

**Pumtiwitt C. McCarthy, Ph.D.**

Morgan State University  
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**EDUCATION**

- 2009 **Ph.D., Biochemistry.** University of Delaware, Newark, DE  
Dissertation Advisor: Colin Thorpe, Ph.D.
- 2003 **B.S., Biochemistry, *cum laude.*** Rowan University, Glassboro, NJ  
Research advisor: Catherine Yang, Ph.D.

**PROFESSIONAL EMPLOYMENT**

- 2021- **Interim Chairperson**
- 2019- **Associate Professor**
- 2013-2019 **Assistant Professor**  
Department of Chemistry, School of Computer, Mathematical and Natural Sciences (SCMNS), Morgan State University, Baltimore, MD
- 2009-2013 **Postdoctoral Research Fellow**  
Laboratory of Bacterial Polysaccharides, Center for Biologics Evaluation and Research, U.S. Food and Drug Administration, NIH Campus, Bethesda, MD  
Research Advisor: Willie Vann, Ph.D.
- 2003-2009 **Graduate Research Assistant**  
Department of Chemistry and Biochemistry, University of Delaware, Newark, DE
- 2001-2003 **Undergraduate Research Assistant**  
Department of Chemistry and Biochemistry, Rowan University, Glassboro, NJ

**LEADERSHIP EXPERIENCE**

- 2021- **Interim Chairperson, Department of Chemistry**
- Managing a collaborative team of eight tenured faculty, five full-time lecturers and three staff members
  - Continually advocating to higher administration on behalf of the department for needed resources (financial, personnel, equipment, etc.) to ensure faculty and student needs are feasibly met to ensure teaching and research excellence
  - Overseeing department course scheduling (undergraduate and graduate) and undergraduate curricular adherence to American Chemical Society-accreditation guidelines
  - Serving as the primary representative of the department at internal (e.g. MSU Fall and Spring Open Houses) and external (e.g. exhibition at NOBCChE annual conference, STEM Transfer Fair at local community colleges) recruitment events

- Working collaboratively within SCMNS with the Deans and other department chairs to develop and implement new cross-disciplinary programs
- 2021- **Co-Director, NIH RISE program, Morgan State University**
- Working with Director and Program Coordinator to administer the program which gives undergraduates mentored research experience with faculty mentors six different departments.
  - Providing career and personal mentorship to RISE scholars to increase their scientific identity and equip them with the necessary time management, coping skills and self-confidence to thrive in graduate school
- 2020 **Chair, Maryland Local Section of the American Chemical Society (ACS)**
- Oversaw section activities and collaborated with board members to host events of interest to membership
  - Facilitated in-person and virtual-only section programming after COVID-19 shutdown including four Executive Committee meetings, a social event, two award ceremonies and administration of the local U.S. National Chemistry Olympiad Exam
- 2014- **General Chemistry I and II Lecture and Laboratory Coordinator, Morgan State University**
- Meeting weekly with all lecture and laboratory instructors of General Chemistry sequence for science majors to discuss success and challenges and ensure continuity across sections
  - Discussing and strategizing implementation of evidence-based techniques to more fully engage science majors (especially Chemistry majors) in course content and enhance student success
- 2010-2012 **Co-founder and Co-chair, CBER Fellows Association, FDA**
- Worked with a fellow co-chair to mobilize other postdoctoral fellows to become involved with the organization as an avenue for postdoctoral voices to be heard
  - Held various discussions with higher administration for support to help institutionalize the association

#### **COMPETITIVE RESEARCH FUNDING**

***Secured over \$1.1 million in external and internal research grants as PI***

- 2022-2024 University of Minnesota/Morgan State University Seed Grant program, Role: MSU PI.
- 2021-2024 National Science Foundation (NSF) Excellence in Research Award, supported by Division of Materials Research, Biomaterials Program, Role: PI.

- 2019 Morgan State University, Office of Technology Transfer, Small Tech Transfer I-GAP Grant Award, Phase B, Role: PI.
- 2018-2022 National Institutes of Health-National Institute of General Medical Sciences (NIH-NIGMS) Support of Competitive Research (SCORE) SC2 Pilot Project Award, Role: PI.
- 2018 Morgan State University, Office of Technology Transfer, Small Tech Transfer I-GAP Grant Award, Role: PI.
- 2016-2019 NIH BUILD/Morgan State University ASCEND Pilot Project Grant Award, Role: PI.
- 2014 MSU, 2014 Applied and Basic Summer Research Grant, Role: PI.

### **HONORS AND AWARDS**

- 2021 Sigma Xi Scientific Research Honor Society
- 2020 MSU ASCEND: Course Redesign Grant for CHEM 304 Biochemistry
- 2015 Travel Award to National Organization for Black Chemists and Chemical Engineers National Meeting (NOBCChE), The Committee on the Advancement of Women Chemists (COACH)
- 2015 National Science Foundation Extreme Science and Engineering Discovery Environment (XSEDE) Startup Allocation, Role: PI
- 2014 MSU, 2014 Applied and Basic Summer Research Grant, Role: PI
- 2014 Travel Award to NOBCChE, COACH
- 2012-13 ORAU ORISE Postdoctoral Fellowship
- 2011 Federation of American Societies for Experimental Biology (FASEB) Travel Award, Microbial Polysaccharides of Medical, Agricultural, & Industrial Importance, FASEB Summer Research Conferences
- 2009-2012 NIH Pharmacology Research Associate Training (PRAT) Fellowship, NIH-NIGMS
- 2009 ORAU ORISE Postdoctoral Fellowship
- 2008 Carl Storm Underrepresented Minority Fellowship Travel Award, Thiol-Based Redox Regulation and Signaling, Gordon Research Conference
- 2008 E.I. DuPont Graduate Fellowship, NOBCChE
- 2004-2006 University Graduate Scholar Fellowship, University of Delaware
- 2003-2004 Chemistry-Biology Interface Predoctoral Trainee, NIH-NIGMS funded training program, University of Delaware
- 2003 American Institute of Chemists Student Award, New Jersey Section, American Institute of Chemists

