Curriculum Vitae of

Justin Buck

547 Riverside Drive
New York, NY 10027
301-525-9310
Jb4363@cumc.columbia.edu

Education:

B.S. Cell Biology and Genetics Aug 2015-May 2019
B.S. Psychology
University of Maryland, College Park
Summa cum Laude

Research Experience:

National Institute of Mental Health, Oct 2016-April 2019
Student Intern
Advisor: Kuan Hong Wang, PhD

- Completed thesis in the Biology Departmental Honors program entitled, "The Impact of Rewarding Experiences on Dopamine Circuit Architecture in the Mouse Brain"
- Optimized X-CLARITY tissue clearing, Alpha3 light sheet microscopy, and 3D reconstruction techniques to enable whole brain reference map generation
- Developed comprehensive reference maps of *Mus musculus* dopamine circuitry throughout development
- Collaborated with Dr. Erica Glasper at the University of Maryland to compare *Mus musculus* and *Peromyscus californicus* dopamine circuitry

Children's Hospital of Philadelphia, May-Aug 2016
Student Lab Assistant
Advisor: Jo Lynne Rokita, PhD

- Investigated the role of the LMO1 oncogene in neuroblastoma tumorigenesis
- Over-expressed LMO1 in low-expression NBL lines to investigate the effect on oncogenic phenotypes
- Over-expressed FLAG-tagged LMO1 in CHO-K1 cells that were later used for protein purification

National Institute of Standards and Technology, May-Aug 2015
Intern
Advisor: Jo Lynne Rokita, PhD

- Investigated biases of alternative references and different variant calling algorithms on single nucleotide polymorphism calls across six BK virus genotypes
- Utilized UNIX, Python, and R programming to sort and compare variant calls
- Recommended reference sequence for mapping and new genes for quantitation

National Institute of Standards and Technology, May-Aug 2014
Intern
Advisor: Jo Lynne Rokita, PhD

- Designed and developed seven BK virus PCR primer and probes sets
- Optimized quantitative PCR and droplet digital PCR reaction conditions with BK virus primers
- *Five of seven primer and probe sets were used for digital PCR certification of the BK Virus Standard Reference Material (SRM No. 2365) which was released in August 2018*

Leadership Experience

Columbia University Neuroscience Outreach Nov 2019-Present
Vice President of Curriculum

- Overseeing team of graduate students that design lesson plans and interactive activities for classroom visits and Zuckerman Institute's Saturday Science
- Developing open access educational resource database with team of graduate students to support teachers and parents during the COVID-19 pandemic
- Translating existing curriculum to Spanish to improve accessibility

Foundational Learning and Mentorship Experience, Sept 2016-May 2019
Director of Mentorship

- Oversaw STEM-based mentorship programs at three schools in Prince George's County which served over 100 students
- Conducted University-approved qualitative research on best mentorship practices
- Initiated collaboration with the University of Maryland College of Education, Honors College, and Terrapin Teachers program to improve mentorship model and offer increased service opportunities to undergraduate students
- Oversaw curriculum development based on Common Core math, biology, and physics
- *Awarded $1250 from the Maryland Space Business Roundtable for a Field Trip to the National Air and Space Museum for middle schoolers*
- *Winner of the University of Maryland's 2019 Do Good Challenge ($5000 award)*

College of Computer, Math, and Natural Sciences, Teaching Assistant Aug-Dec 2017
10 Hours/Week

- Facilitated active and collaborative learning in an Honors Cell Biology and Physiology course
- Fostered open academic and career discussions at weekly office hours
- Graded and provided feedback on homework assignments and exams

Community Service:

Petey Greene Program, Tutor June 2018-Aug 2019

- Taught GED Exam math and science concepts to incarcerated adults at the Howard County Detention Center
- Developed individualized learning programs to support student growth
- Taught English as a Second Language to incarcerated youth at the Prince George's County Correctional Facility

Provost's Committee on Living and Learning Programs Mar 2017-May 2019
Student Representative

- Evaluated the strategic plans of living and learning programs at the University of Maryland
- Collaborated with University professors and administrative staff to generate constructive feedback for each program via a comprehensive report
- *Selected as one of two students to represent University student body*

Awards and Honors:

Phi Beta Kappa Membership	May 2019
University of Maryland Do Good Graduate Award	May 2019
University of Maryland Honors College Research Grant	Oct 2018
Irv and Micki Goldstein Scholarship Award	Mar 2018
National Institute of Mental Health Summer Fellowship	2017 & 2018
Maryland Leadership Conference Sponsorship	Oct 2016
Dean's Scholarship, University of Maryland	2016/2017
Primannum Honor Society New Member Scholarship	Apr 2016
Undergraduate Summer Research, Travel, and Educational Enrichment Award	Mar 2016
St. Baldrick's Foundation Summer Fellow Award	Jan 2016
Best University Honors Seminar Research Paper:	Dec 2015
"Thinking Outside the Cell: Rehabilitating America's Youth"	
Dean's Scholarship, University of Maryland	2015/2016

Publications

JA Buck, M Coon, W Zhang, ER Glasper, and KH Wang. "Developmental changes and interspecies differences of dopamine neuron systems in rodents." *Under Review*

Invited Talks

"Mapping the Mouse Brain: An Investigation of Dopamine Circuitry." University of Maryland Integrated Life Sciences Seminar Series. (College Park, MD) April 8, 2019

Presentations:

JA Buck, ER Glasper, and KH Wang. "Mapping the Mouse Brain: An Investigation of Dopamine Circuitry." Organization for the Study of Sex Differences (Washington, DC) May 5, 2019

JA Buck, W Zhang, and KH Wang. "Mapping the Mouse Brain: An Investigation of Dopamine Circuitry." American Association for the Advancement of Science (Washington, DC) February 16, 2019
Brain and Behavior Honorable Mention

JA Buck, W Zhang, and KH Wang. "Mapping the Mouse Brain: An Investigation of Dopamine Circuitry." Bioscience Day (College Park, MD). November 13, 2018
Best Neuroscience and Cognitive Science Poster

JA Buck, W Zhang, and KH Wang. "Mapping the Mouse Brain: An Investigation of Dopamine Circuitry." Alliance for Diversity in Science and Engineering (College Park, MD). September 29, 2018

JA Buck, W Zhang, and KH Wang. "The Impact of Rewarding Experiences on Dopamine Circuitry in the Mouse Brain" (Bethesda, Maryland). August 9, 2018

JA Buck and B Badiei "Charles Carroll Science Club Budget Proposal" (Montgomery Space Business Roundtable, Lanham, MD). January 31, 2018

JA Buck, M Coon, T Usdin, KH Wang "Optimization of Histological Methods to Examine Neurological Projections in the Mouse Brain" (Bethesda, Maryland). August 11, 2017

JA Buck, PM Vallone, and J Harenza. "Investigation of reference sequence and variant caller effects on single nucleotide polymorphism (SNP) calls made across six BK virus genotypes." (Gaithersburg, Maryland). August 4, 2015
Best Poster Presentation Finalist

JA Buck, PM Vallone, and J Harenza. "Design and Optimization of Primer and Probe Sets for BK Virus Candidate SRM 2365"(Gaithersburg, Maryland). August 5, 2014
Best Poster Presentation Finalist

J Harenza, **JA Buck**, L Cook, and PM Vallone. "An update on a candidate BK virus DNA standard reference material". American Association for Clinical Chemistry (Chicago, Illinois). July 29, 2014