



To Whom It May Concern,

I am writing to express my interest in joining your department as an Assistant Professor. I am a developmental neurobiologist and epigeneticist with an interdisciplinary background in longitudinal and high-dimensional analyses of mental health. I have specific expertise and training in animal models, biostatistics, computational biology (including machine learning), developmental neuroscience, epigenomics, genetics, and molecular biology and psychiatry.

My research investigates the link between early-life exposures and mental health trajectories across development, with an emphasis on the longitudinal dynamics of epigenetic mechanisms and brain health. Specifically, I aim to determine *when* and *how* early-life stressors influence mental health, integrating evidence from population cohorts to dissect the genetic and socio-biological mechanisms underlying health and disease. Ultimately, my goal is to identify the genetic and environmental foundations of psychiatric disease, as well as modifiable risk factors, biomarkers, and treatments that may help prevent mental illness across the life course.

### **Research training and accomplishments**

I received my PhD in Medical Genetics at the University of British Columbia under the supervision of Drs. Michael Kobor and Joanne Weinberg, where my doctoral work focused on identifying genetic and epigenetic signatures of prenatal alcohol exposure. After my PhD, I joined the Department of Computational Biology at Cornell University, training in computational biology and statistical genetics as a postdoctoral fellow working with Drs. Alon Keinan and Andrew G. Clark. Unfortunately, my time at Cornell was cut short due to unforeseen medical issues experienced by my primary mentor, Dr. Keinan. Despite the setback of finding a new postdoctoral training position and ensuing publication gap, I remained steadfast in my long-term goal of leading my own research group, pivoting towards new opportunities at Massachusetts General Hospital (MGH). There, I trained with Dr. Erin Dunn, a social and psychiatric epidemiologist and expert on sensitive periods in development and depression, with secondary mentorship from Dr. Kerry Ressler, a world leader in molecular and translational psychiatry. My current research examines the social and genetic determinants of mental health across development, with a focus on epigenetic mechanisms that mediate and predict depression.

These experiences have positioned me to be a productive and collaborative member of the scientific community. I have an excellent track-record investigating the impact of adverse prenatal and childhood exposures on brain health and development across the life course. I have published 22 peer-reviewed articles and 3 book chapters or editorials and written 5 manuscripts in revisions or available as preprints (17 as first author). I have received several research awards for my work, including oral and poster presentation awards at the local and international levels and research fellowships. I have also helped conceptualize and submit several successful CIHR and NIH grants, experiences that have prepared me to secure future funding. Of note, I am the Principal Investigator on a pending R21 from the National Institute of Alcoholism and Alcohol Abuse (NIAAA), as well as a CIHR research fellowship that is currently under review. Furthermore, my interdisciplinary research has helped me establish a wide network of collaborators across Canada, the USA, and internationally. These connections will not only enrich my research program and position me as a leader of team science efforts, but also create opportunities for novel and exciting research on the socio-biological and molecular foundations of human health and disease.

## **Teaching and leadership activities**

I am confident I will meet the high standards in teaching and leadership set by the university. I have received extensive training in course design and pedagogical approaches through the University of British Columbia (UBC) and Cornell University, which gave me the tools to be an effective teacher and mentor to students at all levels. I applied these skills in two courses at UBC, as well as a recent class on sensitive periods as part of the Beacon Hill Seminars in Boston. I have also mentored students at all levels, including 23 trainees who have pursued successful careers in academia and industry. Of note, I received a 2022 Outstanding Research Mentor Award from the MGH Center for Faculty Development, which honored two of the 1500+ postdocs at MGH for their outstanding contributions in helping graduate students and staff advance their skills and provide support with scholarly activities.

I am also keen to contribute to leadership and service positions, as I take great pride in advocating for graduate students and postdoctoral trainees at institutional levels. For instance, I was heavily involved in the Kid's Brain Health Network during my doctoral studies, acting as chair of the Trainee Advisory Committee and leading initiatives to expand the network's training activities. More recently, I became a Vice-Chair of the MGH Postdoc Association, which provides resources for training and advocacy to the postdoctoral community at MGH. Together, these experiences have enriched my skills as a mentor and leader, which will serve me well in future teaching, mentoring, and leadership opportunities.

## **Diversity, equity, and inclusion**

I am committed to the collective goals of diversity, equity, and inclusion of the academic community and have built towards these goals across multiple areas of my scientific and academic career. I have mentored several students from minoritized groups, including women of colour and first-generation college students. Being a mentor to these students taught me important lessons in being a fair and equitable mentor and how to actively listen and engage with students' lived experiences to support their personal and professional growth. Importantly, my mentees have helped me recognize the importance of creating diverse, equitable, and inclusive environments that foster collaboration and creativity across different perspectives and experiences. Beyond my responsibilities as a colleague and mentor, I believe that integrating different perspectives and research populations is necessary to broaden my work's impact and reach. As such, I am fostering new collaborations with more diverse and representative population cohorts to improve the reliability and applicability of my research program.

In sum, my experience in population studies of early-life exposures and life-long health trajectories will complement and expand the expertise of the outstanding researchers in your department, whom I believe will be excellent partners in my future research career.

Thank you for your consideration,

Alexandre Lussier, PhD  
Postdoctoral Research Fellow  
Center for Genomic Medicine, Massachusetts General Hospital  
Department of Psychiatry, Harvard Medical School  
Broad Institute of Harvard and MIT