### **PATENTS**

- 2022 P.C. McCarthy, J. Wachira and S. Paudel. "Methods for Altering Substrate Specificity of a Bacterial Capsule Polymerase". (Provisional patent application filed December 6, 2022)
- 2020 P.C. McCarthy and S. Ghimire. U.S. Patent Application No. 16/842,923. "Bacterial polysaccharides for heavy metal capture". (Patent pending, filed on April 8, 2020)

2019 P.C. McCarthy and S. Ghimire. Provisional patent application number 62/831319: "Bacterial polysaccharides for heavy metal capture". (Filed on April 9, 2019)

## **PUBLICATIONS**

### ***2019-present***

#### **Book Chapters**

A.J. Winstead, D. Nurudeen, K. Alabrash, A.M. Culmer-Gilbert, J.-P. T. Akinbami, T.V. Hinton, S. Parnell, B.Y. Varisli, C. Krauss, F.A. Abebe, Y. Zhang, P. McCarthy, J. Peng, P.Y. Zavalij, and S.K. Mandal. Organometallic Rhenium(I) Complexes of Some Non-Steroidal Anti-Inflammatory Drugs (ReNSAIDs): Synthesis, Characterizations, and DNA-Binding Studies in "A *Comprehensive Guide to Non-Steroidal Anti-Inflammatory Drugs*", Süleyman Kaplan, ed. Nova Science Publishers, Inc., 2021, ISBN: 978-1-53619-128-8.

#### **Papers in Refereed Journals**

- A.J. Winstead, P.C. McCarthy, D.S. Rice and G.W. Nyambura. Linking Chemistry to Community: Integration of Culturally Responsive Teaching into General Chemistry I Laboratory in a Remote Setting. *J. Chem. Educ.* (2022) 99, 402
- L.S. Moghaddam, A. Adegbite and P.C. McCarthy. Investigation of bioluminescence-based assays for determination of kinetic parameters for the bifunctional *Neisseria meningitidis* serogroup W capsule polymerase. *BMC Res Notes* (2021) 14, 417
- S. Paudel, J. Wachira, P.C. McCarthy. Towards Computationally Guided Design and Engineering of a *Neisseria meningitidis* Serogroup W Capsule Polymerase with Altered Substrate Specificity. *Processes* (2021) 9, 2192.
- A. Adegbite and P.C. McCarthy. Recent and Future Advances in the Enzymatic Synthesis of Homogeneous Glycans for Bacterial Glycoconjugate Vaccine. *Vaccines* (2021) 9, 1021.
- P.C. McCarthy, Y. Zhang, F. Abebe. Recent Applications of Dual-Stimuli Responsive Chitosan Hydrogel Nanocomposites as Drug Delivery Tools. *Molecules* (2021), 26, 4735
- B.N. Harris., P.C. McCarthy, A.M. Wright, H. Schutz, K.S. Boersma, S.L. Shepherd, L.A. Manning, J.L. Malisch, R.M. Ellington. From panic to pedagogy: Using online active learning to promote inclusive instruction in ecology and evolutionary biology courses and beyond. *Ecol Evol.* (2020) 10, 12581
- J.L. Malisch, B.N. Harris, S.M. Sherrer, K.A. Lewis, S.L. Shepherd, P.C. McCarthy, J.L. Spott, E.P. Karam, N. Moustaid-Moussa, J.M. Calarco, L. Ramalingham, A.E. Talley, J.E. Canas-Carrell, K. Ardon-Dryer, D.A. Weiser, X.E. Bernal and J. Deitloff. Reply to Arora et al.: Concerns and considerations about using the CV as an equity tool. *Proc Natl Acad Sci U.S A.* (2020) 117, 24033
- J.L. Malisch, B.N. Harris, S.M. Sherrer, K.A. Lewis, S.L. Shepherd, P.C. McCarthy, J.L. Spott, E.P. Karam, N. Moustaid-Moussa, J.M. Calarco, L. Ramalingham, A.E. Talley, J.E. Canas-Carrell, K. Ardon-Dryer, D.A. Weiser, X.E. Bernal and J. Deitloff. Opinion: In the wake of COVID-19, academia needs new solutions to ensure gender equity. *Proc Natl Acad Sci U S A.* (2020) 117, 15378
- P.C. McCarthy, R. Williams, C. Hughes-Darden, R. Ellington, P. Mayaka, M. Jackson, A. Nkwanta Using Molecular Visualization as a Tool for Culturally

### 2013-2018

- Sharyan, C. Gonzalez, O. Ukaegbu, K. Powell, P.C. McCarthy. Determination of the binding affinities of *Neisseria meningitidis* serogroup W capsule polymerase with two nucleotide sugar substrates. *BMC Research Notes* (2018) 11, 425
- S. Ghimire and P.C. McCarthy. Capture of Pb<sup>2+</sup> and Cu<sup>2+</sup> Metal Cations by *Neisseria meningitidis*-type Capsular Polysaccharides. *Biomolecules* (2018) 8, 23
- P.C. McCarthy, A. Sharyan, L. Sheikhi Moghaddam. Meningococcal Vaccines: Current Status and Emerging Strategies. *Vaccines* (2018) 6, 12
- P.T. Wilder, D.J. Weber, A. Winstead, S. Parnell, T.V. Hinton, M. Stevenson, D. Giri, S. Azemati, P. Olczak, B.V. Powell, T. Odebode, S. Tadesse, Y. Zhang, S.K. Pramanik, J.M. Wachira, S. Ghimire, P. McCarthy, A. Barfield, H.N. Banerjee, C. Chen, J.A. Golen, A.L. Rheingold, J.A. Krause, D.M. Ho, P.Y. Zavalij, R. Shaw, S.K. Mandal. Unprecedented anticancer activities of organorhenium sulfonato and carboxylato complexes against hormone-dependent MCF-7 and hormone-independent triple-negative MDA-MB-231 breast cancer cells, *Molecular and Cellular Biochemistry* (2018) 441, 151-163

