Project Title Understanding and Addressing STEM Inequalities Speaker Series
Project Manager Irenee Beattie
Project Manager Email Addressibeattie@ucmerced.edu

What are you proposing to do and how will you do it?
We propose initiating a campus-wide speaker series aimed at understanding and addressing inequalities in STEM (Science, Technology, Engineering, and Math) fields. Of particular focus is the underrepresentation and/or marginalization of undergraduate students, graduate students, and faculty by gender, race/ethnicity, social class (including First Generation status), and sexual orientation in STEM fields at UC Merced. We will form an advisory board of 4-7 members representing each of the three schools to help select speakers and plan the series. Using funds from the DEI grant, we will invite three renowned scholars with expertise on a variety of relevant institutional and programmatic approaches to improving equity and diversity in these fields.

A sample of possible speakers identified, include:
• Professor Sylvia Hurtado, Professor in the Graduate School of Education and Information Studies at UCLA, to come speak about her work examining institutional supports for STEM success among undergraduates at Hispanic Serving Institutions.
• Dr. Kenneth Gibbs, Jr, to discuss workforce development and diversity among Ph.D. students in the sciences. Dr. Gibbs is Program Analyst in the Office of Program Planning Analysis and Evaluation at the National Institute of General Medical Sciences with experience as a bench scientist as well as leading workforce diversity programs.
• Dr. Hanna Wallach, to discuss institutional strategies for addressing the underrepresentation of women in computational fields. Dr. Wallach is a senior researcher at Microsoft Research New York City and an assistant professor in the College of Information and Computer Sciences at the University of Massachusetts Amherst. She has co-founded several organizations to address the underrepresentation of women in computing, including the annual Women in Machine Learning Workshop.
• Dr. Julie Posselt—to discuss how faculty can use the graduate admissions process and create organizational conditions to enhance racial/ethnic and gender diversity among graduate students, especially in STEM fields. Dr. Posselt is Assistant Professor of higher education at the University of Michigan, Posselt is author of the book Inside Graduate Admissions: Merit, Diversity, and Faculty Gatekeeping (2015, Harvard University Press), which is based on an award-winning ethnographic study of faculty judgment in 10 highly ranked doctoral programs in three universities.
• Dr. Meg Urry to discuss institutional strategies for addressing gender inequalities among graduate students and faculty in the sciences. Dr. Urry is currently the President of the American Astronomical Society, formerly on the Hubble space telescope faculty and was chair of the Department of Physics at Yale University 2007-2013. She is notable not only for her contributions to astronomy and astrophysics, including work on black holes and multiwavelength surveys but for her work addressing sexism and gender equity in astronomy, and science and academia more generally.

• Dr. Jeremy Yoder to discuss interpersonal and institutional supports for Lesbian, Gay, Bisexual, Transgender, and Queer faculty and students in STEM fields. Dr. Yoder is a postdoctoral fellow in the Department of Forest and Conservation Sciences at the University of British Columbia. He is project director for "Queer in STEM", a national survey of sexual diversity in Science, Technology, Engineering, and Math.

In addition to invited talks, the series will involve structured post-talk conversations among participants and visiting speakers about specific ways the speaker's insights can be incorporated on our campus. The purpose of these invited talks is to spur discussion between and among faculty in all three schools as well as with administrators, with the aim of developing actionable steps toward understanding and improving STEM inequalities on our campus. This may include grants at the program, school, and institutional levels to support research, as well as working with faculty and campus leaders to develop concrete steps toward institutional and curricular changes that support equitable representation and inclusivity in STEM fields on campus. The talks will also be open to undergraduate and graduate students, who are likely to bring important insights to the discussion.

Another aim of this series is to create bridges for conversations to develop grants to support research and teaching innovations related to STEM inequalities across schools and between the faculty and administration. To that end we have solicited "matching funds" from various campus entities that will support this series into a second year (AY 2017-18). These funds are contingent on receipt of the Diversity, Equity, and Inclusion grant and include a total of $5000 (generous commitments of $1000 apiece from: School of Natural Sciences, School of Engineering, Graduate Division, Office of Undergraduate Education, and Office of the Vice Provost of Faculty). Extending the series into a second year will allow us to have more topical diversity in the series in order to cover a variety of dimensions of STEM inequalities among a variety of populations. Future aims for the speaker series include institutionalizing it through obtaining external funding to help position UC Merced as a leader in STEM diversity and inclusion. The second year of the series funded through matching funds will give us more time to secure external funding to extend the series into the future.

How will the program contribute to and enhance UC Merced's campus climate as a more equitable and inclusive place to study, research and work?

