BIOGRAPHICAL SKETCH

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NAME: BRADFORD (McRae), Chastity N

eRA COMMONS USER NAME (credential, e.g., agency login): CHASTBRADFORD
POSITION TITLE: Department Head and Associate Professor, Biology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Spelman College, Atlanta, GA	BS	1995-1999	Biology
University of Alabama at Birmingham Birmingham, Alabama	PhD	1999-2005	Cellular and Molecular Physiology
The University of Florida Gainesville, Florida	Postdoctoral Training	2008-2012	Physiology and Functional Genomics

A. Personal Statement

I am the department head of Biology and an associate professor of Biology at Tuskegee University(TU). My career has focused on cardiovascular research, diversifying STEM, and community-targeted approaches to blood pressure monitoring and control. I completed a Howard Hughes Faculty fellowship at the University of Florida in Physiology and Functional Genomics. As a junior faculty at TU, I completed the Morehouse School of Medicine/Tuskegee University/University of Alabama Health Disparities Research Training Program and received funding through TU's Research Centers in Minority Institutions to assess the role of focal adhesion kinase in models of pressure overload. I served as senior personnel on the Obesity and Overweight Prevention program funded by USDA with Dr. Norma Dawkins. I was responsible for rural Black Belt community participant recruitment, virtual program planning, and blood pressure training. I am currently the Project Director for a USDA/NIFA funded research and extension experiences for undergraduates project designed to train students to use Geographical Information Systems to solve current biological problems, and Co-PI for a course-based educational research experience that expands the exposure of undergraduates to authentic research. I served as Co-PI for The Tuskegee Alliance to Develop, Implement and Study a Virtual Graduate Education Model for Underrepresented Minorities in STEM (NSF 2014-19). Upon completion of the Morehouse School of Medicine/Tuskegee University/University of Alabama Health Disparities Training Program, I received funding through Research Centers in Minority Institutions to train underrepresented STEM students in biomedical research. As a visiting professor at Temple University's cardiovascular research center, I used a cardiac fibroblast-specific Focal Adhesion Kinase mouse model to assess cardiovascular remodeling in a pressure-overload model of hypertension. In my lab over the last 9 years, I have trained and mentored 4 PhD students, 3 Masters' level students, 25 undergraduate trainees, 7 high school students, 2 junior faculty, 2 K-12 faculty. My lab and others have discovered a critical balance between Angiotensin 1-7 and Angiotensin II, two critical components of the Renin-Angiotensin System. Our lab's focus is to translate our bench-side research to the community. We focus on discovering culture-tailored non-pharmacological intervention strategies that aid blood pressure control in rural Black Belt counties.Using Artificial Intelligence and Machine Learning will provide data-driven insights to issues in our community and enable predictive models to advance cardiovascular health outcomes.

Ongoing Research Support

1. American Heart Association Student Undergraduate Research Experience (SURE) June2024-June 2027
2. 2222434-NSF Understanding the Rules of Life: Emergent Networks; URoL:EN: Convergent Programs that govern emergence and robustness.09/2022-08/2027
3. GT16071-HHMI Inclusive Excellence 3 (IE3) Initiative 11/2022-10/2028
4. 2021-69018-34625- National Institute of Food and Agriculture/USDA Discovering FACTs (FANRH) to Address Challenges of Today and Tomorrow Through Research and Extension 4/01/21-3/31/26
5. 2012081- National Science Foundation HER/HRD Historically Black Colleges and Universities Program Targeted Infusion Projects 9/01/2020-2023 *Tuskegee University Course Based Educational Research Experiences (TU-CUREs).*

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2021-present	Department Head, Biology, Tuskegee University, Tuskegee, AL
2012- present	Associate Professor, Biology, Tuskegee University Tuskegee, AL
2016-2017	Visiting Professor (Summer), Cardiovascular Center, Temple University, Philadelphia, PA
2012-2015	Adjunct Professor, Health Disparities Institute for Research and Education Tuskegee, AL
2008-2012	Postdoctoral Associate/Howard Hughes Medical Institute Faculty Fellow The University of Florida, Gainesville, FL
2005-2007	Assistant Dean, Graduate School, The University of Texas at El Paso (UTEP), El Paso, TX
2000-2002	National Science Foundation G-K12 Fellow, The University of Alabama-Birmingham Birmingham, AL
1997	Howard Hughes Undergraduate Research Fellow, Loyola University, Chicago, IL

