



CCE Diversity Equity Inclusion Committee Meeting Minutes

Date: September 14, 2022

Attendees: Brian Stoltz, Scott Cushing, Julie Kornfield, Kyle Virgil, Stephanie Threat, Paolina Martinez, and Elyse Garlock
Absent: Bil Clemons, Kim See, Reina Buenconsejo and Lindsey Malcom-Piqueux

Item 1: Approval of the Meeting Minutes for Posting

Subitem A: Approval of April Meeting Minutes to be done by e-mail.

Item 2: Updates from Committee News: Tape started late.

Item 3: Proposal for “Rising Tide” Implementation of a New Research Training Outreach in CCE:

Proposed Start Date: Summer 2023

Subitem A: David Cagan’s Power Point Slides

Slide 1: *The STEM Pipeline: The Role of summer Research Experience in Minority Students’ Ph.D. Aspirations* (Caltech’s WAVE)

“...Inadequate academic preparation in foundation science courses leads to poor performance in college science classes which results in attrition of underrepresented minority students from science fields or college in general. “It is due to “gatekeeping classes” and lack of lab courses and lab experience prevents one from even getting started.

The second part of this is the concept of “meritocracy” and whether that is the best approach to increasing diversity in science. In order to have the resources and the lab experience precludes people who come from underprivileged backgrounds, or have income inequality, or are the first generation to attend college and are unaware of resources or of the opportunities that are available to them. Those students might fall behind and that keeps them from being eligible for an excellent program like WAVE.

Slide 2: *Academia Has a “Leaky Pipeline”* C&EN (Chemical & Engineering News Article: **The leaky pipeline for Black academic chemists**. Many Black Students leave chemistry after undergraduate education.

This leads to the Leaky Pipeline as shown in the C&EN News article regarding where it highlights this graphic from the article. The graphic focuses on black academic chemists more broadly this relates to all students from underrepresented backgrounds. You can see even at the beginning of the college career you have basically the same representation of first year college students to the proportion of the black population. There is a huge cutoff after that, in passing on to obtaining a Bachelor of Science degree and then another huge cutoff to entering graduate school. It is these two cutoffs that are being addressed at Caltech, perhaps imperfectly.

Proportion of the US population that is Black 12.3%

Proportion of first-year US college students who are Black 13.4%

Proportion of US Chemistry bachelor’s degree recipients who are black 7.9%

Proportion of US chemistry graduate students who are Black 4.6%
 Proportion of US chemistry PhD recipients who are Black 4.5%
 Proportion of US chemistry postdocs who are Black 3.2%
 Proportion of chemistry professors at US top 50 schools who are Black 1.6%
 It is these two cutoffs that are being address, perhaps imperfectly here at Caltech.

Slide 3: Expanding the "Pipeline"

	<u>WAVE</u>	<u>DICI, GSRI, etc.</u>
Community College	Four Yr. Univ	Graduate School
Freshman, Sophomore, Junior	Sophomore, Junior, Senior	G0 – G5+

Certainly, the second cutoff is being addressed by the WAVE program, (as seen above) you have the sophomore, junior and seniors being corralled into the WAVE program and hopefully shuttled into graduate school and once they are in graduate school here at Caltech there are a lot of programs for them, GSRI, DICI and recently bridging the gap even more with Future Ignited and Caltech Shines.

There are programs in place to stop that leaky pipeline at the second stage but is not much for that first stage, which is how do we get students that may be at community colleges or 1st, 2nd, year undergraduates that are taking these gatekeeping courses and are unsure what courses they are qualified for or have low self-confidence and cannot apply because they don't have experience at all. For those people, especially for community college students, that are the focus of my proposal.

We are looking at these students to help catapult them into WAVE and then eventually into graduate school. This proposal hopes to address this need at Caltech by expanding the WAVE pipeline further through this new entry-level research techniques program "Rising Tide".

Slide 4: "Rising Tide" – Overview

What is Rising Tide?

