

## **Diversity statement- Dr. Christie Bahlai**

I am deeply committed to fostering an environment of diversity and inclusivity in my research and teaching. I am particularly interested in fostering quantitative skills in women, a traditionally male-dominated domain, and promoting open science practices, to encourage accessibility to research regardless of socioeconomic status or geographical location.

I am an active member of the Open Science Community, and recently have been recognized for my efforts by the receipt of a Mozilla Fellowship for Science. One of the most compelling things about working with the Mozilla community is their frank successes in broadening participation. I recently attended a Mozilla conference and an academic conference back-to-back and the contrast was sharp, making it clear that the set of people who are professional scientists differ demographically from those who are interested in participating in sciences. These differences are reinforced from within: at the academic conference, a professional development seminar advised students to take unpaid internships and dress 'conservatively,' advice that directly excludes or alienates students from poorer backgrounds and those who do not conform to western aesthetic ideals. This is a massive loss to academia, because it is clear to me that there are a great many people who do not 'look' like scientists with high energy, new, exciting ideas, and skillsets that many academics do not typically possess. It is absolutely essential to the future of science to work to foster diversity in academia by both working to counter these factors that push people out, while opening up our practice to engage audiences we have not traditionally been reaching.

I have been working the past several years on projects designed to retain existing diversity in academia, and to improve practices to provide avenues to broader participation. I am involved with Software Carpentry and Data Carpentry, non-profit organizations originating with people affiliated with the Mozilla Science Lab, devoted to teaching computing and data management skills to all levels of scientists. Our goal is to demystify and provide a non-judgmental environment for all scientists to improve quantitative and software development skills, improve access to training, and make science more efficient. We use certain pedagogical techniques to ensure we meet these goals. For instance, workshops will be targeted at specific groups: I recently taught a workshop at the University of Michigan for a Women in Science and Engineering group. While teaching, we use the 'sticky note' technique to help break down the barriers of students not socialized to ask for help, and foster co-operative learning. This technique promotes inclusivity by lowering a student's threshold for asking questions or signaling confusion: each student is issued one blue/green, and one red/pink sticky note. When working on a problem in class, students will signal they've completed the problem or their problem solving is going well by displaying the blue note, if they're struggling, they are asked to display the red note. This enables the instructor to very quickly intervene and offer support to the students that are struggling, assess the proportion of students that are struggling, and identify key points that may have been overlooked in the lesson in real time. It also provides a slight social pressure for students who are struggling to engage and follow along while help is available: often, peers noting that a neighbor is struggling will rush in to help.

In graduate mentoring, promoting inclusivity means understanding the needs of the student. I recently had the privilege to mentor a brilliant young woman from a developing country while she was writing her MS thesis. Her challenges were very different from the other students I was mentoring at the time: she struggled to find an assertive voice in her writing, and her training in quantitative techniques used software that would not be available to her when she returned to her home country, limiting her employment opportunities. We worked very closely together to translate

her analysis to free, open-source software, and worked through her writing multiple times to ensure it best advocated her scientific work.

Finally, using an open science approach in my own research is a key aspect of promoting diversity and inclusivity within my research program, because it makes the entry points to science much more apparent to the greater community. I make data and analysis scripts publicly available for the majority of my work, and publish in open access journals wherever feasible. I am an active member of the open science community- In addition to being a Mozilla Fellow for Science alumna, I sit on the Open Science steering committee for the International Network of Next Generation Ecologists, and the Information Management Committee at Kellogg Biological Station Long Term Ecological Research site. I maintain a blog about open data management at <https://practicaldatamanagement.wordpress.com/> designed to make data science friendly, accessible and non-exclusionary. I believe making science open helps us meaningfully build on the work of others, and to remove barriers to ideas and techniques to anyone interested.