

Statement on Equity, Diversity and Inclusion

For a statement on equity, diversity, and inclusion, I do not know the best answers. In all cases of communicating with others, I try to keep an open mind and understand that the world and its inhabitants are vastly complex, yet intrinsically worthwhile. I am always looking for opportunities to grow and learn more about how to support others effectively with equity and remove barriers impeding success. Below are a collection of my thoughts, experiences and literature references.

Diversity, Equity and Inclusion

Diversity makes us stronger. Diverse backgrounds and diverse ideas lead to innovative solutions for our most challenging problems. Everyone benefits from diversity.

Equity is the remediation of individual limiting circumstances to enable everyone to succeed. Equity is adaptable. Equity is challenging and difficult yet essential and valuable.

Inclusion recognizes, facilitates, and empowers everyone. Inclusion is not tokenism, but is natural. Inclusion brings down boundaries and searches for everyone's voice.

Teaching

Incorporating equity and inclusion into the classroom can be challenging due to large class sizes and abbreviated class times. Fortunately, there are large compendiums of inclusive teaching practices¹⁻² to reference. In general, in my classroom, all students should feel respected and encouraged to pose ideas and participate. For traditional lecture-type courses, I intend to employ active learning tasks in my classes, because they support engagement with all students³. I would further like to videotape a few lectures per semester of my teaching and try to identify and address any evidence of biases such as microaggressions and micro-affirmations. Where possible, I would like to schedule short office-hour 'interviews' with students to encourage them to come to office hours for help and further get to know the students. During these office hours, I would also like to inform students of internal and external research and career opportunities. Office hour use is beneficial for students but will also help me tailor the course to meet students needs⁴. There are other small things I can do to facilitate inclusive learning, such as putting perspective on grading: e.g. telling students that I have very high standards but I know they can meet them⁵. Lastly, I want to mention that I welcome and appreciate feedback from students and other faculty, and although there is no perfect teacher, I look forward to working to make my classroom successful for all.

Decision-Making Course: Racial and ethnic biases strongly persist in the medical field, often to the detriment of all parties involved⁶⁻⁷. My experience is that discussing these biases in the context of a medical and engineering decision-making course is a decent way of both exposing students to the biases that they will face in their careers and examining how to address them when they occur. I took a medical decision making course in graduate school taught by Dr. Mia Markey at UT Austin, and I am very interested in teaching a similar course in my coursework. Students likely already know their own biases (if not, they will in my course), and they might be familiar working with the biases of colleagues, but students probably haven't thought through how these biases affect the day-to-day decisions they

will make in their careers. I am very interested in this last area, and although I have several ideas how to present these biases to students, I am admittedly naïve and look forward to continued exploration of this topic to help students properly address these biases.

Research

I will uphold the principles of equity and inclusion in my research career. Since research encompasses a broad scope, I must be explicit in my arguments. Probably the most important factor in fostering equity in my research is to instill my research lab environment on day 1 with equity and inclusion. This is where I think lab leadership really becomes important. I will not be shy, but encourage and facilitate open discussion with lab members about bias and why equity and diversity are important. I intend to help my lab members develop their own research and career plan through resources such as myIDP. I will then support all my lab members and ensure their projects are progressing according to their pre-developed plan. I intend to support all lab members to attend at least one conference, and will encourage them to seek outside industry internships as well. I will be flexible with at-work hours and understanding of family time commitments such as child and elder care. In addition, I must advertise my lab recruitments broadly and openly, not just sharing within my network, but going through online job boards as well. This will facilitate a broad range of applicants with diverse backgrounds, not just those internal to my network. Finally, the name of my research lab will be topical and not based on my name to ensure that my lab members feel respected as colleagues and not subordinates.

I must also be equitable and inclusive in the research I pursue. This is relevant in my research particularly when different alleles correlate with different ethnic cohorts, such as in immunology with different HLA alleles. In the past, I have addressed this by exploring a wide swath of HLA alleles to detect any anomalous behavior to the HLA allele implicated in disease phenotype. I must also be extremely mindful of any potential machine learning research I conduct on patient images. I must ensure that the image training set is extensively diverse and that the algorithm is not biased toward any ethnicity. There is a great deal of current discussion on bias in the machine learning field⁶, and I must ensure that any models I develop are equitable.

Mentorship

Teaching and mentorship are two reasons I am excited to re-enter academia, but these roles, particularly mentorship, hold great responsibility and potential to foster equity in future scientists and philosophy. *Nature* has highlighted several general attributes of successful mentors, such as accessibility and optimism⁸. Beyond these, however, women and under represented minorities are known to have difficulty finding faculty mentors in college and receiving adequate career, network, and sponsorship support⁹⁻¹⁰. In order to ensure everyone's success, it is important to provide vocational research support for these groups, such as conference travel and introduction to colleagues. More specifically, I think it is important to pre-emptively reach out to all students and ensure their work and careers are progressing according to a pre-developed plan such as myIDP. Too often in our world, the squeaky wheel gets the grease, while the quiet wheels are left struggling with career bureaucracies and underappreciated efforts. Reaching out regularly and providing support to those who wouldn't normally seek support is a good way to catch problems and aid mentee success.

Mentees: While I was a graduate student, I mentored five undergraduate research students, four of which were visible minorities. Three of these students were very successful, both in completing their research projects and landing favorable industry positions after graduating. The other two students unfortunately, were not as successful, either not finishing their research project, or struggling to find opportunities after graduating. If I were to do a post-mortem for these students, I realize that one of these students had difficulty getting to campus, which is a hindrance that I wasn't fully aware of at the time. For this student, I now realize that remote mentorship, now so popular due to COVID-19, might have been more favorable, and as a computational researcher is something I could easily do. The second student, fortunately, was able to complete their research project and presented it at an undergraduate research symposium. But they struggled to find work after graduating. Looking back, I admit that I don't know the perfect way to help this student, but I think I should have invested more time after they completed their research. I should have kept in touch with them, maybe with a short email and invitation to drop by the lab, or an offer to look at job documents. These ideas, flexibility for remote mentorship and keeping in touch with mentees after they leave my purview, are concepts that I have learned so far from experience. I intend to continue to evaluate my mentorship in the future and refine my efforts for continual improvement.

Summer Education Programs

During the summer of 2019, I was the director of a summer STEM camp targeting middle school students from underrepresented groups. First off, I loved the experience. It was so much fun, and I think we all had a blast. Second, I learned a great deal, not only in the logistics and management of summer camp organization, but mostly how to positively reach out to middle school students who otherwise would not have had the opportunity for a summer camp. It was particularly enlightening talking with the middle school principals, discussing some of the problems that they faced, and how they selected the students for the summer camp. During the whole summer camp, I thought we were just having fun doing science experiments and exploring new technology. But the principals saw things differently and told me that the structure as well as the academic (and video-game) tie-ins of the camp really helps retain and motivate students in the classroom the following year.

Given my experience, I am a big proponent of summer education programs targeting students who otherwise would not get the opportunity. These types of summer camps require a lot of work and cannot be done with just one person, but require numerous volunteers both to coordinate logistics and to actually run the camp. However, I think the benefits to the students are plural and deep and more than justify our labor. I am very interested in continuing my work in summer education programs targeting underrepresented groups, and I look forward to doing so in an academic setting, which I think has many unique advantages.

References

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