Expanding Undergraduate Success in STEM (EUSS)
Conference Summary 2017

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For 26 years, the Biology Scholars Program (BSP) has helped undergraduates who are passionate about science succeed in biology at UC Berkeley. Uniquely, the nationally recognized program has long challenged the "by the numbers" popular view (e.g., SATs, GPAs) as good predictors of student success. Instead, the BSP continues to take a strength-based, student-centered approach focused on developing talent and potential. As a result, to date the BSP has successfully generated 3500 diverse undergraduate scientific leaders, many of whom are from from low-income, first-to-college, and historically marginalized groups.

Can the "BSP approach" be scaled and replicated to help address chronic underrepresentation in our STEM majors? The **3rd Annual Howard Hughes Medical Institute (HHMI) funded Expanding Undergraduate Success in STEM Conference (EUSS)** convened on December 5, 2017 to explore this question.

Conference Speakers

- Dr. John Matsui: *Dr. John Matsui is Director and Co-founder of the Biology Scholars Program at UC Berkeley.* He presented a historical overview of the BSP program, discussed future directions, and led a conference participant exercise rooted in 'The BSP Way' inventory to student success.

- Dr. Kelly Mack: *Dr. Kelly Mack is Vice President for Undergraduate STEM Education at the Association of American Colleges and Universities.* She presented the Teaching to Increase Diversity and Equity in STEM, a national faculty professional development initiative aimed at improving culturally responsive teaching, and increasing the learning outcomes and retention of groups historically underrepresented in STEM.

- Dr. Mica Estrada: *Dr. Mica Estrada is Assistant Professor in the Department of Social and Behavioral Sciences and the Institute of Health and Aging at the University of California, San Francisco. Dr. Estrada also serves as the researcher and evaluator for the BSP program*. She presented research data on why BSP works, including aspects related to BSP's student advising, mentoring, and teaching practices.

Activity Highlights

- BSP Student Panel: Conference participants heard from BSP students, including their perspectives and reactions in response to four quotes as related to their experience in STEM at UC Berkeley: (1) "I teach science, I don't teach students." *-Faculty member on teaching.* (2) "This is science, leave your culture at the door." *-PI to an African-American BSP student entering his lab.* (3) "You may like science, but science doesn't like you." *-Staff advisor to a BSP student who received a "C" in Chem 1A and 3A.* (4) "If we'd admit the right students there'd be no problem." *-Faculty member on underrepresentation in STEM.* Dr. Estrada facilitated the discussion and Q&A.

- 'The BSP Way' Inventory: Conference participants were introduced to The BSP Way Inventory -- BSP's unique student-centered approach to programming. The Inventory was provided to conference participants in a worksheet format. Participants were asked to assess their immediate workplace context (e.g., office, department, program, classroom) utilizing the The BSP Way Inventory.

- Breakout Groups: Post Inventory exercise, conference participants self-organized into three groups: mentors, instructors, and advisors. Participants discussed the value(s) versus the feasibility of working with students in their immediate workplace context based on the 'BSP Way.'

Key Takeaways

The following takeaways emerged as a result of aggregating the advising, mentoring, and instructional/teaching conference breakout groups. Each breakout group focused on debriefing and discussing The BSP Way Inventory exercise, described above.

Target Strategies to Improve Practice Around Constraints

- Having limited time was identified as a common challenge across the advising, mentoring, and instructional groups. Participants suggested that strategies on how to improve practice that are modeled after 'The BSP Way' should be targeted around the realities of "limited time," as well as limited bandwidth, high workload, and limited support or resources. Participants believed that addressing these challenges would help facilitate concept to reality.

Improve Faculty-Advisor-Student Cross-Communication

- A strong desire existed to create a bi/multi-directional communication mechanisms to help inform mentoring, advising, and instructional practice. For instance, advisors expressed wanting to hear from faculty and from faculty advisors; faculty expressed wanting to hear from students to improve instruction; faculty, mentors, and advisors called for greater student involvement to receive timely input, feedback, and practical

solutions for new or persistent challenges related to mentoring, advising, and teaching/learning.

Institutional Transformation

Conference participants expressed a desire to work toward institutionalizing improved practice(s) across mentoring, teaching, and advising. Specifically, participants voiced that addressing culture, consistency, and recognition at multiple institutional levels are critical to successfully adapt The BSP Way Inventory, campus-wide. The text below captures participants' sentiments:

- *Culture*
    - Address cultural (and structural) constraints, including attitudes, what is valued, reward structures, and institutional support. Conference participants agreed that research university culture is a barrier to improving teaching, mentoring, and advising practices. Moreover, the lack of dis/incentives to improve teaching and mentoring does not lend itself easily to spend effort in these areas.

- *Consistency*
    - Consistent training and access to resources are key. For example, it is essential to consistently offer developmental opportunities to improve mentoring, teaching, and advising in order to keep momentum going, and to impact short-term as well as long-term change. "Life is not a conference."

- *Multiple Institutional Levels*
    - Once size may not fit all. Participants noted the importance of keeping in mind that solutions to challenges may differ depending on the "level" of focus (e.g., individual vs. course vs. department etc). However, all of it feeds into overall change.

In addition to the 2017 EUSS Conference, Dr. John Matsui initiated three Working Groups (Advising,Teaching, and Mentoring) consisting of campus faculty, post-docs, graduate students, and staff to assist in developing a "blueprint" for a comprehensive, developmental program of trainings, workshops, and presentations. The Working Groups met over a one-year period leading up to the 2017 EUSS Conference and directly informed the development and topical foci of this year's Conference.

Next Steps

The Biology Scholars Program will develop a series of workshops, trainings, and speaker events based on areas of interest expressed by EUSS Conference participants and Working Groups. The event series will run in Fall 2018, Spring 2019, and Summer 2019.