Scientific Appointments

2000-present	American Heart Association
2004-2012	American Physiological Society
2010, 2012	Journal of Renin-Angiotensin-Aldosterone System- reviewer
2011	International Journal of Hypertension- reviewer
2012-2015	Beta Kappa Chi Honor Society- member
2013	Alzheimer's Association International Research Grant Program- reviewer
2014	National Conference for Undergraduate Research-Proceedings- reviewer
2015	SBIR Hypertension Treatment Network- reviewer
2016-2017	American Society of Cell Biology
2018	Cardiovascular and Hematological Disorders-Drug Targets- reviewer
2018-present	American Heart Association Vascular Biology and Blood Pressure Study Section Reviewer/Chair

Honors

	MSM/TU/UAB Summer Institute Poster Presentation (2nd Place)
2013	Health Disparities Research Training Fellowship, Morehouse School of Medicine/Tuskegee
2013	University/UAB Cancer Center Partnership
	ASCB MAC 2014 9th Annual Junior Faculty/Postdoctoral Fellows Career Development
2014	
2015	Keystone Symposia Young Investigator Travel Award Vancouver, Canada
2016	College of Arts and Sciences Faculty Teaching Award Tuskegee, AL
2015	L.A. Potts Award for Early Access to Healthy Living Program Tuskegee, AL
2016-2018	American Society of Cell Biology Visiting Professorship (Temple University)
2017	College of Arts and Sciences Faculty Member of the Month Tuskegee, AL
2020-21	Biology Education Intersegmental Collaborative Fellow

C. Contributions to Science

During my early scientific career, at the University of Alabama at Birmingham, our lab discovered the Role of Local Renin-Angiotensin System in Cardiac Remodeling During the Development of Hypertension and Progression of Cardiac Fibrosis. We discovered that angiotensin converting enzyme inhibitors alter fetal programming and early perturbations in the renin angiotensin system prior to the increases in blood pressure could be manipulated in offspring of spontaneously hypertensive rats.

1. P.Rocic, **C. McRae**, T. Griffin, and P.A. Luchessi. Increased expression and activation of PYK2 in hypertensive vascular smooth muscle. *Am J Physiol Heart Circ Physiol 2002; 28; H457-65.* PMCID 2630259.0

2. Alcocer F, Whitley D, Salazar-Gonzalez JF, Jordan WD, Sellers MT, Eckhoff DE, Suzuki K, **McRae C**, Bland KI. Quercetin inhibits human vascular smooth muscle cell proliferation and migration. *Surgery. 2002; 131(2); 198-204.* PMID: 11854699.

After three years in administration as an Assistant Dean, at the University of Texas at El Paso's graduate school, I returned to full-time research and accepted a position as Howard Hughes Faculty Fellow at the University of Florida's Department of Physiology and Functional Genomics. During my fellowship in Mohan Raizada's laboratory, I continued to study the renin angiotensin system in a model of pulmonary hypertension, and I characterized a mouse model that overexpresses angiotensin converting enzyme 2 (ACE2). We discovered the protective role of ACE2 in pulmonary hypertension and angiotensin-II infused end-organ damage. We also discovered the effect of global overexpression of ACE2 on multiple organs.

1. Yoriko Yamazato, Anderson J. Ferreira, Kwon-Ho Hong, Srinivas Sriramula, Joseph Francis, Masanobu Yamazato, Lihui Yuan, **Chastity N. Bradford**, Vinayak Shenoy, Suk P. Oh, Michael J. Katovich, Mohan K. Raizada. Prevention of Pulmonary Hypertension by Angiotensin-Converting Enzyme 2 Gene Transfer. Hypertension. 2009; 54; 365-371. PMCID: PMC2732127.

2. Anderson J. Ferreira, Robson A.S. Santos, **Chastity N. Bradford**, Adam P. Mecca, Colin Sumners, Michael J. Katovich and Mohan K. Raizada. Therapeutic Implications of the Vasoprotective Axis of the Renin-Angiotensin System in Cardiovascular Diseases. *Hypertension 2010; 55; 207-213.* PMCID: PMC2826213.

