

The Wallace H. Coulter Department of Biomedical  
Engineering  
Climate Study Report (2021)

# Executive Summary

## Background and Charge

The purpose of this study is to understand how our students (undergraduate, graduate, and postdoctoral fellows) experience being a member of the department with respect to their sense of belonging and inclusion. The department is particularly interested in:

- exploring students' peer-to-peer interactions,
- student-faculty interactions in classrooms and research laboratories,
- investigating if students with traditionally excluded identities (e.g., women, underrepresented minorities [URM], LGBT, persons with disabilities) feel included and valued.

## Climate Study Goals

This study focuses on the following two aspects of climate: the 1) **psychological climate**, including students' sense of belonging, perceptions of discrimination, and perceptions of support, and the 2) **behavioral climate**, including opportunities to participate in educational experiences and social interactions (i.e., peer-to-peer and student-to-faculty) inside and outside of the classroom.

## Methodology

The department's Executive Director of Learning and Training, in consultation with the Community, Diversity, and Inclusion committee's Data action team, developed an online survey for undergraduate, graduate and postdoctoral fellows. This survey was administered via Qualtrics during the 2021 spring semester. The quantitative data were analyzed, using independent samples T-tests, for differences within groups for undergraduate and PhD students. Groups explored for all students included gender, race, ethnicity, sexual orientation, and disabilities. In addition, we looked for differences based on first generation and transfer status among undergraduates, and based on citizenship among PhD students.

The qualitative data consisted of student responses to one open-ended survey question: "Do you have any comments you would like to add regarding your feelings of fairness and belonging in BME at Georgia Tech?" The responses to this question were sorted by category of respondent (Undergraduate, Masters, PhD, and Postdoctoral fellow) and by the overall valence (negative, neutral, or positive) of the response with respect to department climate. These comments provide important context for understanding the quantitative data.

We used a concurrent mixed method approach. We gave primacy to the quantitative method, to describe the BME climate with respect to diversity. Qualitative data were collected primarily through open-ended survey items.

## Key Findings (Quantitative Data)

1. Undergraduates who identify with traditionally excluded identities (TEI) report more negative experiences in BME than those who do not. The most significant differences between undergraduate TEI and non-TEI are:
  - a. the experiencing of insensitive remarks
  - b. perceptions of Tech's commitment to diversity
  - c. perceptions of BME's climate
2. Most or all groups of undergraduates:
  - a. Reported significant negative impacts of COVID-19, with the most negative impacts reported by East Asian, LGBT, Disabled students, and Transfer students.
  - b. Had low self-concept fit, a trend that was especially pronounced with Black and LGBT students.
  - c. Exhibited relatively low levels of well-being in several groups, most prominently among Black, LatinX students, and Transfer students.
3. The statistical analysis of the Masters student MS responses, due to the low number of respondents (10), is not provided to protect their confidentiality. Although limited in number, the responses did indicate the students did not feel a sense of belonging to the BME community, and were dissatisfied with the university's commitment to diversity.
4. Some PhD students who identify with TEI have a more negative experience in BME than those who do not. Specifically:
  - a. Female PhD students' perception of Tech's commitment to diversity and of the BME climate are lower than Male students'.
  - b. Black PhD students experience more insensitive remarks than do White students.
  - c. Asian PhD students experience more insensitive remarks than do students who do not identify as Asian.
5. In addition, most or all groups of PhD students:
  - a. Reported significant negative impacts of COVID-19, with the most negative impacts reported by Disabled students.
  - b. Had low self-concept fit.
  - c. Exhibited low social-fit, with this trend most significant among Black and LGBT students.
  - d. Perceived the BME climate as not sufficiently favorable, especially for women, Black, LGBT, and Disabled students.
6. The statistical analysis for postdoctoral associates, due to low numbers of respondents (11), is not provided to protect their confidentiality. However, some trends were evident:
  - a. There is dissatisfaction with the BME climate.
  - b. Some postdoctoral associates are not comfortable with their advisor.
  - c. Some postdoctoral associates indicate low scores on well-being and fit with the BME community.

### **Key Findings (Qualitative Data)**

1. For undergraduate students, 4 themes emerged from responses to the open-ended question about feelings of fairness and belonging. These responses revealed that

students who have traditionally excluded identities (TEI) experience BME very differently than other students. The 4 themes are:

- a. Team projects and group work highlight inequities as ESL (English as a Second Language) students are excluded from leadership roles, active participation, and teaching assistant help.
  - b. BME focuses on diversity, equity, and inclusion but is not perceived by some as being supportive or inclusive.
  - c. BME can be competitive, stressful, and isolating, particularly for students with traditionally excluded identities.
  - d. When peer, TA, and faculty microaggressions occur in classes and labs, students don't know how to report them and are fearful of repercussions.
2. For graduate students, 4 themes emerged from responses to the open-ended question about feelings of fairness and belonging. Analysis of the comments revealed that lab culture and PI experiences define the climate of BME, regardless of what is stated or intended. The 4 themes are:
- a. BME focuses on diversity, equity, and inclusion, but is not perceived by some as being supportive or inclusive.
  - b. BME climate can be alienating and isolating, particularly for master's students and first-year students during the pandemic.
  - c. Lab culture and PI largely define the graduate student experience of BME.
  - d. TEI groups experienced (and did not report) both peer and faculty microaggressions.

## Recommendations

Based on these results, we re-endorse the recommendations made in the 2017 climate study. In addition, we recommend centering those who are *most* marginalized. We recommend the department ask questions such as: 1) how does our curriculum and programming serve those who are *most* marginalized? 2) how can we shift from a model of service *for* to one of service *with* marginalized populations? and 3) how do we think about what is best across vulnerable populations, considering how initiatives or policies affect those with multiple/intersecting TEIs?

Specific recommendations:

- Prioritize improving the Black and LGBT undergraduate student experience.
- Conduct focus groups with undergraduate Black, LGBT, disabled, and transfer students to better understand their experiences in BME, particularly with respect to those that affect their well-being, sense of belonging, self-concept, social-fit, and goal-fit.
- Conduct focus groups with masters' students to gain an understanding of their experience in the Masters MBID programs.
- Conduct focus groups with PhD and postdoctoral students, especially Black, LGBT, and disabled students, to better understand their experiences in BME, particularly with respect to those that affect their well-being, sense of belonging, self-concept, social-fit, and goal-fit.

- Raise awareness and understanding of issues of diversity, equity, and inclusion by integrating these topics within the required curriculum. Some efforts in this regard are in progress; the impact of these efforts should be evaluated and publicly shared.
- More frequently feature diverse faces and voices in department print and social media, and in permanent visual representations in the department's physical spaces.
- Require periodic training / professional development for all students and faculty on microaggressions, upstander intervention, inclusive interpersonal interactions and pedagogies, Title IX, anti-racism approaches, and mental health.
- Establish a system for students to safely share their concerns, including conflicts with their advisor or instructors or unjust events they've observed, or been subject to, in BME spaces.
- Offer more social events and/or seminar series to build community, particularly among PhD and postdoctoral students
- Increase access and participation of undergraduate TEI students in research labs
- Consult and partner with external campus experts such as CEED to lead programming or assist in conceptualization and executing steps to promote inclusion of TEI
- Increase the representation of TEI in the faculty.
- Administer a survey of the climate on an annual basis in a way that minimizes the burden to respondents and keeps the database updated and relevant. Administering portions of the survey annually will increase the ability for the department to respond in a flexible and timely manner.
- Raise the BME community's awareness and understanding of the CD&I Committee; who they are, how to get involved, what actions they are taking.