Many of the issues UC Merced confronts with respect to STEM inequalities are neither new nor specific to our campus environment. However, research clearly demonstrates that institutional practices, policies, and cultures can promote more equity and diversity in STEM fields. Bringing speakers with expert knowledge about these inequalities and evidence about concrete steps taken elsewhere to address them can help improve our campus climate first by starting a conversation which acknowledges the inequities in the first place. Beyond this, the goal of this project is to spur discussions aimed at developing actionable institution-level (rather than individual-level) next-steps to help

improve the campus climate for underrepresented and marginalized groups, particularly in STEM fields. These efforts will help improve the campus climate for all who study, research, and work on the campus, but especially for members of underrepresented and marginalized groups in STEM fields. This speaker series is an important first step toward making UC Merced a leader in understanding and addressing STEM inequalities.

Both the campus climate survey and institutional data reveal important inequalities in both representation and experience of various marginalized groups in STEM fields on our campus. While UC Merced boasts an exceptionally diverse undergraduate student body, this diversity is not distributed equally across all fields nor reflected in the graduate students and faculty. For example, while about 50% of the undergraduate student body are women, only 14% of students graduating with Bachelor's degrees in Computer Science and Engineering (CSE) are women. Further, additional analyses of the campus climate survey in the School of Engineering (SoE) showed that undergraduate women in SoE are significantly more likely than men to report experiencing exclusionary behavior. On our campus, women are also significantly more likely to leave STEM majors in SNS than are their male counterparts (. Further, while the undergraduate student population is 48 percent Hispanic, several STEM majors have relatively small proportions of Hispanic students (e.g. Economics, 35%; CSE, 30%; Materials Science and Engineering, 30%; Chemical Sciences, 39%). Although our campus has the largest proportion of first generation students of any campus in the UC system (67%), they are significantly underrepresented in particular majors (Physics 39%; Bioengineering 52%). Research shows that gender, race, and class differences in student major choices are not simply "individual choices," but rather these decisions are structured by the programs and policies embedded in the institutional context of the school.
Graduate student composition on the campus significantly differs from the undergraduate population, with substantially more men (57%) than women (43%) and far fewer students from underrepresented minority groups (only 22% from these groups compared to 54% among undergraduates). In Engineering, for example, only 7 percent of Ph.D. students are members of underrepresented minority groups, and only 31 percent are women. Graduate programs in STEM fields in SNS and SSHA also vary with respect to their representation of women and students of color. Institutional policies and practices can help improve the share of these groups in our graduate programs.

The campus climate survey shows that among faculty, 86% of underrepresented minority faculty members report feeling excluded and 100% have considered leaving the campus. While these analyses are not disaggregated by STEM field, data from Institutional Research and Decision Support (IRDS) show that underrepresented minority faculty (including African American, Hispanic, Native American, and Pacific Islander) are an even smaller share of ladder rank faculty in the Schools of Engineering (11%) and Natural Sciences (10%) than in the School of Social Sciences Humanities and Arts (27%). Gender representation among the faculty is also not equitably distributed between different fields of emphasis. Across the campus, women comprise only 38% of

the ladder rank faculty, with particularly scarce representation in the School of Engineering (20%), as well as in particular individual STEM fields in SSHA (Economics=25%; Political Science=27%) and SNS (Chemical Sciences=18%).

Unfortunately, UC Merced does not collect systematic data on sexual orientation among faculty or students, so we are unable to quantify representation of Lesbian, Gay, Bisexual, or Queer (LGBQ) and genderqueer faculty or students in STEM fields. The campus climate survey indicates that LGBQ and genderqueer members of the campus community reported feeling significantly more "exclusionary, intimidating, offensive or hostile conduct" than their heterosexual counterparts. The survey also found that LGBQ individuals were less comfortable with the overall campus climate, their workplace environments, and their classes. A focus group with LGBQ senate faculty at UCM (conducted in collaboration with the ad hoc committee on the status of LGBQ faculty at UC Merced) found numerous instances of professional exclusion and marginalization, including among those in STEM fields.

In sum, there is substantial evidence that some members of the campus community experience underrepresentation and/or marginalization, particularly in STEM fields. The multiple dimensions of inequality we consider (gender, race/ethnicity, social class, and sexuality) interact and intersect with one another, thus our series helps bridge existing efforts on campus to address inequalities among distinct groups. Our aim is to bring expertise to campus to help identify strategies for institution-level responses to these problems that cut across schools and programs. Further, we hope to institutionalize the series by obtaining external funding to support it long-term. These efforts will also help identify and support synergies for research, teaching, and public outreach aimed at addressing STEM inequalities that can help position UC Merced a leader in promoting STEM equality in the region and among higher education institutions.

