BIOGRAPHICAL SKETCH

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NAME: Gamble-George, Joyonna

eRA COMMONS USERNAME (credential, e.g., agency login): gamblejc

POSITION TITLE: Postdoctoral Fellow

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
Xavier University of Louisiana, New Orleans, LA	B.S.	05/2003	Biochemistry and Biology
University of South Florida, Tampa, FL	M.H.A.	12/2005	Health Administration
University of South Florida, Tampa, FL	Certificate	05/2008	Health Sciences
Howard Hughes Medical Institute/Vanderbilt University Medical Center, Nashville, TN	Certificate	05/2016	Molecular Medicine
Vanderbilt University, Nashville, TN	Ph.D.	08/2016	Neuroscience
University of Florida, Gainesville, FL	Postdoctoral	04/2018	HIV and Substance Addiction
National Institutes of Health, Bethesda, MD	Certificate with Commendation	01/2020	Clinical Research
New York University (NYU), New York, NY	Postdoctoral	Present	Behavioral Sciences in Substance Abuse

A. Personal Statement

My previous academic training and research experiences have provided me with an excellent background in the health sciences with a focus on substance addiction and affective disorders and various biological disciplines including behavioral pharmacology and neuropharmacology, molecular biology, and biochemistry. In addition, it enabled me to gain valuable experience in designing clinical and behavioral research studies and in biomedical laboratory and statistical techniques that has prepared me for conducting the proposed research project in this current application as a postdoctoral fellow at New York University and a future tenured academic scientist at a research-intensive university. Currently, I am developing my capabilities as a behavioral scientist through the Behavioral Sciences Training in Drug Abuse Research Program at New York University Rory Meyers College of Nursing. My future research program will concentrate on substance misuse or dependence from an integrated systems biology and psychosocial-ecological approach. I plan to discover which biopsychosocial-ecological factors and their interactions are risk factors for substance misuse or dependence using human brain imaging and other biomedical techniques in conjunction with behavioral research methodologies. For example, I plan to study which of these factors and their interactions influence decision making in substance use. Then, I plan to find ways to monitor these factors and their interactions to make predictions when they can cause substance use disorders to occur. Another focus of my future lab's research will be to create interventions (pharmacological and/or environmental enrichment strategies) using human behavioral therapy models and animal models that prevent these factors and their interactions from contributing to the negative consequences in the brain due to substance misuse or dependence, and support recovery from substance misuse and addiction. These findings will hopefully facilitate the discovery of therapeutics that may ameliorate deleterious neurobiological and psychological outcomes in socioeconomically disadvantaged populations and populations where substance misuse or dependence is a significant disparity.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2022	Course Manager and Faculty, Marine Biological Laboratory Summer Program in Neuroscience, Excellence and Success (SPINES)
2022-	Visiting Research Faculty, Center for Interdisciplinary Research on AIDS, Yale University
2022-	Member, American Association of University Women (AAUW)
2022-	Member, Association for Women in Science (AWIS)
2021-2023	Advisory Board Member, NSF-Funded Twin Cities PBS *Black SciGirls* Project
2021-	Member, Society for Research in Child Development (SRCD)
2021-2022	Fellow, NIH Special Populations Research Forum Clinical Research Recommendation Comm.
2021-	Member, International Society for Developmental Psychobiology (ISDP)
2021-	Member, American Psychological Association (APA)
2020-	Affiliated Investigator, Center for Drug Use and HIV/HCV Research (CDUHR), NYU GPH
2020-2021	Diversity, Equity, and Inclusion Task Force Member, American Society for Cell Biology (ASCB)
2020-	Member, Society for Advancement of Chicanos/Hispanics and Native Americans in Science
2020-	Postdoctoral Research Fellow, NYU Rory Meyers College of Nursing
2019-	Member, American Society for Biochemistry and Molecular Biology (ASBMB)
2019	Health Scientist/AAAS Science and Technology Policy Fellow, National Institutes of Health
2019	Adjunct Faculty, Natural Sciences Department, St. Petersburg College
2017-	Member, American Association for the Advancement of Science (AAAS)
2016-2018	Postdoctoral Research Associate, Neuroscience Department, University of Florida
2015	Teaching Assistant, Psychology Department, Vanderbilt University
2015	FOCUS Course Co-Leader, Interdisciplinary Graduate Program, Vanderbilt University
2013	Lecturer, Neuroscience Graduate Program, Vanderbilt University
2012-	Member, Society for the Psychological Study of Social Issues (SPSSI)
2011-	Member, International Cannabinoid Research Society (ICRS)
2011-2016	Graduate Research Assistant, Psychiatry Department, Vanderbilt University
2010-2022	Member, Society for Neuroscience (SfN)
2009-2011	Lab Manager and Research Assistant, Physiology Department, Meharry Medical College
2008	Interdisciplinary Community Health Scholar, Gulfcoast South Area Health Education Center
2007-2009	Biological Science Lab Technician, Veterans Affairs Bay Pines Healthcare System
2006-2007	Executive Director for Graduate Life, University of South Florida Graduate School
2005	Health System Specialist, Central Alabama Veterans Health Care System
2004-2005	Graduate Research Assistant, Health Policy & Management Dept., University of South Florida