### Postdoctoral and Graduate Work

- K.M. Muindi, P.C. McCarthy, T. Wang, J. Vionnet, M. Battistel, E. Jankowska, and W.F. Vann. Characterization of the Meningococcal Serogroup X Capsule N-Acetylglucosamine-1-Phosphotransferase, *Glycobiology* (2014), 24, 139-149
- P. C. McCarthy, R. Saksena, D.C. Peterson, C.H. Lee, Y. An, J.F. Cipollo, and W.F. Vann. Chemoenzymatic Synthesis of Immunogenic Meningococcal Group C Polysialic Acid-Tetanus Hc Fragment Glycoconjugates, *Glycocon. J.* (2013), 30, 857-870
- D.C. Peterson, J. Vionnet, G. Arakere, P.C. McCarthy, and W.F. Vann. Characterization and acceptor specificity of a soluble meningococcal group C polysialyltransferase, *J. Bacteriol.* (2011) 193, 1576-1582
- S.L. Mosley, P.C. Rancy, D.C. Peterson, J. Vionnet, R. Saksena and W.F. Vann. Chemoenzymatic synthesis of conjugatable oligosialic acids, *Biocat. and Biotrans.* (2010) 28, 1-10
- D. Ramadan, P.C. Rancy, R. Nagarthar, J.P. Schneider, C.Thorpe. Arsenic (III) Species Inhibit Oxidative Protein Folding in Vitro, *Biochemistry* (2009) 48, 424-432
- P.C. Rancy and C. Thorpe. Oxidative Protein Folding in vitro: a Study of the Cooperation between Quiescin-sulfhydryl Oxidase and Protein Disulfide Isomerase, *Biochemistry* (2008) 47, 12047-12056
- E.J. Heckler, P.C. Rancy, Vamsi K. Kodali, and C. Thorpe. Generating disulfides with the Quiescin sulfhydryl oxidases. *Biochim. Biophys. Acta* (2008) 1783, 567-577
- S. Sivendran, M.L. Segall, P.C. Rancy, R.F. Colman. Effect of Asp<sup>69</sup> and Arg<sup>310</sup> on the pK of His68, a Key Catalytic Residue of Adenylosuccinate Lyase (ASL). *Prot. Sci.* (2007) 16, 1700-1707

### **Manuscripts currently in progress**

- L.S. Moghaddam and P.C. McCarthy. Evaluating Kinetics of *Neisseria meningitidis* Serogroup W Capsule Polymerase Galactosyltransferase Activity by Bioluminescence Assay.
- L.S. Moghaddam, J.-P. Akinbami, D. Nurudeen, M. Balogun, J. Wachira and P.C. McCarthy. Functional interactions between active site proximal and distal motifs of the *Neisseria meningitidis* serogroup W capsule polymerase.

### **Other: Commissioned lectures**

- McCarthy, P. (2021, May 30). Vaccines as a weapon against antibiotic resistance [Video file]. In The Biomedical & Life Sciences Collection, Henry Stewart Talks. Retrieved June 2, 2021, from <https://hstalks.com/bs/4635/>

### **EDITORIAL BOARD MEMBERSHIPS**

- 2021- Review Editor, *Frontiers in Molecular Biosciences - Glycoscience*
- 2021-2022 Guest Editor, *Bioengineering*, Special Issue: *Bioengineering of Polysaccharide Production Systems*  
[https://www.mdpi.com/journal/bioengineering/special\\_issues/polysaccharide\\_systems](https://www.mdpi.com/journal/bioengineering/special_issues/polysaccharide_systems)

### **PROFESSIONAL MEMBERSHIPS**

- 2019- Member, Society for Glycobiology
- 2018-2020 Member, The Protein Society
- 2014- Member, American Association for the Advancement of Science (AAAS)
- 2008, 2013- Member, NOBCCChE
- 2011- Member, American Society for Biochemistry and Molecular Biology (ASBMB)
- 2003- Member, American Chemical Society

### **RESEARCH PRESENTATIONS**

#### **Invited Oral Presentations**

##### ***2019-Present***

- Panel Speaker, Molecules Webinar - *Advances in Polysaccharide Materials* (2022)
- Seminar Speaker, RCMI Seminar Series, Morgan State University (2022)
- Panel Speaker, Pacificchem. Symposium title - *Recent Advances in Carbohydrate Chemistry and Chemical Glycobiology*, (2021)
- Panel Speaker, *Excellence in Organic Chemistry and Chemical Biology Research with Undergraduates*, ACS MARM, Baltimore, MD. (2021)
- Seminar Speaker, Division of Chemistry and Biochemistry, New York University (2021)
- Seminar Speaker, Division of Biochemistry, Wayne State University (2020)
- Seminar Speaker, Department of Biology, Lawrence University (2020)
- Seminar Speaker, Joint GlycoNet/ACS CARB Webinar series (2020)
- Seminar Speaker, Department of Chemistry, Brown University (2020)
- Panel Speaker, Symposium title - *New Tools to Explore the Biology of Bacterial Polysaccharides*, Joint NIH/ACS CARB Virtual Symposium (2020)

- Seminar Speaker, Natural Science and Mathematics Colloquia, St. Mary's College of Maryland (2020)
- NIH/FDA Glycosciences Research Day, NIH, Bethesda, MD (2019)
- Panel Speaker, *Emerging Investigators: Early Career Organic Chemists Symposium*, ACS MARM, Baltimore, MD. (2019)

