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RE: Written response to COMPASS Program reviews, EDUC5-13686

Dear Review Committee,

We were pleased to see a score in the category of "recommended for funding" and appreciate the opportunity to respond the reviewer comments. Here we summarize the comments per review question and highlight our responses or clarifications in red italics. The review committee was unanimous in their support regarding the first question "**Does the proposed program hold the necessary significance and potential for impact?"**. The only minor concern mentioned a missed opportunity to leverage our previously CIRM-funded facility grant. Our responses are below in italics.

Perhaps we did not emphasize the usage of the CIRM-funded facility grant as clearly as we should have. The utilization of our Stem Cell Instrumentation Foundry (SCIF) is highlighted in the resource section. PI, Kara McCloskey, and co-PI, Jennifer Manilay, were both co-PIs on that instrumentation grant funded approximately 15 years ago and have made significant use of the facility for many years. Perhaps the confusion lies in the fact that our facility was on a much smaller scale compared with most other campuses. The space for cell culture in our SCIF facility has capacity for only 2 users at a time. Our teaching laboratories are much bigger. Therefore, the cell culture training for cohorts of many COMPASS students is better facilitated in our larger-sized teaching labs.

The usage of the instrumentation in the facility is included in the training plan, as much as it can serve our ability to train students. Specifically, in the ***Human Stem Cell Culture Training Module*** *that will provide hands-on training in ……. using flow cytometry and microscopy (cell characterization instrumentation is located in the SCIF); their required course in* ***Engineering Multicellular Living Systems Laboratory*** *is focused on developing strategies for …… cell patterning, materials design and fabrication, and on-chip diagnostic platforms (clean room is also located in the SCIF); and* ***research experiences****. In addition, several of the faculty mentors utilize the SCIF as part of their research program, so COMPASS scholars will be exposed to and trained on the equipment and research facilities managed by the SCIF..*

A few concerns were mentioned in response to **"Is program proposal practical and achievable?** "It is unclear whether the number of courses required for this program is in addition to the standard curriculum - will this extend the trainees' time to degree? Are there are any courses that are specifically designed for this program? The overall requirements seem to be an overload for students who may not be fully equipped to handle such course and research workload? The laboratory course on stem cell culture in the first Summer seems out of place. Having a hands-on course in stem cell culture without any theoretical background seems to be a weakness." To clarify, we will step through each requirement and respond, in turn.

The ***Foundational Coursework*** *for the COMPASS program requires 3 courses. The participating undergraduate curriculum programs also require 3 technical elective courses to be chosen from a generous list of upper division science classes within their B.S. program's standard curriculum. Therefore, these 3 courses do not add additional work to the COMPASS trainee's degree program.*

First Summer Internal Internships *and* ***Second Summer External Internships*** *will take place during summers when students do not enroll in courses.*

Laboratory research experiences *during First Spring and First Fall are flexible. The proposal plan considered this and stated "as their schedules allow" in order to not overburden the student. Students can enroll in 0-4 units depending on their course loads.*

COMPASS trainees' final research experience at UC Merced during their Second Spring semester in BIO 197 Biological Science ***Culminating Experience*** *fulfills the COMPASS Program's requirement for a "Capstone Project". This 1-unit capstone course also meets a general education requirement in Culminating Experience for students at UC Merced.*

Unique and newly developed as part of this program and additional requirements above the trainee's curriculum program are the a) ***Human Stem Cell Culture Training Module*** *that will be delivered over the summer when students are not already taking courses (3 hours per week for 1 summer),* ***b) monthly COMPASS Meetings*** *(6 hours per semester), and c)* ***Clinical Experiences*** *(six 1-hr sessions). These additions, plus an outreach (3 hours total) and retreat (1 day) contribute less than 60 hours of additional work (~15 hours total per semester= 1 hour per week). Unfortunately, avoiding an additional required workload for this program was not possible, however, every attempt was made to keep these additional requirements to a minimum and will not add to the trainees' time to degree.*

The last comment was regarding clarification with respect to previous training and the timing for the ***Human Stem Cell Culture Training Module*** *occurring during the trainees' first summer. We did carefully discuss the planning and timing and balance workload for this training plan. Our rationale is as follows: 1st Spring was early, 1st Summer was acceptable and could be delivered as a module instead of a course, 1st Fall already contained their Clinical Experience, 2nd Spring already contained their Culminating Experience, and trainees would be out of town on External Internships during their 2nd Summer. To remind the review committee, our recruitment plan will target junior-level students, therefore, trainees will have taken at least 2 and usually 3 or more courses in biology before enrolling in the COMPASS program. They will also have completed their 1st required course in Developmental Biology and Lab during their 1st Spring before their 1st Summer. At the start of the 1st Summer, trainees should be prepared to understand the concepts in their* ***Human Stem Cell Culture Training Module****.*

This review committee was unanimous in their support regarding the third question "**Is the program proposal practical and achievable?"** A minor concern mentioned that the proposal did not describe any courses that have been established for this program and lacks a strong method of trainee follow up.