Honors

2023	Children's Hospital of Philadelphia Data and Analytics for Research Training Program Fellow
2022	UW Broadening Representation of Academic Investigators in NeuroScience Program Fellowship
2022	Baylor COM *All of Us* Underrepresented Biomedical Researcher Scholars Program Fellowship
2022	REIDS Fellowship, Center for Interdisciplinary Research on AIDS, Yale University
2022	NIDA Diversity Scholars Network (NDSN) Program Fellowship
2021	Nepris Trailblazer Award in STEM Education
2021	SEE-Diversity to Success Program Fellowship, American Psychological Association
2021	NIH Director's Award for Advancement of Women's Health Research and Education
2020	Special Recognition Global Award, WomenTech Network
2020	Certificate of Recognition for Contributions to STEM, WomenTech Network
2020	NIDA Ruth L. Kirschstein Institutional National Research Service Award (NRSA) Fellowship
2020	Nepris Outstanding Volunteer Award in STEM Education
2020	NHLBI Director's Award for Partnership/Collaboration with Women's Health Working Group
2020	Certificate of Appreciation for Contributions to NIH Special Populations Research Forum
2019	AAAS IF/THEN® Woman in STEM Award
2017	Neuroscience Scholars Program Grant Proposal Mentoring Award, Society for Neuroscience
2017	OBGAPS Msomi Award for Outstanding Scholarship, Vanderbilt University
2017	Cold Spring Harbor Laboratory Cellular Biology of Addiction Workshop, NIDA Fellowship
2016	National Institute on Drug Abuse Diversity Supplement to R01 DA026947

2016 Dr. Levi Watkins Jr. Student Award for Commitment to Diversity, Vanderbilt University
2016 Graduate Student Travel Award, Vanderbilt University Graduate School
2015 Sigma Xi (Scientific Research Honor Society)
2015 Cover Art Award, *Vanderbilt Reviews Neuroscience*
2015 Travel Award, Summer Program in Neuroscience, Ethics, and Survival's Symposium
2015 Travel Award, National Enhancement of Underrepresented Academic Leaders Conference
2015 UNCF/Merck Graduate Science Research Dissertation Fellowship
2015 Neuroscience Scholars Program Fellowship, Society for Neuroscience
2014 Student Travel Award, International Cannabinoid Research Society
2014 Graduate Student Travel Award, Howard Hughes Medical Institute/VU Medical Center
2014 Alcoa Foundation Fellowship, 64th Lindau Nobel Laureate Meeting (Physiology/Medicine)
2013 Graduate Student Travel Award, Vanderbilt University Graduate School
2013 Graduate Student Council Travel Award, Vanderbilt University
2013 Carl Storm Underrepresented Minority Fellowship, Gordon Research Conferences
2012 SREB-State Doctoral Scholars Program Fellowship, Southern Regional Education Board (SREB)
2012 Vanderbilt Brain Institute Scholars Program Fellowship
2011 Initiative for Maximizing Student Diversity Program Fellowship, National Institutes of Health
2010 Marine Biological Laboratory Summer Program Fellowship in Neuroscience, Ethics, & Survival
2010 Frontiers in Addiction Research Mini-Convention Travel Award, NIDA
2009 1000 Hour Award for Community Service in Neuroscience Research, Veterans Affairs
2009 Young Investigator Scholarship, Alzheimer's Drug Discovery Foundation
2008 500 Hour Award for Community Service in Neuroscience Research, Veterans Affairs
2005 Omicron Delta Kappa Honor Society (National Leadership Honor Society)
2005 Delta Omega (Honorary Society for Graduate Studies in Public Health)
2005 Foster G. McGaw Student Scholarship
2005 Florida Public Health Association Graduate Student Scholarship
2005 Carl A. Gelin Endowed Scholarship
2005 Student Honorary Award for Research and Practice, University of South Florida