### **2013-2019**

- Interdisciplinary Seminar Series, Morgan State University, Baltimore, MD (2019)
- Molecular Biology, Biochemistry, Bioinformatics Program, Towson University, Towson, MD (2018)
- NIH/FDA Glycosciences Research Day, NIH, Bethesda, MD (2014)
- DuPont, DuPont Experimental Station, Wilmington, DE (2014)
- Interdisciplinary Seminar Series, Morgan State University, Baltimore, MD (2013)

### **Postdoctoral and Graduate Work**

- Baltimore-Washington Area Glycobiology Interest Group (with Willie Vann), The Johns Hopkins School of Medicine, Baltimore, MD (2012)
- National Organization for the Professional Advancement of Black Chemists and Chemical Engineers National Conference, Philadelphia, PA (2008)

### **Contributed Conference Oral Presentations**

#### **2019-Present**

1. Pumtiwitt C. McCarthy. "Chemoenzymatic strategies to investigate activity of a bifunctional *Neisseria meningitidis* capsule polymerase," ACS National Meeting, Philadelphia, PA (2020, cancelled due to COVID-19 presentation uploaded to SciMeetings)

#### **2013-2018**

2. Pumtiwitt C. McCarthy. " Fluorescence and Absorbance Based Assays for a *Neisseria meningitidis* Capsule Polymerase," National Organization for the Professional Advancement of Black Chemists and Chemical Engineers National Conference, Minneapolis, MN (2017)
3. Pumtiwitt C. McCarthy. "Biochemical assay development for a *Neisseria meningitidis* capsule polymerase," ACS National Meeting, Washington, DC (2017)
4. Pumtiwitt C. McCarthy. " Biochemical Studies of a Capsule Producing Glycosyltransferase from *Neisseria meningitidis*," National Organization for the Professional Advancement of Black Chemists and Chemical Engineers National Conference, Raleigh, NC (2016)
5. Pumtiwitt C. McCarthy. " Development of an Activity Assay for the *Neisseria meningitidis* serogroup W Capsule Polymerase," National Organization for the Professional Advancement of Black Chemists and Chemical Engineers National Conference, Orlando, FL (2015)
6. Pumtiwitt C. McCarthy. "Chemoenzymatic Synthesis of Carbohydrates from the Bacterial Pathogen *Neisseria meningitidis*," National Organization for the Professional Advancement of Black Chemists and Chemical Engineers National Conference, New Orleans, LA (2014)

### **Postdoctoral and Graduate Work**

7. Pumtiwitt C. McCarthy. "Towards a Well-Defined Meningitis Vaccine: Chemoenzymatic Synthesis of Meningococcal Glycoconjugate Vaccine Candidates." American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA. (2012)
8. Pumtiwitt C. McCarthy. "Chemoenzymatic synthesis of an immunogenic meningococcal group C polysialic acid-tetanus Hc fragment glycoconjugate." Microbial Polysaccharides of Medical, Agricultural, & Industrial Importance, FASEB Summer Research Conference, Carefree, AZ. (2011)
9. Pumtiwitt C. McCarthy. "Preparation of a meningococcal group C polysialic acid-tetanus Hc fragment glycoconjugate vaccine candidate by chemoenzymatic synthesis." Frontiers at the Chemistry-Biology Interface Symposium, Newark, DE (2011)

### **Contributed Conference Poster Presentations**

#### **2019-Present**

1. Laleh Sheikhi Moghaddam, Nyah Johnson, Sydney Brown and Pumtiwitt McCarthy. "One Pot Chemoenzymatic Synthesis of a Photocrosslinking Nucleotide Donor Sugar Derivative to Identify Catalytic Amino Acids of the *N. meningitidis* serogroup W capsule polymerase." The 13th Jenner Glycobiology and Medicine Symposium, Cambridge, MA (2019)

#### **2013-2018**

2. Pumtiwitt McCarthy, Abeer Sharyan, Cendy Gonzalez, Ophelia Ukaegbu, Kayla Powell. "Determination of the binding affinities of *Neisseria meningitidis* serogroup W capsule polymerase with two nucleotide sugar substrates." Protein Society Annual Meeting, Boston, MA (2018)
3. Pumtiwitt McCarthy, Cendy Gonzalez, Abeer Sharyan, Sujana Ghimire, Kayla Powell, Chikaodi Nwanegwo, and Ophelia Ukaegbu "Biochemical Assay Development for a *Neisseria meningitidis* Capsule Polymerase" NOBCCHE Northeast/Midwest Regional Meeting, Pittsburgh, PA. (2017)
4. Pumtiwitt C. McCarthy, Corshai Williams, Ophelia Ukaegbu, Tresh Gordon-Travers. "Production of Fluorescent Oligosaccharide Substrates for the *Neisseria meningitidis* Serogroup W Capsule Polymerase" American Society for Biochemistry and Molecular Biology Annual Meeting, Boston, MA. (2015)

### **Postdoctoral and Graduate Work**

5. Pumtiwitt C. McCarthy, Sylvester L. Mosley, Rina Saksena, Dwight C. Peterson, Justine Vionnet, Yanming An, John Cipollo, Willie F. Vann. "Chemoenzymatic synthesis of immunoreactive polysialic acid-tetanus Hc fragment glycoconjugates. Annual Conference for the Society for Glycobiology, Seattle, WA. (2011)
6. Pumtiwitt C. McCarthy, Sylvester L. Mosley, Rina Saksena, Dwight C. Peterson, Justine Vionnet, Willie F. Vann. "Preparation of a meningococcal group C polysialic acid-tetanus Hc fragment glycoconjugate vaccine candidate by chemoenzymatic synthesis." American Society for Biochemistry and Molecular Biology Annual Meeting, Washington, DC. (2011)
7. Pumtiwitt C. McCarthy, Sylvester L. Mosley, Rina Saksena, Dwight C. Peterson, Justine Vionnet, and Willie F. Vann. "Formation of an immunoreactive polysialylated



glycoconjugate using chemoenzymatic synthesis.” Gordon Research Conference: Biocatalysis. Bryant University, Smithfield, RI. (2010)

