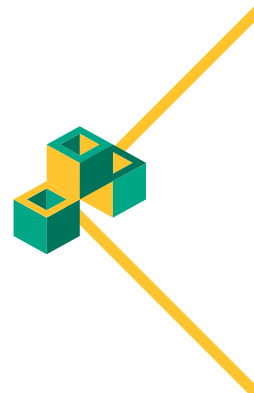
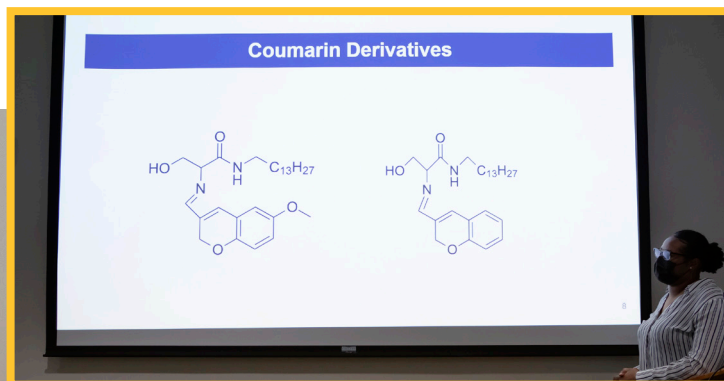


Bryan Redmond, BUILD Scholar



Institutional Development Core

Zaire Bellamy, BUILD Scholar



Lazarus Sutton, BUILD Scholar

INFOGRAPHICS

THE WHITE DRESS PROJECT

CONTACT US

UTERINE FIBROIDS A CAMPUS INITIATIVE

UTERINE CARE

WHAT ARE UTERINE FIBROIDS?

THE DISPARITY

QUESTIONS FOR YOUR DOCTOR

Tyler Alexander, BUILD Scholar







Administrative Core



Administrative Core

The Administrative Core provides administrative oversight of the other three cores, oversees program evaluation, and ensures that there is ongoing communication with the NIH, the CEC, and the other members of the DPC.

The core has multiple partnerships with various institutions that provide support for our students to strengthen their graduate school applications. This includes providing students with advice on graduate school application processes and how to be more competitive applicants.



Partner Liaisons

Boston University Medical School

Fadie Coleman, Ph.D.

Dartmouth

Jane Seibel, Ph.D.

Emory University

Amanda Marie James, Ph.D.

Icahn School of Medicine at Mount Sinai

Matthew O'Connell, Ph.D.

Johns Hopkins University

Darlene F. Saporu, Ph.D.

Louisiana State University Health Sciences Center

Allison C. Augustus-Wallace, Ph.D., MS, MNS

Albert Einstein College of Medicine

Victoria H. Freedman, Ph.D.

Meharry Medical College

Evangeline Motley-Johnson, Ph.D.

New York University School of Medicine

Naoko Tanese, Ph.D.

Northwestern University

Damon L. Williams, Jr.

Tulane University Medical School

Weiwei Xu, Ph.D.

Tulane University School of Public Health and Tropical Medicine

Lizheng Shi, Ph.D.

University of Chicago

Victoria Flores, Ph.D.

University of Michigan

TJ Shannon

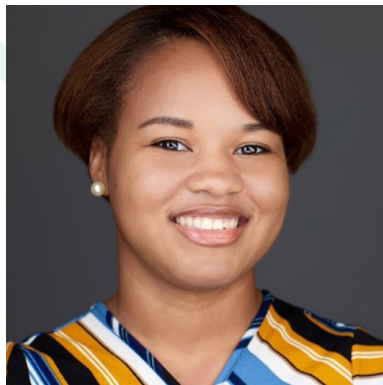
University of Wisconsin Madison

Amber Smith, Ph.D.

University of Rochester



Meet the **BUILD** Team



From left to right, top to bottom:
Top Row: **Maryam Foroozesh, Marguerite Giguette, Kathleen Morgan**
Second Row: **Harris McFerrin, Nathaniel Holmes, Michelle Boissiere**
Third Row: **Tracey Jackson, Brhea Washington**
Not Pictured: **Clair Wilkins-Green, Cecily DeFreece, Kristina Gibson**





Dr. Maryam Foroozesh
Lead Principal Investigator
Administrative CORE and REC

Dr. Marguerite Giguette
Principal Investigator
IDC

Dr. Kathleen Morgan
Principal Investigator
STC

Dr. Harris McFerrin
Pilot Project Director
REC

Dr. Nathaniel Holmes
Assistant Provost for Student Success
Student Academic Success Office &
CURGO

Dr. Michelle Boissiere
Education Improvement Specialist
REC

Dr. Clair Wilkins-Green
Internal Evaluator
Administrative Core

Dr. Cecily DeFreece
Co-Director
STC

Ms. Tracey Jackson
Director
Office of Career Services

Ms. Kristina Gibson
Program Manager
Administrative Core & IDC

Ms. Brhea Washington
Senior Communications Specialist