Describe how this project is a new, high impact, collaborative, experimental and/or sustainable approach to enhancing and/or addressing an area of campus climate.
This collaborative project involves nearly twenty faculty members from across all three schools with interests in making STEM fields on our campus (and beyond) more equitable. Our effort complements, without duplicating, existing campus efforts focused on single dimensions of inequality (e.g. W-STEM). Our focus is novel in its institution-level focus (rather than individual or programmatic levels) and its consideration of multiple forms of inequality across multiple groups (faculty, undergraduate student, and graduate student populations). Support for this initiative from the Office of Campus Climate will help our group expand and develop action plans related to research, teaching, and institutional supports that address STEM inequalities on many levels. Further, we hope to institutionalize an action-based speaker series on this topic by gaining external funding (from donors, federal granting agencies, and/or foundations) along with internal funding from campus leaders to support the series. We have already begun building bridges between the faculty and administration by securing matching

funds to support the series into a second year, contingent on support from this grant. The proposed series cuts across various intellectual pillars of faculty research interests, and it presents a novel opportunity for creating synergies between the instructional, research, institutional innovation, and diversity missions of the campus.

Describe the expected difference(s) the project will make on the issues addressed, the audience(s) it will serve, and the number of people it will affect.
UC Merced is at a critical time in our development as a campus. We are poised to add significant numbers of students at the undergraduate and (especially) graduate levels, along with growing the faculty. It should be an institutional priority to thwart existing patterns of inequalities in STEM fields on our campus, described above, before they become further threaded into the fabric of the campus.

Because of our focus on numerous dimensions of inequality across a variety of people on campus, we expect it to appeal to a broad cross section of faculty, administrators, staff, and students. We will reach out to relevant campus centers and organizations, as appropriate, to encourage their involvement in the series as well as other efforts that emerge from our discussions (these include: Blum Center, ReCESS, CalTeach, W-STEM, Center for Engaged Teaching and Learning, HSRI). We expect that the series will involve 40-60 people from across campus over the course of the first year. However, because we seek to improve knowledge on campus in order to support broad-scale institution-level solutions to STEM inequalities, the number of people this effort can potentially impact in the long term is far greater.

How will the project bring together two or more campus entities, advance mutual goals and/or share knowledge? Specifically identify how the project will be integrated into the activities of teaching, research or public service.
This proposed series brings together faculty from across all three schools interested in understanding and addressing STEM inequalities on our campus and beyond. The project advances the goals of excellence and equity in our campus community. Speakers will address topics of interest to the entire campus, including students, faculty, staff, and administrators. The proposed series is explicitly aimed at linking teaching and research strategies for improving the representation and experience of underrepresented groups in STEM. We further hope to use this series as a catalyst to secure external funding (from industry, foundations, or private donations) to support additional speakers, as well as incubate faculty innovation in teaching and research on understanding and addressing STEM inequalities.

Describe the leadership, capacity and qualifications of the individual or group to implement the project.
The faculty involved in this effort have extensive experience planning speaker series, and network ties to some proposed speakers. Irenee Beattie will serve as the lead coordinator of the project until an advisory board of 4-7 members (with representation

from all three schools) is selected by the group to plan the series. We have the support of staff in our schools to plan these talks.

Individuals participating in this effort, and their campus affiliations include:
Beaster-Jones, Laura, LPSOE, SNS, Molecular and Cell Biology
Beattie, Irenee, Assistant Professor, SSHA, Sociology
Berhe, Asmeret Asefaw, Associate Professor, SNS, Earth Systems Sciences
Chin, Wei-Chun, Associate Professor, SoE, Bioengineering
Dale, Rick, Associate Professor, SSHA, Cognitive and Information Sciences
Frank, Carolin, Assistant Professor, SNS, Life and Environmental Sciences
Garcia-Ojeda, Marcos, LSOE, SNS, Molecular and Cell Biology
Goggans, Jan, Associate Professor, SSHA, Humanities and World Cultures (English)
Gueorguieva, Petia, STEM Resource Center Coordinator
Hirst, Linda, Professor, SNS, Physics
Khatri, Shilpa, Assistant Professor, SNS, Applied Math
Kremer, Belinda, Lecturer, SSHA, Merritt Writing Program
Leppert, Valerie, Associate Professor, SoE, Mechanical Engineering
Manilay, Jennifer, Associate Professor and Chair, SNS, Molecular and Cell Biology
Menke, Carrie, LSOE, SNS, Physics
Moyes, Holley, Assistant Professor, SSHA, Humanities and World Cultures (Archeology)
Noelle, David, Associate Professor, SSHA, Cognitive and Information Sciences and Electrical Engineering and Computer Science graduate group)
Qattawi, Ala, Assistant Professor, SoE, Mechanical Engineering
Tokman, Mayya, Associate Professor, SNS, Applied Math