- It is a 5-week research techniques training program that will be directed at URM sophomore/junior chemistry students.
5-weeks is half the time of the WAVE program, and it will be directed at the URM students who are sophomores and junior chemistry students before they take their advanced lab courses at the beginning of their experience with chemistry
- Students will be nominated by faculty (as it is done for FUTURE Ignited). I already have a verbal partnership with some of the faculty at PCC that are very excited about the program and had hoped it would happen last year, unfortunately I was still writing it and figuring out certain aspects of the proposal.
- Participants will receive chemistry techniques training from Caltech graduate students or postdoctoral scholars in three primary areas: synthetic, analytical, and computational chemistry and we can swap out computational chemistry for biochemistry or biochemical techniques depending on which faculty are participating.
- Participants will attend academic and professional development workshops and we already have a verbal partnership agreement with the SFP office, who host these workshops with the WAVE SURF student programs during the summer to extend that to the Rising Tide program and to sponsor the costs of these workshops and to assist in the onboarding application portal and evaluation process.
- Participants (5 students) will be paid a stipend of \$3,420 for the 5-week program. This is roughly half of the WAVE stipend because it is half the number of weeks. This is important for the students from underprivileged backgrounds that might be eligible for this might have to work during this time or find other avenues of income so at least we could provide some income so they would be able to participate in the program.

- The program will be evaluated in cooperation with the Institutional Research Office and the Student-Faculty Office. In a similar fashion to the WAVE program or like the Future Ignited are evaluated with follow-up. Ideally, I would like to follow up with the participants 2 or 3 years after to see if it is helping. I think it will be, however we must double check.

The immediate goal of *Rising Time* is to offer chemical laboratory competence and confidence for its participants enabling them to use the techniques learned to apply for full research experiences at Caltech. e.g., to apply to the WAVE program and to Amgen at Caltech and beyond. This would help them do better in their lab classes and assist them in gaining the confidence and the experience to get them into the pipeline. Thank you for your time. Any questions?

Questions from the committee:

- **Question:** On the three area, do you envision each student going through the three areas, or do they pick one of these areas at the outset? Every student will have exposure to all three areas. It is a general overview. **Response:** These students are so early in their careers that it would be hard to pick one. It is important to give them that exposure along with a lot of overlap. It was addressed in the topic and timeline.
- **Question:** Then each one is self-sufficient. What you do in week one is not going to impact week four. This is technique rotations through the different avenues of chemistry. You could mix and match and the students could have some input. For example, a student is interested in biochemistry, so you make a slant like organic, synthesis, analytical or biochemical while another student is computer oriented, and you swap one out. It seems there is flexibility, depending on what faculty sign up and which students are sign up. **Response:** I think the spirit of the program would still hold with that approach.
- **Question:** The time frame, many students work in the summer. To have a five-week job then look for another job could be difficult for students. **Response:** The schedule is set up to end concurrently with the WAVE program, which ends prior to when semester systems begin. Working students change their schedules when they begin their classes. If they had a summer job, they could end it 5 weeks early before the semester starts.
- **Question:** The end of the summer makes sense. Must students be on quarters? **Response:** No, summer sessions at community colleges are usually two sessions long. My reason for ending Rising Tide concurrently with WAVE is that students attending the WAVE poster sessions and talks would see what the next step for them could be.
- **Question:** When would the first week begin? **Response:** Mid-July to the end of August.
- **Question:** With Caltech Connections data, one of the issues we have encountered is providing year around guidance for our youth. Rising Tide would integrate well, though 10 students would be a good number. Have you thought of shifting the program a few weeks? Not every college schedule aligns with PCC. If you are going to reach out to other institutions, you might want to adjust the program schedule. **Response:** The schedule could be tweaked a bit to include more schools. For the pilot program, I kept the number of students at 4 to 6. Adding more students in the second year will depend on how smoothly the first year goes and training the grad students is critical. Since most grad students work with experienced WAVE and SURF students, they will require more training to work with inexperienced students. Another reason for keeping a smaller cohort in the first year.
- **Question:** For each of the sessions, is it going to be a graduate student teaching or a graduate student mentoring? **Response:** I see it as a hybrid. Students would work with grad student or a pod of co-mentors. Because it will require extra teaching and time. I was hoping that we could offer the grad students an incentive, basically a TA credit. It is five weeks, but it requires more time, it is half

the length of a quarter, but more time than it would take for a class so that would incentivize students since more work is involved. It would give support for the work.