8. Pumtiwitt C. McCarthy, Sylvester L. Mosley, Rina Saksena, Dwight C. Peterson, Justine Vionnet, Willie F. Vann. “Chemoenzymatic synthesis of conjugate polysialic acid vaccines.” American Chemical Society, Middle Atlantic Regional Meeting. Wilmington, DE. (2010)

9. Pumtiwitt C. Rancy and Colin Thorpe. “Oxidative protein folding in vitro: a study of the cooperation between Quiescin sulfhydryl oxidase and reduced protein disulfide isomerase.” Gordon Research Conference: Thiol-Based Redox Regulation and Signaling, Barga, Italy (2008)

### **Pedagogical Presentations/Webinars**

#### ***2019-Present***

1. Panelist: “From Panic to Pedagogy: Tips and resources for making online teaching more active and inclusive”, University of Colorado, Denver, Center for Learning and Teaching ACUE course: Creating an Inclusive and Supportive Online Learning Environment. (2021).

#### ***2013-2018***

2. Webinar Presenter: “The Morgan Teaching to Increase Diversity in STEM (MTIDES) Project”. (2018)\_Webinar archived here:

[https://www.youtube.com/watch?v=kXFkKoK\\_FJg](https://www.youtube.com/watch?v=kXFkKoK_FJg)

3. Panelist: “Using Molecular Visualization as a Tool for Culturally Sensitive Teaching and Biochemistry”. AAC&U Project Kaleidoscope Conference, Stevenson University, Pikesville, MD (2018)

4. Pumtiwitt C. McCarthy, “Infusing Computational Science and Cultural Competency into Biochemistry for Majors and Biochemistry for Non-Majors,” AAC&U Project Kaleidoscope Conference, Morgan State University, Baltimore, MD (2017) (poster)

### **Recruiting, Outreach and Other Presentations**

#### ***2019-Present***

1. Session Speaker, “Keeping You on the RISE at Morgan State University: Opportunities in Chemistry and Beyond”, Prince George’s Community College STEM Transfer Week Fair, March 2023

2. Speaker, Scientist Spotlight Seminar Series for Postbaccalaureate fellows, University of Texas Southwestern Medical Center, March 2022

3. Session Presenter, “Career Talks with Morgan State Collegiates!”, Virtual STEM Career Session, MD Science Olympiad Tournament, Baltimore, MD March 2022

4. Panel Speaker, “Career Opportunities in Biomaterials for HBCU Students Webinar, Society for Biomaterials”, October 2021 <https://biomaterials.org/student-webinar-career-opportunities-biomaterials-hbcu-students>

5. Panel interview for Dear Pandemic: “Dear Pandemic talks to authors of recent PNAS opinion about parenting and women in science in a pandemic” July 2020

<https://www.facebook.com/dearpandemic/videos/289373172320719/>

6. Invited Speaker, Annual Research Symposium, Quest Research Institute: “Unlocking New Doors: Gaining Early Insight into STEM Careers by Participating in Research”, August 2020

7. Invited Seminar Speaker, MSU Science Graduate Students Association, Title: “How to Write a Winning Grant Proposal”, March 2019

8. Invited Keynote Speaker, Women Chemists Committee Luncheon, ACS Middle Atlantic Regional Meeting, Title: “My Journey Through Science”, May 2019

### **2013-2018**

9. Invited Speaker, Summer Academy of Mathematics and Science (SAMS) high school program, MSU. Presentation title: “Bacterial Sugars: Tools for Biomedical Science”, July 2015

10. Invited Speaker, Summer Academy of Mathematics and Science (SAMS) high school program, MSU. Presentation title: “Sweet Isn’t Always Nice: Studies of Proteins that Make Important Sugars in a Bacteria that Causes Meningitis”, July 2014

11. Panelist, “Pre-tenure Years – Teaching Intensive” at 2014 NIH Annual Career Symposium, National Institutes of Health, May 2014

### **RESEARCH SUPERVISED**

*Overview:* Trained 2 research technicians, 6 Ph.D. students, 5 M.S. students, 20 undergraduate students and 7 high school students in interdisciplinary biochemical research.

\* represents URM in STEM

### **Former Research Personnel**

1. Nikki Handy, M.S.\*

Laboratory Technician (2020-2021)

Current position: Laboratory Coordinator, Bowie State University

2. Shruti Budhani, M.S.

Laboratory Technician (2019)

Current position: Laboratory Assistant and Lecturer, Medical Laboratory Sciences Program, Morgan State University

### **Current Graduate Students**

#### **Ph.D.**

1. Tania Moharrery, (Bioenvironmental Science)

Project: *Bacterial Polysaccharides for Heavy Metal Capture*

Spring 2023-present

2. Iyinoluwa Sofowora\*, (co-mentor, primary mentor Dr. James Wachira, Bioenvironmental Science)

Project: *Genomics of Polysaccharide Production and Bacterial Polysaccharides for Heavy Metal Capture*

Fall 2021-present

3. Muyideen Haruna\*, (Bioenvironmental Science)

Project: *Bacterial Polysaccharides for Heavy Metal Capture*

Summer 2020-present

- 1 poster and 1 oral presentations at local/national conferences

## **M.S.**

4. John-Paul Akinbami\*, (co-mentor, primary mentor Dr. James Wachira, Bioinformatics)

Project: *Bacterial Polysaccharides for Heavy Metal Capture*

Fall 2021-present

- 2 oral presentations at local/national conferences

## **Former Graduate Students**

### **Ph.D.**

5. Ayobami Adegbite, Ph.D.\*, (Bioenvironmental Science)

Dissertation title: *Control of Neisseria meningitidis serogroup W Capsule Polymerase Activity Using Modified Substrates*

Summer 2018-May 2022

- 2 publications, 2 research poster presentations, 1 oral presentation at local/national conferences

Current position: Non-scientific workforce

6. Laleh Sheikhi Moghaddam, Ph.D. (Bioenvironmental Science)

Dissertation title: *Biochemical Studies of Neisseria meningitidis serogroup W Capsule Polymerase Activity for Vaccine Development Against Meningococcal Disease*

Fall 2017-May 2022

- 2 publications, 1 research award, 4 research posters and 1 oral presentations at local/national conferences (2 publications in progress)

Current position: Lecturer, Biology Department, Morgan State University

7. Mylik Jupiter\*, (pursued degree in Bioenvironmental Science)

Project: *Bacterial Polysaccharides for Heavy Metal Capture*

Attended 2018-2019.