C. Contributions to Science

1. **Early Career:** My early career contributions concerned research on Alzheimer's disease (AD) pathology and therapeutics that I conducted as a lab technician at Bay Pines Veterans Affairs Healthcare System. The active form of the serine/threonine kinase cRaf-1 is upregulated postmortem in the brains of AD patients and in transgenic mouse models of AD pathology. The persistent activation of cRaf-1 activates the proinflammatory transcription factor NFκB and, consequently, upregulate the expression of its downstream targets, such as the amyloid precursor protein (APP), cyclooxygenase-2 (COX-2), and inducible nitric oxide synthase (iNOS). My role in the project was to investigate the molecular mechanisms of the activity of Raf inhibitors in embryonic rat cortical neurons exposed to amyloid β (Aβ) toxicity and in a mouse model of early-onset AD (APPswe) using cell viability assays and Western blotting. The findings from this research suggested that cRaf-1 inhibitors are neuroprotective against neurotoxic insults, such as the Aβ peptide, *in vitro*, through a mechanism that involves NFκB. It also suggested that cRaf-1 inhibitors can reverse memory impairment and reduce the expression of APP, COX-2, and iNOS in the brains of a transgenic mouse model of AD. The findings from this research demonstrated how Raf inhibitors can serve as promising therapeutic tools against neurological disorders and as anti-neurodegenerative agents.
    a. Echeverria, V, Burgess, S, **Gamble-George, J**, Arendash, GW, Citron, BA. (2008). Raf inhibition protects cortical cells against β-amyloid toxicity. *Neuroscience Letters*, 444: 92-96. PMID: 18706973.
    b. Echeverria, V., Burgess, S., **Gamble-George, J.**, Zeitlin, R., Lin, X., Cao, C., Arendash, G.W. (2009). Sorafenib inhibits nuclear factor kappa B, decreases inducible nitric oxide synthase, and cyclooxygenase-2 expression, and restores working memory in APPswe mice. *Neuroscience*, 162(4):1220-1231. PMID: 19447162.
2. **Graduate Career:** My graduate research contributions at Meharry Medical College focused on neurotoxicity due to subchronic methamphetamine (METH) exposure. METH is a widely used illicit drug worldwide and abused by drug addicts in high concentrations for extended periods of time. METH-induced neuronal injury may render METH users more susceptible to neurodegenerative pathologies.

Specifically, chronic exposure to psychostimulants is associated with decreases in striatal dopamine transporter (DAT) expression and increases in striatal alpha-synuclein expression, a synaptic protein implicated in the pathogenesis of neurodegenerative diseases. This raises the question whether METH exposure causes memory deficits and affects protein levels in the brain that play a key role in dopaminergic neurotransmission. I investigated the memory and molecular effects of subchronic METH administration in C57BL/6J mice. This research suggested that subchronic METH exposure causes spatial memory deficits. It also showed that subchronic METH exposure causes differential, brain specific expression of protein markers involved in dopaminergic homeostatsis, which could be one of the causal mechanisms or compensatory consequences of METH-mediated neurotoxicity. The results from this research will potentially further the discovery of molecular targets that can prevent or treat neurodegeneration caused by METH exposure.

a. Swant, J., Goodwin, J.S., North, A., Ali, A.A., **Gamble-George, J.**, Chirwa, S., and Khoshbouei, H. (2011). α- Synuclein stimulates a dopamine transporter-dependent chloride current and modulates the activity of the transporter. *Journal of Biological Chemistry*, 286(51):43933-43. PMID: 21990355. PMCID: PMC3243541.
b. North, A., Swant, J., Salvatore, M.F., **Gamble-George, J.**, Prins, P., Butler, B., Mittal, M.K., Heltsley, R., Clark, J.T., Khoshbouei, H. (2013). Chronic methamphetamine exposure produces a delayed, long-lasting memory deficit. *Synapse*, 67(5):245-57. PMID: 23280858. PMCID: PMC3831527.
c. Butler, B., **Gamble-George, J.**, Prins, P., North, A., Clarke, J.T., Khoshbouei, H. Chronic Methamphetamine Increases Alpha-Synuclein Protein Levels in the Striatum and Hippocampus but not in the Cortex of Juvenile Mice. *Journal of Addiction & Prevention* (2014), 2(2):pii: 6. PMID: 25621291. PMCID: PMC4303106.

