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THE UNIVERSITY OF BRITISH COLUMBIA

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Dear Dept. of Statistics and Master of Data Science Search Committee,

I am writing to apply for the position of tenure-track instructor-1 in the Department of Statistics at University of British Columbia (UBC). I am aware and excited that this position will in large part be working on the delivery and development of the Master of Data Science (MDS) program, and will also involve working on other programs in the Statistics Department. This opportunity was brought to my attention by Dr. Paul Gustafson, Professor of Statistics and Co-Director of the MDS program. Currently, I am a Teaching and Learning Fellow in the Department of Statistics at UBC, where my primary roles are to teach, develop curriculum materials, coordinate and administer the MDS program. Beyond this, I am actively involved in teaching and developing data science curricula through my affiliations and collaborations with Software Carpentry, the Data Intensive Biology Lab at UC Davis, and the UBC R study group. Additionally, I actively work and engage in Data Science research problems through collaborations with several local biology and genomics labs (Moerman, Leroux & Rankin).

This tenure-track instructor position in the Department of Statistics and MDS really excites me because I am passionate about teaching and because Data Science is a critically important, emerging interdisciplinary field, yet few structured educational programs are in place to support training for it. I have thoroughly enjoyed my past involvement breaking ground with this program, and would love to continue working on its future development and delivery in a more permanent role. While working as a Teaching Fellow on the MDS program, I have come to be especially impressed by the collaboration between the Departments of Statistics and Computer Science - they both have provided amazing support for the development and implementation of this program. I have also enjoyed the program's forward-thinking approach to pedagogy, in particular the module-based course format, the use of Github as a classroom management system and the final capstone projects. I want to continue to be a part of further building and bettering this program with the aim to make it the best Master of Data Science program in North America. Beyond my role in the Statistics Department with the MDS program, I have also worked with the Applied Statistics and Data Science (ASDa) group to generate and continue collaborations with outside partners (e.g., Coast Mountain Bus Company), as well as to develop teaching material for their statistics workshops. I have also enjoyed this and I am keen to continue to work with ASDa to expand its capacity and reach inside and outside of UBC.

I believe I am an ideal candidate for this position because of my passion for Data Science, teaching and learning. Furthermore, I have 12 years of teaching experience in the fields of Data and Computational Science, Biology and Psychology, as well as 7 years of practical Data Science experience from my roles as a PhD student, postdoc, and most recently as a Teaching and Learning Fellow for the MDS program. I have also forged strong connections to industry through conferences, Software and Data Carpentry, Twitter, and my work developing the 2017 MDS Capstone projects. These connections are especially relevant given that MDS is a professional program, and most current and prospective MDS students have indicated that working as a Data Scientist in industry is their top priority after they finish the program. With respect to the content of the MDS program, I am experienced in all the computational tools that are currently taught (R, Python, Unix Shell, Git, Github, AWS, Docker, etc), and have experience applying the vast majority of the statistical tools taught in the program. I am also experienced with using

Github as a classroom management system. I first did this when I taught Computation in the Physical Sciences at Quest University, and have used this, in collaboration with Mike Gelbart, to manage the grading, assignments, instructor and student communications and peer-review for the first MDS cohort.

Although I was not originally trained as a statistician, I have done a tremendous amount of self-guided learning in this field and acted as the in-house statistics consultant for the lab where I performed my postdoctoral research. I have taken several elective statistics courses, including "High-Dimensional Omics Data" and "Pathway & Network Analysis for Omics" at the Summer Institute for Statistical Genetics at the University of Washington, as well as Trevor Hastie's and Rob Tibshirani's online course "Introduction to Statistical Learning". During my postdoc, I also regularly attended and presented at the [Statistical Genetics Working Group](#) in the Department of Statistics and Actuarial Science at Simon Fraser University. My self guided learning has included reading "[The Handbook of Biological Statistics](#)" and "[An Introduction to Statistical Learning](#)". Additionally, I have applied a wide variety of statistical tools and analyses in my work and discussed these tools and analyses with statisticians and biologists on a regular basis. In support of my skills and knowledge of applied statistics, I would like to direct your attention to a recent research project, in which I performed genome-wide rare-variant association analysis using the Sequence Kernel Association Test (SKAT). This research is available as a published manuscript [here](#), and all associated code is available in [this Github repository](#). For this project I planned and carried out all statistical and computational analyses.

To demonstrate that I am capable of developing curriculum in the area of statistics, I would like to share two example lesson plans I have previously developed. The first is aimed at undergraduates and teaches sampling distributions (see lesson plan [here](#)), and the second was developed for ASDa and is aimed at non-statistics graduate students and postdocs and teaches experimental design and analysis of variance (ANOVA) in R (see materials [here](#)). Further evidence of my teaching and curriculum development in Statistics are the labs and quizzes that I developed for Statistical Inference and Computation I and Regression I MDS courses. For the MDS program, I would be happy to teach the courses I have previously taught (Programming for Data Science, Computing Platforms for Data Science and Data Science Workflows) as well as the Statistical Inference and Computation I, Data Wrangling, Data Visualization I and Communication and Argumentation courses. Of the core undergraduate and graduate courses currently offered by the UBC Statistics department, I would be most comfortable teaching: *i*) STAT 200: Elementary Statistics for Applications, *ii*) STAT 545A: Exploratory Data Analysis, *iii*) STAT 547M: Topics in Statistics, and *iv*) STAT 540: Statistical Methods for High Dimensional Biology.

In closing, I would like to emphasize that my non-traditional statistics training is an advantage for this particular position, due to its close relationship with the Master of Data Science program. Given that the majority of my statistics learning happened after my formal biology and neuroscience degrees, I can very much relate to the Master of Data Science students, as most of them are entering Data Science and Statistics from other backgrounds as well. For example, I can anticipate what parts of the MDS statistics content will be most challenging or confusing for them. Additionally, my understanding of statistics is firmly tied to practical applications which is key for the UBC MDS students as the programs goal so far has been to teach responsible and practical use of Statistics and Data Science methods.

Thank-you for considering me for this position. In addition to this letter, please find my [curriculum vitae](#), [statement of vision for Data Science education](#) and [statement of teaching and training philosophy](#) attached to this application.

Sincerely,

Tiffany A. Timbers, Ph.D.