Current position: Adjunct Lecturer, West Coast University.

## **M.S.**

8. Subhadra Paudel, M.S., (Bioinformatics, primary mentor, co-mentor w/Dr. James Wachira)

Thesis Title: *Computationally-Guided Design and Engineering of a Neisseria meningitidis Serogroup W Capsule Polymerase*, May 2021

- 1 publication, 1 research poster at national conference

Current position: Research Assistant, Morgan State University's NIH-RCMI/ASCEND program

9. Abeer Sharyan, M.S., (Science, Track: Chemistry)

Thesis Title: *Biochemical Assays for the Neisseria meningitidis serogroup W Capsule Polymerase*, May 2018

- 2 publications, 1 award: SCMNS Outstanding STEM Master's Thesis

Current position: Pursuing Ph.D. at King Abdulaziz University, Saudi Arabia

10. Sujan Ghimire, M.S. (Science, Track: Chemistry)

Thesis title: *Metal Binding to Macromolecules: Bacterial Polysaccharides for Heavy Metal Capture and Rhenium Complexes as Anticancer Agents*, December 2017

- 2 publications, 2 research poster presentations at local/national conferences

Current position: Non-scientific workforce

11. Cendy (Gonzalez) Alcantara, M.S.\* (Science, Track: Biology)

Thesis title: *Neisseria meningitidis Serogroup W Capsule Polymerase: Determining Enzyme Kinetics of Donor Sugars and Development of a Chemoenzymatic Method To Produce a Photocrosslinking Derivative*, May 2017

- 1 publication, 3 research poster presentations at local/national conferences; 3 research awards

Current position: Research Laboratory Technician, Center for Immunization Research, Johns Hopkins Bloomberg School of Public Health

### **Current Undergraduate Students**

1. Trinity Bolton\*, Senior, Major: Chemistry

Project: *Mechanistic Studies of a Bacterial Capsule Polymerase*

Summer 2022-present

- 2 oral presentations at local/national conferences

2. MaryAgnes Balogun\*, Senior, Major: Chemistry, NIH-RISE Scholar

Project: *Mechanistic Studies of a Bacterial Capsule Polymerase*

Summer 2020-present

- 8 research presentations (poster and oral) at local/national conferences, 1 research award (1 paper in progress)

### **Former Undergraduate Students**

3. Nyah Johnson\*, Major: Chemistry

Project: *Mechanistic Studies of a Bacterial Capsule Polymerase*

Summer 2017-Spring 2021

- 5 research poster presentations at local/national conferences, 3 research awards

Current position: Research Assistant, Johns Hopkins and also pursuing M.S. Public Health

4. Charlene Shoetan\*, Major: Chemistry

Project: *Mechanistic Studies of a Bacterial Capsule Polymerase*

Summer 2019-Spring 2020

- 1 research poster presentations at a local conference

Current position: Medical Technologist, University of Maryland, St. Joseph Medical Center

5. Adedoyin Adesina\*, Major: Biology

Projects: *Mechanistic Studies of a Bacterial Capsule Polymerase/Bacterial Polysaccharides for Heavy Metal Capture*

Fall 2019-Spring 2020

6. Tamia Johnson\*, Major: Biology

Projects: *Mechanistic Studies of a Bacterial Capsule Polymerase/Bacterial Polysaccharides for Heavy Metal Capture*

Spring 2020

7. Bolutife Baiyewu\*, Major: Biology

Project: *Mechanistic Studies of a Bacterial Capsule Polymerase*

Fall 2017-Spring 2018

8. Kayla Powell\*, Major: Chemistry

Projects: *Isolation of Sugar-Producing Enzymes from Pathogenic Bacteria/*

*Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

- 1 publication; 3 research poster presentations at local/national conferences; 1 oral presentation; 2 research awards

Spring 2015-Summer 2017

Current position: R.N. program, Coppin State University

9. Chikaodi Nwanegwo\*, Major: Chemistry

*Isolation of Sugar-Producing Enzymes from Pathogenic Bacteria*

*Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

- 3 research poster presentations at local/national conferences; 2 research awards
- Fall 2015-Spring 2017

Current position: Non-scientific workforce

10. Ophelia Ukaegbu\*, Major: Chemistry, NIH-RISE Scholar

Projects: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis/Isolation and Characterization of a Sugar-Producing Enzyme from the Pathogenic Bacteria Campylobacter jejuni*

- 1 publication; 5 research poster presentations at local/national conferences; 1 oral presentation; 9 research awards

Summer 2014-Summer 2016

Current position: Senior Scientist, Merck. Obtained Ph.D. Biochemistry, University of Delaware, May 2022

11. Tresha Gordon-Travers\*, Major: Nutritional Sciences

Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Winter 2015-Spring 2015

- 1 research poster presentations at local conference

12. Anita Tembo\*, Major: Medical Technology

Project: *Growth, Expression and Purification of Neisseria meningitidis CMP-Sialic acid Synthetase*