3. **Graduate Career:** My graduate research contributions at Vanderbilt University School of Medicine focused on the role of the endocannabinoid (eCB) system in stress-induced behavioral and synaptic maladaptations in mice. Cannabinoid receptors have been examined as potential targets to alleviate the negative consequences of anxiety, trauma-related, and stress-related disorders. However, in preclinical animal studies, synthetic cannabinoids can produce adverse motoric and cognitive effects. Thus, my role in these studies was to examine how augmenting eCB levels in the brain through use of inhibitors of eCB degradative enzymes have the potential for combating anxiety and stress responses. I devised a rodent model of acute and chronic stress-induced anxiety and used electrophysiological recordings in coronal brain slices to examine changes in neuronal activity and biochemical techniques to measure eCB levels in the brain. The findings from these studies will hopefully provide more knowledge on how the role of the eCB system in anxiety, trauma-related, and stressor-related disorders can be useful for medical practice, especially with respect to treating individuals that suffer from these disorders.
   a. **Gamble-George, J.**, Conger, J., Hartley, N., Gupta, P., Sumislawski, J.J., and Patel, S. (2013). Dissociable effects of CB1 receptor blockade on anxiety-like and consummatory behaviors in the novelty-induced hypophagia test in mice. *Psychopharmacology (Berl)*, 228(3):401-9. PMID: 23483200. PMCID: PMC3707973.
   b. Hermanson, D. J., Hartley, N. D., **Gamble-George, J.**, Brown, N., Shonesy, B. C., Kingsley, P. K., Colbran, R. J., Reese, J., Marnett, L. J., and Patel, S. (2013). Substrate-selective inhibition of COX-2 enhances central endocannabinoid signaling. *Nature Neuroscience*, 16(9):1291-8. PMID: 23912944. PMCID: PMC4074568.
   c. Bluett, R.J.*, **Gamble-George, J.C.***, Hermanson, D. J., Hartley, N.D., Marnett, L. J., and Patel, S. Central anandamide deficiency predicts stress-induced anxiety: behavioral reversal through endocannabinoid augmentation. *Translational Psychiatry* (2014), 4:e408. doi: 10.1038/tp.2014.53. PMID: 25004388. PMCID: PMC3788575. ***These authors contributed equally to the manuscript***.
   d. **Gamble-George, J.C.**, Baldi, R., Halladay, L., Kocharian, A., Hartley, N., Silva, C.G., Roberts, H., Haymer, A., Marnett, L.J., Holmes, A., and Patel, S. (2016). Cyclooxygenase-2 inhibition reduces stress-induced affective pathology. *eLife*, 5:e14137. doi: 10.7554/eLife.14137.001. PMID: 27162170. PMCID: PMC4862754.

4. **Postdoctoral Career:** As a postdoctoral fellow at the University of Florida, my research examined the cellular mechanisms of drug addiction and HIV-1 infection. Many METH abusers are HIV-1 positive. Combined HIV and METH insults can worsen brain injury and, subsequently, lead to neurocognitive

impairments known as HIV-associated neurocognitive disorders (HAND). HAND is advanced by several factors, including the presence of the HIV-1 Tat protein in the brain. My postdoctoral research project focused on how the HIV-1 Tat protein induces cellular toxicity and affects ion channel activity and function in dopaminergic neurons and other cell types derived from the ventral tegmental area and the substantia nigra before and after METH exposure. The findings from this research project will potentially provide new key insights into pharmacological strategies for the treatment of drug addiction and HIV-1 infection.

a. Miller, D.R., Shaerzadeh, F., Phan, L., Sharif, N., **Gamble-George, J.**, McLaughlin, J.P., Streit, W.J., and Khoshbouei, H. HIV-1 Tat regulation of dopamine transmission and microglial reactivity is brain region specific. *Glia* (2018), 00:1-14. doi: 10.1002/glia.23447. PMID: 29733459. PMCID: PMC6185750.
b. Gaskill, P.J., Miller, D.R., **Gamble-George, J.**, Yano, H., and Khoshbouei, H. HIV, Tat and dopamine transmission. *Neurobiology of Disease* (2017), 105:51-73. doi: 10.1016/j.nbd.2017.04.015. PMID: 28457951. PMCID: PMC5541386.

5. **Postdoctoral Career:** As a postdoctoral fellow at New York University, my research focuses on the biopsychosocial factors that contribute to substance addiction, affective disorders, and HIV risky behaviors in people, including social connectedness aspects of social cohesion and social capital.
   a. Reid, R., Lardier Jr., D., Opara, I., **Gamble-George, J.**, Cantu, I., Garcia-Reid, P. Gender Group Differences in HIV/AIDS Knowledge, Sexual Negotiation Skills, and Sexual Risk Behavior among Urban Minority Youth. *Health Education and Behavior* (in press).
   b. Ransome, Y., Hayashi, K., **Gamble-George, J.**, Dean, L.T., and Villalonga-Olives, E. Racial and ethnic differences in the association of social cohesion and social capital with HIV testing. *SSM-Population Health* (2022), 21:101327. doi: 10.1016/j.ssmph.2022.101327. PMID: 36618543. PMCID: PMC9811247.
   c. Opara, I., Malik, S., Lardier, D.T., **Gamble-George, J.**, Kelly, R.J., Okafor, C.N., Greene, R.N., and Parisi, D. Increased Alcohol Use and Misuse among Young Adults (18-35 years old) in New York during the COVID-19 pandemic. *Journal of Substance Abuse Treatment* (2021). doi: 10.1080/07347324.2021.1950091. PMID: 34898835. PMCID: PMC8664084.

Complete List of Published Work in My Bibliography:
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