Date of Hearing: April 2, 2024

ASSEMBLY COMMITTEE ON HIGHER EDUCATION
Mike Fong, Chair
AB 2349 (Wilson) – As Amended March 6, 2024

SUBJECT: Public postsecondary education: Cal-Bridge Program.

SUMMARY: Establishes the Cal-Bridge Program as an intersegmental partnership program between the California Community Colleges (CCC), the California State University (CSU), and the University of California (UC), with a mission of creating a pathway that promotes the advancement of California's diverse undergraduate public postsecondary student population majoring in science, technology, engineering, and mathematics (STEM) disciplines to pursue STEM doctors of philosophy (PhDs) and become members of California's professorate or leaders in California's technology industry. Specifically, **this bill**:

1) Establishes the Cal-Bridge Program as a fully intersegmental partnership program between the CCC, CSU, and UC.

2) Stipulates that the Cal-Bridge Program shall be independent of the CCC, CSU, and UC, but it shall be administratively housed at either a campus of the CSU or UC.

3) Specifies that CCC, CSU, and UC students majoring in STEM disciplines shall be recruited into the Cal-Bridge Program.

4) Requires the Cal-Bridge Program to have all of the following goals:

    a) Preparing students to apply to PhD programs in STEM disciplines, particularly UC STEM PhD programs;

    b) Supporting students in becoming PhD scholars and preparing them to become competitive postsecondary faculty candidates and leaders in California's technology industry;

    c) Offering postdoctoral opportunities in the UC and CSU systems to further prepare students to become faculty in California's postsecondary education system; and,

    d) Maintaining an ongoing support network of scholars and faculty to support the continuation and growth of the Cal-Bridge Program and to create a community of support.

5) Stipulates that the Cal-Bridge Program shall consist of the following three distinct, but interrelated, programs:

    a) The Cal-Bridge Undergraduate Program, which shall provide all of the following types of support to CCC and CSU undergraduate scholars majoring in STEM disciplines with the goal of supporting them to successfully apply to STEM PhD programs:

        i) Mentorship by CSU and UC faculty;

ii) Financial support towards completing their undergraduate degrees;

iii) Professional development focused on guiding them through the PhD application process; and,

iv) Research opportunities in their STEM disciplines.

b) The Cal-Bridge Doctoral Program, which shall provide all of the following types of support to students in CSU and UC STEM PhD programs, particularly those in the UC system, to prepare them to become competitive postsecondary faculty candidates or leaders in California's technology industry:

i) Financial support towards completing their PhD degrees;

ii) Professional development in pedagogy and research leadership; and,

iii) Mentorship by Cal-Bridge Program-participating faculty that supplements the doctoral mentorship that these scholars receive in their PhD programs.

c) The Cal-Bridge Postdoctoral Program, which shall provide additional preparation for postdoctoral scholars to become competitive faculty candidates. The Cal-Bridge Postdoctoral Program shall include all of the following:

i) Cal-Bridge postdoctoral scholar positions shall each be a two-year postdoctoral position;

ii) UC and CSU Cal-Bridge postdoctoral scholars shall be sponsored by a STEM-instructing faculty member of the applicable segment and receive on-campus research opportunities under the direct supervision of the faculty member; and,

iii) CSU postdoctoral scholars shall teach classes at the segment as the instructors of record.

6) Specifies that funding appropriated for purposes of implementing the Cal-Bridge Program may be used to offer any of the following:

a) Financial support to Cal-Bridge Undergraduate and Doctoral Program scholars;

b) Summer research opportunities to Cal-Bridge Undergraduate Program scholars;

c) Salaries and benefits to Cal-Bridge Postdoctoral Program scholars;

d) Financial support for Cal-Bridge Program meetings and workshops relating to professional development, including travel expenses, venue rentals, stipends, and hiring consultants;

e) Stipends to UC, CSU, and CCC faculty who take on Cal-Bridge Program mentorship or professional development roles;

f) Financial support to UC, CSU, and CCC faculty who take on leadership roles in the Cal-Bridge Program, including course release funding, summer salaries, and stipends; and,

g) Cal-Bridge Program administrative salaries or stipends.

7) Stipulates that, consistent with existing law, this measure only applies to the UC only to the extent that the UC Regents make it applicable.

8) Stipulates that this measure can be implemented only upon an appropriation by the Legislature for its purposes.