Summer 2015

Current position: RN, Johns Hopkins University

13. Ugomma Etoh\*, Major: Chemistry

Project: *Isolation of Sugar-Producing Enzymes from Pathogenic Bacteria*

Spring 2015

- 1 research award

14. Jessica Purviance\*, Major: Chemistry

Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Fall 2014, Spring 2015

15. Ngozi Madu\*, Major: Medical Technology

Project: *Isolation of Sugar-Producing Enzymes from Pathogenic Bacteria*

Spring 2015-Fall 2015

Current position: Clinical Research Scientist, Medical Laboratory Sciences, University of Delaware

16. Desiree Record\*, Major: Chemistry

Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Winter 2015-Spring 2015

Current position: Dental student, UCLA School of Dentistry

17. Samuel Kudadji\*, Major: Chemistry

Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Fall 2014

Current position: Non-scientific workforce

18. Saeed Alsolumi, Major: Medical Technology

Project: *Isolation and Characterization of a Sugar-Producing Enzyme from the Pathogenic Bacteria Campylobacter jejuni*

Summer 2014

19. Francis Owolabi\*, Major: Chemistry

Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Spring 2014

Current position: QC Microbiologist, Miltenyi Biotech

20. Erika Okehie\*, Major: Chemistry

Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Spring 2014

Current position: Non-scientific workforce

### **Former High School Students**

1. Grayce Cooper\* (Glenelg Country School, supported by Army REAP Program),  
Project: *Meningococcal Vaccine Research to Target Serogroup W*  
Summer 2021

2. Heaven Cross\* (Bel Air High School, virtual high school internship),  
Project: *Protein Visualization Using Open Source Bioinformatics Tools*  
Summer 2020

3. Arianna Pankey\* (Eleanor Roosevelt High School, supported by Army REAP Program)

Project: *Biosynthesis of Modified Sugars for Vaccine Development*

Summer 2019

Current position: Pursuing B.S. in Biology at Howard University.

- 1 research poster presentations at local conference, 1 science competition (MD BioGENEius Challenge, 2020)

4. Rudy Diaz\* (Baltimore Polytechnic Institute, supported by ACS Project SEED)  
Project: *Biosynthesis of Modified Sugars for Vaccine Development*

Summer 2019

- 1 research poster presentations at local conference

5. Sydney Brown\* (From the Heart Christian school, sophomore, supported by Army REAP Program)

Project: *Growth, Expression, and Purification of a Sugar-Producing Enzyme from Neisseria meningitidis*

Summer 2018

- 1 research poster presentations at local conference
6. Jayda Smith\* (Western High School, supported by ACS Project SEED)  
Project: *Growth, Expression, and Purification of a Sugar-Producing Enzyme from Neisseria meningitidis*

Summer 2015

Current position: Enrolled at University of Maryland, College Park

7. Corshai Williams\* (Western High School, supported by ACS Project SEED)  
Project: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

Summer 2014

Current position: Enrolled in Ph.D. program in Chemistry at MIT.

### **Prior to Morgan State University**

Janet Karanja\*, FDA-CBER intern, student from University of Maryland-College Park (Summer 2013)

Project: *Isolation of a Sugar-Producing Enzyme from the Pathogenic Bacteria Neisseria meningitidis*

### **TEACHING EXPERIENCE**

#### **Graduate**

Graduate Thesis Seminar (2014-2019 Fall)

Supervised Research in Chemistry (2015-2023 Spring)

Advances in Biochemistry – Lecture (Graduate level course) (2014-2021 Spring, 2023 Spring)

Modern Research Techniques (Biology graduate level course) (Summer 2015)

#### **Undergraduate**

General Chemistry I – Laboratory (2013F, 2017 Fall)

Biochemistry – Lecture/Laboratory (2013-2021 Fall, 2022 Fall – Lab only)

Biochemistry II – Lecture (2019-2021 Spring, 2023 Spring)

Biochemistry for Health Majors – Lecture/Laboratory (2014-2017 Spring)

Effective Technical Presentations (2017, 2018, 2020-2022 Fall)

Undergraduate Research (2020-2022 Fall)

Senior Seminar (2015-2023 Spring)

### **GRANT PROPOSAL REVIEW**

2022-2024 Regular Standing Member, NIH TWD-C (7/1/22-6/30/24)

2022 Ad-hoc reviewer, NIH TWD-C

2022 Ad-hoc reviewer, NIH ESI-MIRA

2021 Ad-hoc reviewer, NIH TWD-C

2021 Ad-hoc reviewer, NIH F04A

2021 Ad-hoc reviewer, NIH SBCA

2018 Expert Reviewer, ECOS-Sud-Argentine, Université Paris 13

2018-2023 Panelist reviewer, NSF (MPS and EHR Directorates)

## MANUSCRIPT REVIEW

- 2020 - Reviewer Board member, *Vaccines*  
2017- Manuscript reviewer: *Vaccines, Biomolecules, Applied Sciences, Applied Microbiology and Biotechnology, Antioxidants, International Journal of Environmental Research and Public Health, Polymers, Marine Drugs, Analytical Methods, Journal of Chromatography B, Nephrology Dialysis Transplantation, Pharmaceuticals, Microorganisms, Molecules, Bielefeld Journal of Organic Chemistry, ACS Infectious Disease, Frontiers in Molecular Biosciences – Glycoscience*