3. **Chastity N. Bradford**, Debra Ely, Mohan K. Raizada. Targeting the Vasoprotective Axis of the Renin Angiotensin System, A Novel Strategic Approach to Pulmonary Hypertensive Therapy. *Current Hypertension Reports 2010;12;212-219*. PMCID: PMC295787.

4. Vinayak Shenoy, Altin Gjymishka, Jarajapu Yagna, Yanfei Qi, Aqeela Afzal, Katya Rigatto, Anderson J Ferreira, Rodrigo A Fraga-Silva, Patrick Kearns, Deepmala Agarwal, Kamal Mubarak, **Chastity Bradford**, William R Kennedy*, Joo Y Jun, Anandharajan Rathinasabapathy, Erin Bruce, Dipankar Gupta, Arturo J Cardounel, J Mocco, Jawaharlal M Patel, Joseph Francis, Maria B Grant, Michael J Katovich, Mohan K Raizada. Diminazene Attenuates Pulmonary Hypertension and Improves Angiogenic Progenitor Cell Functions in Experimental Models. *American Journal of Respiratory and Critical Care Medicine 2013;187;648-657.* *Mentee. PMCID: PMC3733435.

At Tuskegee University, my laboratory continues to elucidate the role of the Renin Angiotensin System (RAS) and oxidative stress in cardiovascular remodeling. We study the impact of nutritional intervention on models of metabolic syndrome and the spontaneous hypertension to determine the effect of nutrition on cardiac protein expression, cardiac remodeling, and vascular function. With a greater emphasis on the role of the diet in hypertension and heart failure, we are investigating the role of the RAS system in hypertension, oxidative stress, and end organ damage.

1. Ian Hunter, Amanda Soler, Gregory Joseph, Brenda Hutcheson, **Chastity Bradford**, Frank Zhang, BarryJ Potter, Spencer D. Proctor, Petra Rocic. Cardiovascular function in male and female JCR:LA-cp rats: Effect of high fat/high sucrose diet American Journal of Physiology - Heart and Circulatory Physiology Jan,2017, ajpheart.00535.2016; PMCID: PMC5407169.

2. Hunter, I., Soler, A., Joseph, G., Hutcheson, B., **Bradford, C**., Zhang, F. F., Potter, B., Proctor, S., & Rocic, P. (2017). Cardiovascular function in male and female JCR:LA-cp rats: effect of high-fat/high-sucrose diet. *American journal of physiology. Heart and circulatory physiology*, *312*(4), H742–H751. https://doi.org/10.1152/ajpheart.00535.2016 PMCID: PMC5407169.

3. Shenoy, V., Gjymishka, A., Jarajapu, Y. P., Qi, Y., Afzal, A., Rigatto, K., Ferreira, A. J., Fraga-Silva, R. A., Kearns, P., Douglas, J. Y., Agarwal, D., Mubarak, K. K., **Bradford, C**., Kennedy, W. R., Jun, J. Y., Rathinasabapathy, A., Bruce, E., Gupta, D., Cardounel, A. J., Mocco, J., Raizada, M. K. (2013). Diminazene attenuates pulmonary hypertension and improves angiogenic progenitor cell functions in experimental models. *American journal of respiratory and critical care medicine*, *187*(6), 648–657. PMCID: PMC3733435.

At Tuskegee University, I have also been engaged in multi-institutional collaboration that focus on preparing the STEM undergraduate pipeline by using course-based research. I have collaborated with Indiana University School of Medicine as a Co-PI for a Bridges to the Doctorate at Indiana University School of Medicine. As an NSF Faculty Fellow, I created Life Science modules for 7th grade AL Black Belt teachers and published some of the modules on Alabama Learning Exchange.

1. Mader, C. M., Beck, C. W., Grillo, W. H., Hollowell, G. P., Hennington, B. S., Staub, N. L., Delesalle, V. A., Lello, D., Merritt, R. B., Griffin, G. D., **Bradford, C**., Mao, J., Blumer, L. S., & White, S. L. (2017). Multi-Institutional, Multidisciplinary Study of the Impact of Course-Based Research Experiences. Journal of microbiology & biology education, 18(2), 18.2.44. https://doi.org/10.1128/jmbe.v18i2.1317 PMCID: PMC5577972.

   Complete List of Published Work in ORCID: https://orcid.org/0000-0001-7460-6134