- **Question and Discussion:** If a graduate students take the time to prepare the materials and are working toward becoming a teacher, they might prefer a few more students. Also, some of the subsections are ambitious. Best to consult those who have taught for a while on content because we often plan to accomplish more than can be completed in the time frame. I approve of the proposal; we are slowly building up a full year pipeline for the various stages of people.
- **Committee Discussion:** My concern in involving too many students in the program, is that we run out of grad students willing to mentor/teach. A small group the first year ensures that the students in the program receive personal attention and work safely. Four students will perfect for any hands-on component.
- **Committee Discussion:** I like the proposal. It is the single biggest impact project on the DEI committee budget to date. The success of a project like this in one year would allow us to raise money specifically for the project. Strategically that is the direction we want to go. If the Caltech Connections program could dove-tail into this or eventually merge with it with some funding that would be amazing. .
- **Question:** One concern is being too PCC specific. PCC has money which can make students from other community college students feel left out. The first year it doesn't matter, but in future it is important to keep in mind. By being next door, PCC gets 95% of Caltech's outreach. **Response:** I chose PCC because it was my home institution for a time, and I have a network there. It is the easiest in terms of a streamlined inaugural year. But I see the program expanding to ELAC, LACC, and the broader community colleges in the area. For the first year, I wanted to make it as easy as possible to ensure that the program is a success, so we can grow it.
- **Question:** As we expand on all our DEI efforts, my concern focuses on the integrity of the grad students and postdocs physical research schedules. What will happen to their research as we load more responsibilities onto them? This work is vital for the community thriving. But I wonder if there will eventually be some type of stipend for the graduate students or postdocs? There are only so many students on campus focused on teaching/mentoring. It is important to have some support for those students who sacrifice their time and their primary research to teach and mentor.
- **Committee Discussion and Question:** Caltech Connection has explored financial support options. A supplement can be given to graduate student's salary up to 4%. We cannot give a graduate student a raise. Could we make this a TA ship? If you are wondering about funding for a TA ship. Does a student TA's get a salary supplement? No, they do not. Discussion continued as to what could be done to support the students for solely increasing diversity at Caltech, the discussion will be continued at a later meeting.
- **Question on Rising Tide:** Please address the training that mentors would get to work effectively with these students who have no prior research experience. The mentors need to be well equipped for this type of work. **Response:** Prior to the beginning of the program, the mentors who sign up for the program must go through orientation and onboarding training. I am still writing that portion. I led a similar program to this at Cal State LA. In terms of definitive training, we plan to partner with CCID for sensitivity and patience training focused particularly on working with inexperienced students. Safety awareness is crucial, requiring coordinating with the lab safety officers on procedures along with informing them that extra focus is required in the lab throughout the program.
- **Question:** Is there an age requirement? 18 would be the age to avoid any minors training. **Response:** I believe that is in the eligibility section. If not, I stated that high school students are ineligible.

- **Question:** Will the day to day, in terms of training the grad students, include clearly stated expectations for what expected from the cohort? It is a great deal of structure, but the pod will need the instructions be as clear as possible. **Response:** For the program at Cal State LA, I helped write protocols for every single one of these techniques. Like a class curriculum, it is a syllabus and like the class curriculum everything will have a protocol. The graduate student can be a little flexible on what experiment they want to set up if they have one in process. But there needs to be very clear learning outcomes and structures so that the requirements of the program are still met
- **Question:** Is there going to be a recapping of what people have learned or an assessment to see if people are following along with all the material? **Response:** Yes, students are required to keep a detailed lab notebook, which is good practice, plus the notebook will be periodically checked by the mentor. Finally, a write up will be required at the end of the program to describe what they learned. It doesn't have to be a perfect write up, but It is important to have that requirement in their mind, to help them focus on what they are learning. Week 5 is a review of all the techniques just as in a class there will be continued reinforcement of what they have learned.
- It was a great discussion, David, thank you for spearheading and presenting the proposal. You will hear from us soon. Thank you for the opportunity to present.
- **Committee Discussion:**
- I think it was a vibrant discussion. David is on top of a lot of things and is incredibly engaged and thoughtful. I am in support of funding the program. The committee continued discussions on the program in terms of PI labs being used and the option of utilizing the temporary undergraduate labs and that the first and last weeks are time intensive so that should not be a problem for PI's. It was noted that this an extremely small Caltech class and is a pilot program so some aspects will continue to be refined.
- **The committee approved funding the Rising Tide Proposal.**