## SERVICE AND COMMITTEE WORK

### National Service

- 2023 Host, 2023 Ionic VIPeR Summer Workshop (funded by non-Morgan NSF CCLI-0737030, NSF TUES-Type 2-1225792 NSF IUSE-1726162, IUSE-1726133 grants)  
2021-2023 Alternate Councilor (elected), CARB (Carbohydrate) Technical Division, American Chemical Society (ACS)  
2021-2022 Co-Organizer, *Next Generation Glycoscientists: Glycoscience Research at Predominantly Undergraduate Institutions*, CARB Technical Division, Spring 2022 ACS National Meeting  
2020-2022 Member, Ad-Hoc Subcommittee, ACS CARB Joint EuroCarb/GlycoNet Fall and Spring Seminar Planning Committee, ACS CARB Division  
2018-2019 Co-Organizer and Fundraiser for ACS CARB Division *Glycans in Context* Symposium, 2019 ACS Fall National Meeting, San Diego, CA  
2018 Host, 2018 BioMolViz Protein Visualization Workshop (funded by non-Morgan NSF-IUSE 1712268)  
2016 Chair, Technical Session 17: Biochemistry and Chemical Biology, National Organization of Black Chemists and Chemical Engineers (NOBCCHE) Annual Conference  
2015 Abstract Reviewer, 2015 Annual Biomedical Research Conference for Minority Students

### Regional/Local Service

- 2019 External Program Evaluator, Biochemistry Program, University of Maryland Eastern Shore  
2019 Vice-Chair, Maryland Local Section of the ACS  
2018 Chair-Elect, Maryland Local Section of the ACS  
2017-2019 Exposition and Sponsorship Co-Chair, Middle Atlantic Regional ACS Meeting (MARM) 2019  
2015-2020 Alternate Councilor (elected), Webmaster and Editor-in-Chief, ACS Maryland Local Section  
2015 Faculty Mentor, Fusion Forum Graduate Recruitment Program, Carnegie Mellon University, Pittsburgh, PA  
2015, 2013 Poster Judge, NIH/FDA Glycosciences Research Day, National Institutes of Health



2015, 2014 Judge, "Disease Detectives" test for Maryland Science Olympiad, Baltimore Regional Tournament

### University Service

2022- Teacher Education Council, Department of Teacher Education and Professional Development, MSU  
2022 Member, Search Committee for Dean of SCMNS, MSU  
2018- Conflict of Interest Committee, MSU  
2018-2020 School of Computer, Mathematical and Natural Sciences (SCMNS) representative, University Council, MSU

### Service to SCMNS

2019- Member, Faculty Advisory Committee, NIMHD-funded RCMI@Morgan, Center for Urban Health Disparities Research & Innovation: Research Infrastructure Core (RIC)  
2018-2020 Faculty Evaluation Survey Instrument Committee, SCMNS, MSU  
2018, 2014 Oral Presentation Judge, 21st Annual Undergraduate and Graduate Science Research Symposium at MSU  
2015 Research Mentor, Summer Research Institute, MSU ASCEND program, NIH BUILD-funded program  
2014-2021 Member, Selection Committee for Ph.D. Program in Bioenvironmental Sciences, MSU  
2013-2014 Member, SCMNS Spring 2014 Faculty Development Workshop Planning Committee, MSU

### Department Service

2014- Member, Chemistry Department Curriculum Committee, MSU  
2014- Chair, Chemistry Department Advising Committee, MSU  
2021- Member, Recruitment Committee, MSU  
2015-2021 Member, Appointment, Promotion and Tenure Committee, MSU  
2015-2021 Member, Selection Committee for M.S., Chemistry Program, MSU

### Membership on Graduate Committees

2022 Ph.D. Bioenvironmental Science Dissertation Committee, Christopher Krauss, MSU  
2022 Ph.D. Bioenvironmental Science Dissertation Committee, Odedoyin Aduroja, MSU  
2022 M.S. Science in Integrated Sciences (Chemistry) Thesis Committee member, Bandana Ranamagar, MSU  
2019 M.S. Chemistry Thesis Committee member, Jazmin Gonzalez, MSU  
2017 Ph.D. Bioenvironmental Science Dissertation Committee, Zainab Boone-Kukoyi, MSU  
2017 M.S. Biology Thesis Committee member, Kaisha Hazel, MSU  
2016 M.S. Chemistry Thesis Committee member, Fatmah Alsharari, MSU  
2015 M.S. Chemistry Thesis Committee member, Aysha Zaakan, MSU  
2015 M.S. Biology Thesis Committee member, Aryan Vahedi-Faridi, MSU

## **SERVICE GRANTS**

- 2019 ACS Project SEED grant, Co-PI, Project Title: *Biosynthesis of Modified Sugars for Vaccine Development*
- 2019 Leadership Institute Partnership Mini-Grant, ACS Local Section Affairs Committee
- 2019 Science Advocate Grant, Society for Science & The Public
- 2015 ACS Project SEED grant, Co-PI, Project Title: *Growth, Expression, and Purification of a Sugar-Producing Enzyme from Neisseria meningitidis*
- 2014 ACS Project SEED grant, Co-PI, Project Title: *Production of Fluorescent Carbohydrate Substrates for a Sugar-Producing Enzyme from Neisseria meningitidis*

## **PROFESSIONAL DEVELOPMENT ACTIVITIES**

- 2023 MSU Administrative Conference
- 2023 Interfolio Training for Deans and Chairs
- 2023 EAB Online Training for Program Analytics
- 2022 Department Chair Training (facilitated by Dr. Jeanne Hey)
- 2020 Morgan State University, Summer Writing Institute Grant
- 2019 AAC&U PKAL STEM Leadership Institute
- 2019 ACS Leadership Institute
- 2018 NIH National Research Mentoring Network Grant Writing Workshop
- 2017 Mobile Summer Institute on Scientific Teaching
- 2016 NSF Early Career Investigator Grant Writing Workshop
- 2015 COACH workshop: Negotiation, Communication and Leadership Workshop for Faculty
- 2014-2015 NSF Building Connections Mentoring program
- 2014 Quality Education for Minorities Professional Development Workshop for the NSF-MRI Program
- 2014 NIH Regional Seminar on Program Funding and Grants Administration
- 2014 QEM Professional Development Workshop for Assistant Professors
- 2014 COACHing Strong Women in the Art of Strategic Persuasion
- 2013 Research Faculty Boot Camp Series: Professionally Packaging a Grant Proposal