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Dear search committee members,

I am writing to apply for the position of Assistant Professor in the Neuroscience program at Lafayette College. I am thrilled to have an opportunity to apply to this position, as I feel it is an excellent fit with my teaching and research interests, skills, and experience. I am currently a postdoctoral fellow at The Lieber Institute for Brain Development and Johns Hopkins University School of Medicine, working with Dr. Keri Martinowich. I have previously completed my Ph.D. in Behavioral Neuroscience with Dr. Amy Griffin at The University of Delaware. As a behavioral neuroscientist, I have spent the past decade performing research aimed toward understanding how the brain drives learning, memory, attention, and decision making at the systems and molecular levels. I have done this research alongside many talented undergraduate and post-baccalaureate research assistants. These research assistants are co-authors on **11 of my 15 total submitted and peer-reviewed publications**, and all of my conference abstracts. My track record of performing high-quality, undergraduate-driven research using both experimental and computational approaches, combined with my versatility as an instructor in the classroom, are why I feel I would be an excellent fit at Lafayette.

As an educator, have put my teaching philosophies into practice many times as a graduate student at the University of Delaware, and a post-doc at The Johns Hopkins University School of Medicine. I have taught in a wide range of courses, including Introductory Psychology, Research Methods, Brain and Behavior, Neurobiology, Introduction to Biology, and advanced seminars in Neurophysiology and Spatial Cognition. Throughout my time as an instructor in these courses, I have engaged students through active learning and flipped classrooms, and have received overwhelmingly positive course evaluations from my pupils (please see Teaching Statement for more detail). I have complimented my classroom exposure with a range of pedagogical training, including a competitive collaborative teaching fellowship and certificate of completion from The Johns Hopkins Teaching Academy. Given my experience as a teaching assistant, guest lecturer, and instructor of record for Introduction to Neuroscience, I would be delighted to teach foundational courses in Neuroscience at Lafayette, including Introduction to Neuroscience, Neurobiology, Advanced Neuroscience, and Physiological Psychology. I also have a passion for teaching classes centered on experimental design and statistics, which is complimented by my experience as an instructor of record for Measurement and Statistics, as well as my participation in a teaching practicum centered on Research Methods as a graduate student. In light of these experiences, I would also value the opportunity to lead classes such as Design and Analysis, and Quantitative Methods in Psychology at Lafayette. I would additionally welcome the opportunity to design courses in my area of expertise that would compliment existing courses in the department, such as a class centered on current techniques in neuroscience research, a seminar on the neurobiology of learning and memory, or an advanced course that focuses on computational approaches to analyzing neural data.

In terms of research, my program examines how the brain controls cognition and behavior. I am specifically *focused on understanding how neurons in the brain encode distinct components of decision making, such as attention and working memory.* My research program will address several important questions regarding brain function during decision making:

1) Are attention and memory networks in the brain distinct, or overlapping?
2) How does biological sex affect these networks during decision making?
3) Do cells in these networks share common gene expression programs that differentiate them from other cells in the brain?

I have begun to address these questions as a graduate student and post-doc by using a variety of techniques, including *in vivo* electrophysiology, calcium imaging, and computational modeling with associated neural data (e.g., generalized linear modeling and mixed linear effects modeling). For example, I have demonstrated how synchronous activity between multiple brain regions (including the prefrontal cortex, hippocampus, thalamus, and locus coeruleus) predicts behavior during decision making. As a post-doc, I have complimented these findings by demonstrating that interactions between these brain regions are associated with enrichment of specific genes, including brain-derived neurotrophic factor (*Bdnf*) and apolipoprotein E (*Apoe*). My future research will compliment and extend these findings by 1) identifying *which* neurons support attention and memory, and what the molecular identities of these neurons are, and 2) using translationally-relevant touchscreen-based tasks commonly used in humans to characterize how these neurons contribute to decision making. To answer these questions, my research program will employ a range of techniques that are

implementable at a liberal arts college, and able to be performed completely by undergraduates (please see Research Statement for more detail). My research track record includes 12 peer-reviewed publications (7 as first author); numerous awards, honors, conference abstracts, and invited speaking engagements; and grants from the National Institutes of Mental Health (NIMH) and the Brain and Behavior Research Foundation. In particular, my NARSAD Young Investigator Award from the Brain and Behavior Research Foundation allows me to purchase equipment for my future laboratory as an independent investigator. Throughout all of my time as a scientist, I have mentored undergraduate and post-baccalaureate students to perform research independently, helped students prepare scientific manuscripts and posters, overseen honors theses, and helped students prepare graduate school applications. I believe that my ability to engage students in high-quality, independent research projects is a strength that I will bring to your department at Lafayette.

In addition to teaching in the classroom and laboratory, I have also mentored young scientists-to-be from underrepresented groups in STEM. I have done this as a scientist pen pal to middle school students, as a presenter and teacher to high school students, and as a primary adviser to post-baccalaureate researchers in the PREP program at Johns Hopkins. My philosophy is that ***anybody*** can be a scientist, and my goal is to engage and mentor any student that shows a willingness to put in effort and learn. As such, I am dedicated to enhancing and maintaining diversity in my research program, as well as in the classroom. I plan to achieve this goal in my laboratory by actively recruiting students from underrepresented backgrounds to work on research projects, standardizing the application process for my lab, and keeping discussions about structural racism in science at the forefront of our conversations during lab meetings. In the classroom, I am dedicated to following best practices for inclusive teaching, including presenting course material in a variety of formats (something that I am actively doing to prepare asynchronous components for an Introduction to Neuroscience course at Hopkins), making grading rubrics available to students, and introducing research topics and papers from diverse groups of scientists and authors.

I include in this application package my *curriculum vitae,* and statements regarding my research and teaching interests. Letters of reference are forthcoming from Drs. Keri Martinowich, Amy Griffin, and Shawn Gallagher.

Thank you for your time, and should you require any additional information, please do not hesitate to contact me. I am looking forward to the opportunity to meet with the members of the search committee to demonstrate further how I could contribute to the vibrant teaching and research environment in your department. As a Pennsylvania native, I am very familiar with Lafayette's reputation as an institution that values excellence in both teaching and research. This kind of setting is exactly the backdrop in which I would like to grow as a teacher and scholar in neuroscience.

Sincerely,

Henry L. Hallock, Ph.D.