In addition, the following individuals have generously agreed to support our efforts with "matching funds" of $1000 apiece if this funding proposal is successful:
Vice Provost of Faculty Gregg Camfield, Office of the Vice Provost of Faculty
Dean Mark Matsumoto, School of Engineering
Dean Juan Meza, School of Natural Sciences
Dean and Vice Provost Elizabeth Whitt, Office of Undergraduate Education
Dean and Vice Provost Marjorie Zatz, Graduate Division

Describe how likely the project is to be continued and incorporated or replicated by other organizations on campus and demonstrate why.
We explicitly aim to use the STEM inequalities speaker series as a mechanism to secure external funding to institutionalize the series into the future. The broad interest from across the faculty and administration, demonstrated by the commitment of matching funds if this grant is successful, suggest institutional willpower to maintain a series of this type.

Provide the full timeline - from start to completion - for the project.
Proposed timeline (note that speaker visit times may be adjusted to accommodate speaker schedules):
• Early May, 2016: Participants meet to select advisory board and suggest speakers to be considered. Advisory board meets to select speakers for AY2016-17. Extend invitations to speakers.
• Oct 2016: Advisory board solicits potential speakers for AY2017-18 (funded by matching funds), meets to select speakers. Speakers are invited.
• Nov. or Dec. 2016: First speaker visits campus
• Jan-Feb. 2017: Advisory Board and interested participants meet with representatives from Office of Development to discuss potential sources of funding to institutionalize speaker series.
• Feb. 2017: Second speaker visits campus.
• April 2017: Third speaker visits campus.
• May 2017: Advisory Board prepares and submits Annual Report to Office of Campus Climate and other sponsoring entities.
• AY2017-18: Speaker series will continue for one additional year on a similar timeline due to "matching funds" (contingent on our successful acquisition of funds through this proposal) provided by the Deans of Natural Sciences, Engineering, Graduate Education, Undergraduate Education, and the Vice Provost of the Faculty.

What are your project goals and expected outcomes.
Goal 1: Initiate conversations between faculty in all three schools and with the administration that focus on understanding and addressing the dimensions of STEM inequalities on our campus.
Outcome 1: Identify synergistic research, teaching, and program interests across multiple the faculty and administration and meet with development office to discuss opportunities for funding these activities.
Goal 2: Identify concrete institutional strategies that faculty, deans, and administrators can take to promote equity and diversity in STEM fields across the campus.
Outcome 2: Develop a list of actions to pursue at the institutional level for improving STEM equality.
Goal 3: Incubate proposals for external funds to support research, teaching, and/or programmatic innovations to enhance equity and diversity in STEM fields among undergraduates students, graduate students, and faculty at UCM.
Outcome 3: Members of the working group submit at least one external funding proposal to support related activities.

What is your definition of success? How will you measure it?
We will be successful if we end the year with the following: 1) A list of synergies across working group members and other faculty related to understanding and addressing STEM inequalities across multiple dimensions. 2) Meet with the Development Office to initiate identification of funding opportunities for a continued speaker series. 3) Develop

a list of concrete steps at the institutional level to pursue for enhancing equality in STEM fields. 4) Submit at least one application for external funding to support continuing the speaker series, collaborative research, and/or teaching innovations to support STEM equality at UCM. We will measure these markers of success by collecting data and producing an annual report, as described below.

What tools will you use to collect the data needed to measure the progress and success of each expected outcome? When will you use them?
We will collect data on talk attendance as well as on actions proposed as a result of post-talk discussions with participants and visiting speakers. Our group will catalog activities prompted by the talks (e.g. talk funds solicited, research grant applications, programmatic innovations, etc) and any associated meetings that emerge from our speaker series. The advisory board will produce a brief annual report (by May 15 of each year) including this information to share with the Office of Campus Climate, as well as the five entities across campus that have generously offered matching funds for this series if this application is successful.

PROJECT SPONSORING UNIT
All projects must be sponsored by a UC Merced student organization, or campus department/ by-law unit, School or Graduate Group. The sponsoring unit is responsible for administering and reporting on funds. Project managers much be current UC Merced campus members. Budget Managers must be current UC Merced staff members.

UCM Sponsor Sociology (lead), in collaboration with 16 other campus units (as listed in questions above and project budget)

Budget Manager Lisa Neely

Budget Manger Email Address lneely@ucmerced.edu