Our plan leverages courses already developed and regularly delivered. These include Developmental Biology and Lab and Engineering Multicellular Living Systems and Lab. New training requirements in ***Human Stem Cell Culture Training Module*** *will be delivered over the summer as part of the student's* ***First Summer Internal Internships****,* ***b) monthly COMPASS Meetings****, and c)* ***Clinical Experiences*** *(six 1-hr sessions).*

As mentioned in the proposal, we will leverage our Alumni Relations Office as well as create COMPASS specific programs (LinkedIn page, in person social and professional engagements) to engage with our trainees after graduation. We have a strong track record of alumni engagement already as part of our culture at UC Merced and anticipate this will continue in the future with our COMPASS Scholars. We hope to learn other methods of alumni tracking and strategies for alumni engagement from the other CIRM COMPASS institutions at the annual meetings.

We received some concerns regarding the last question on "**Does the program thoughtfully incorporate strategies to support Diversity, Equity and Inclusion?**" These included: not yet having a named DEI Recruitment Coordinator, or a full named advisory committee, unclear benefit to overlapping trainee cohorts regarding alumni tracking/engagement, how enthusiasm will be assessed as an acceptance criterion, and the current success of our campus-wide tracking system to identify untapped talent.

Regarding a named DEI Coordinator, we now have identified ***Valerie Anderson*** *(biosketch is attached) as the designated person for this role. Valerie has many years of experience providing recruitment and outreach for undergraduate research programs at UC Merced in her role as the Assistant Director for our Undergraduate Research Opportunities Center (UROC). She has a specific passion for supporting diverse student access to research and is very successful in supporting students from their initial application for undergraduate research through their research experience at UC Merced and continuing through to supporting the trainees' application to graduate school. Additionally,* ***Delia S. Saenz, Ph.D.*** *Vice Chancellor for the Division of Equity, Justice & Inclusive Excellence & Chief Diversity Officer, helped develop our recruitment plan and is willing to serve as an institutional consultant to help with design of DEI programming and training.*

At the time of the application, we did not have a full Advisory Committee. We now have additional members. In addition to ***John Matsu****i, Ph.D. Assistant Dean for Biological Sciences and Director of the Biology Scholars Program at our sibling campus, UC Berkeley, we have been able to secure 2 additional members:* ***Steve Stice, Ph.D.,*** *is the D. W. Brooks Distinguished Professor; GRA Scholar; and Director of Regenerative Bioscience Center at University of Georgia. He has over 25 years of research and development experience in biotechnology and is a co-founder of five biotech companies, one which is ArunA Biomedical, the 1st company to commercialize a product derived from human pluripotent stem cells and cell development that was used to facilitate approval of Pfizer's current cognitive enhancing pharmaceuticals, and SciStem Inc., in which he serves as Chief Scientific Officer.* ***Rachel Hatano, Ph.D.*** *Industry Partner, Chief of Staff, Deciduous Therapeutics, UC Merced alumni, trained in cardiovascular stem cell differentiation and tissue fabrication. We are in the process of seeking*

additional members, being cognizant of and intentional in recruiting a diverse Board to engage with our students and program.

To clarify the primary benefit to overlapping trainee cohorts during Spring semesters, we planned this overlap to allow peer-mentoring. These will be facilitated within the program's COMPASS meetings. Although we will tap our alumni to participate, that could be accomplished during any part of the training program and does not benefit from the overlapping trainee cohorts.

Regarding concern about how we will access enthusiasm and a criterion, we see that we did not mention that the 2nd stage of reviews will include in-person interviews. The applicants will first be ranked by their diversity statements in the first stage of review, and a list of top candidates will be compiled. The second stage of review will include the applicants' educational history, career and leadership statements, letter of support, and enthusiasm for the training program and commitment to completing the training (from interviews).

There was also disagreement regarding our recruitment plan. One reviewer commented that "Candidates will be selected from a California region that has historically been underserved in educational resources, and therefore; I agree that the institution is already perfectly positioned to train historically underrepresented students", but another reviewer stated that needs improvement to identify untapped talent."

We appreciate that the reviewers acknowledge the special advantage and success of UC Merced in attracting and serving historically underserved populations of students and we also acknowledge that our recruitment plan may not be perfect. We have described a plan to assess and adapt our outreach and recruitment plan over the course of the grant with our Office of Equity, Justice and Inclusive Excellence and our Assessment Coordinator in the Office of Undergraduate Education., We look forward to improving the recruitment plan for the benefit of our students and future generation of stem cell scientists.

We hope that we have responded to all lingering concerns regarding our COMPASS training plan. We will attend the CIRM Board meeting via Zoom to address any lingering concerns about the plan.

Sincerely,

Kara E. McCloskey, Ph.D.
Founding and Associate Professor

Jennifer O. Manilay, PhD
Founding Faculty
Professor and Department Chair, Molecular and Cell Biology