Deconstructing Systemic Bias: Where Biology Ends and Bias Begins
GMS GE 706
Spring 2023
Tuesdays 1:00 pm to 2:50 pm

Course description:
This course will help students explore the relationship between race, ethnicity, ancestry, sex, gender, ability status, and identity. Students will also gain understanding of the fundamentals of human population variation at the genetic level and will demonstrate how this information has been misused in the form of “scientific racism.” These principles will be used to examine the impact of underrepresentation in scientific studies and cases in which scientific racism and bias have caused harm to marginalized groups. To integrate this knowledge, students will debunk misapplication of these concepts in examples of racism and other forms of bias where biological principles are misrepresented.

Course Learning Objectives
By the end of this course, students should be able to:

1. Contrast the biological descriptions of ancestry, sex, disability, and other traits with conflated concepts of race, gender, and traits influenced by systemic inequalities.
2. Apply an understanding of human population genetic variation to inclusion in scientific studies and healthcare practices.
3. Connect the historical context of eugenics to modern practice.
4. Understand the intersectionality of science and policy.
5. Debunk common errors in science communication about these topics.

Course Instructor:
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Grading:
This course will be graded on a pass/fail basis. The intention behind grades in this course is to encourage you to attend each session. Students are asked to attend at least 10 of the 12 core sessions, and completion of the final presentation is also required. This grading allows flexibility for you as a student in cases of emergency, but we ask that students plan to attend all classes as we will build upon prior content.
All reading materials will be posted to Blackboard, and completion of readings prior to classes is essential to participation in class discussions. We expect professionalism and respect for peers during in class discussions.

Illness, Attendance, and Deadlines
We are all delighted to hold classes in person this year for all of our students. However, we also recognize that we are not able to completely eliminate risk to zero, and students/faculty may be exposed in classroom or other environments. To protect the health of our learning community, we ask you to be prudent and isolate yourself if you exhibit any symptoms of illness. We assure you that there will be no penalties for staying home when feeling ill, deadlines can be extended for classroom assignments, and arrangements can be made with respect to discussions. Please keep faculty apprised of your wellness so that we can help you all. We are all in this together!

Student Support
As we continue to live through this pandemic, please know that students are encouraged to keep Dr. Dasgupta informed when situations (related to the pandemic or otherwise) arise that impact your ability to keep up with class. We have many resources to help, some of which are listed on the GMS Student Life and Wellness pages here:
https://www.bumc.bu.edu/gms/student-life/
https://www.bumc.bu.edu/gms/student-life/wellness/

Final project
The final project is designed to give students an opportunity to apply what we have learned to examples of bias in the media or to examples of emerging technologies with the capacity to amplify inequities. Each student team will be able to choose their own topic and will either debunking myths that are propagated by the media or will consider the potential harms of emerging technologies in their presentation. Each presentation will be 10 minutes long.

Boston University and GMS academic conduct codes
https://www.bu.edu/academics/policies/academic-conduct-code/
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| Session 1 | 1. Introduction to Origins of Bias and Humane Genetics, Part I  
Neuroscience of bias, measuring bias, Biology of human populations (race vs. ancestry)  
Project Implicit http://implicit.harvard.edu |
| Session 2 | 2. Humane Genetics, Part II and Racism  
Biology of human populations, the social construction of race  
| Session 3 | 3. Sex and Gender  
Biology of sex determination, women and gender expansive folks in STEM and athletics  
| Session 4 | 4. Pregnancy, Bodily Autonomy, and Reproductive Justice  
Timing of genetic testing relative to reproductive healthcare and emerging restrictions  
| Session 5 | 5. Disability  
Who defines normal, Project Inclusive Genetics, Disability Culture: Achondroplasia, Deafness  
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| Session 6 | **6. What Genetics Doesn’t Fully Explain**  
Sociogenomics, Educational Attainment, Same Sex Behavior |
| Session 7 | **7. Contemporary Eugenics and Its Historical Roots**  
Eugenic philosophy, Genetic Superiority and Protection of the Gene Pool Through Forcible Sterilization, Noninvasive Prenatal Screening |
http://www.eugenicsarchive.org/eugenics/list3.pl  
| Session 8 | **8. Genetics, Privacy, and the Justice System**  
Genetic Information Nondiscrimination Act, Privacy, Genetic Genealogy and Detective Work, Genetics and Police Brutality |
| | The Genetic Information Nondiscrimination Act (GINA).  
https://www.ashg.org/advocacy/gina/  
| Session 9 | **9. Who Gets Left Behind**  
Representation in Studies and in the Workforce, Building Trust |
 Brothers KB, Bennett RL, Cho MK. Taking an antiracist posture in scientific publications in human genetics and genomics. Genet Med. 2021 Jun;23(6):1004-


Session 10 10. Race-Based Medicine
Ancestry and identity, Race Correction in Medicine


Session 11 11. The Future of Genomic Medicine
Preimplantation Genetic Diagnosis and Embryo Selection, CRISPR Babies, Gene Therapy, Economic Ramifications and Access


Session 12 12. Our Shared Responsibilities and Introducing Final Projects
Highlighting the need for scientists to communicate plainly the potential impact of their science and introducing students to the concept of applying their knowledge to debunking information

Session 13 Final Project Team Brainstorming Session

Session 14 Final Project Reading Period

Session 15 Final Presentations