9) Finds and declares all of the following:

a) The Cal-Bridge Program is an intersegmental partnership of the CSU, the UC, and the CCC;

b) The mission of the Cal-Bridge Program is to create a pathway that promotes the advancement of California's diverse undergraduate public postsecondary student population who major in STEM disciplines to pursue STEM PhDs and become members of California's professorate or leaders in California's technology industry;

c) By providing a comprehensive, end-to-end pathway for the diverse undergraduates of the state's public postsecondary system to attain a PhD and join the California STEM professorate and technology industry leadership, the Cal-Bridge Program would transform higher education in California;

d) By diversifying the California STEM professorate, the number of STEM majors from groups traditionally excluded from those disciplines would increase as those students see faculty who look like them; and,

e) Training the next generation of technology industry leaders with PhDs in their disciplines would similarly transform the technology industry to make it more diverse and effective by using the full potential of the diverse California population.

10) Defines the following terms for purposes of the Cal-Bridge Program:

a) "Cal-Bridge Program" means the statewide program established pursuant to this measure;

b) "CCC" means the California Community Colleges;

c) "CSU" means the California State University;

d) "PhD" means doctor of philosophy;

e) "Scholars" means students participating in the Cal-Bridge Program;

f) "STEM" means science, technology, engineering, and mathematics;

g) "STEM disciplines" include, but are not limited to, physics, astronomy, computer science, computer engineering, mathematics, and statistics disciplines; and,

h) "UC" means the University of California.

EXISTING LAW:

1) Establishes the Donahoe Higher Education Act, setting forth the mission of the CCC, the CSU, and the UC (Education Code (EC) Section 66010, et seq.).

2) Stipulates that the CCC is under the administration of the CCC Board of Governors; and, specifies that the CCC consist of community college districts (EC Section 70900).

FISCAL EFFECT: Unknown

COMMENTS: *Need for the measure*. According to data provided by the author, the lack of diversity in the California's public colleges and universities (i.e. the CCC, the CSU, and the UC), of STEM faculty is a persistent problem with multiple negative consequences, from low numbers of students from historically underrepresented (HU) groups participating in STEM education and training, to the lack of diversity in the state's science and technology workforce.

California's science and technology industries are a main economic driver of the state's economy. Over 1.5 million people are employed in the tech industry in California representing 8% of the total workforce. The industry represents an even larger percentage (17%) of the State's economy, generating over half a trillion ($526 billion) of economic activity annually. However, due to a lack of diversity in these industries, the state grossly underutilizes its talent: only 15% of the 1.5 million tech workers in California are Black (3%) or Latinx (12%), and only 26% are women despite the latter two groups each comprising half the State's population.[1]

Data suggests that the reasons for this lack of diversity are multifaceted, but one key factor leading students from underrepresented minority (URM) groups to exit STEM educational pathways is the lack of faculty who reflect their backgrounds. National Science Foundation (NSF) data indicate that 70% of URM [Black, Latinx, and Native American] students who declare a STEM major do not complete their bachelor's degree, compared with 40% for non-URM students.[2] Further, another leading cause of why URM students leave STEM majors is the lack of faculty role models.[3]

The author contends that, "faculty diversity is important not only so that California public universities reflect the state's population, but also because one of the key factors leading students to exit STEM pathways is the lack of faculty who reflect their backgrounds. Diversifying the professoriate will lead to a growth in HU representation in the tech workforce more broadly by increasing the number of students from HU groups completing a STEM bachelor's degree. As countries around the world are increasing their investment in science and technology, making sure our state and nation uses all of the available talent in developing our scientific and technological capabilities is a national security concern."

---

[1] Computing Technology Industry Association (CompTIA) annual Cyberstates report: https://www.cyberstates.org/index.html#interactiveMap?geoid=6__california

[2] National Science Foundation, National Center for Science and Engineering Statistics. Women, Minorities, and Persons with Disabilities in Science and Engineering: 2023. Available at https://ncses.nsf.gov/pubs/nsf23315/report

[3] Stout, Rebecca, et al., "The relationship between faculty diversity and graduation rates in higher education" (Intercultural Education, November 7, 2017) https://www.tandfonline.com/doi/pdf/10.1080/14675986.2018.1437997

Further, the author states, "the STEM public university professoriate in California does not come close to reflecting the state's diversity. As a consequence, large numbers of students from groups underrepresented in the science and technology workforce leave STEM majors before completing their BS degree, thereby grossly underutilizing the talent of the state. California needs to enact Cal-Bridge to broaden opportunities by identifying and nurturing the diverse talent of all Californians."

Lastly, the author states that, "for the past ten years, the Cal-Bridge Program has brought together the three segments of the California higher education system (CCC, CSU, and UC) to provide a comprehensive, end-to-end pathway for California's diverse STEM undergraduates to attain a PhD and join the state's public university faculty. Cal-Bridge has already been proven successful—multiple graduates from this program have obtained tenure-track faculty jobs in the CSU and CCC systems."

This measure seeks to codify the Cal-Bridge Program.

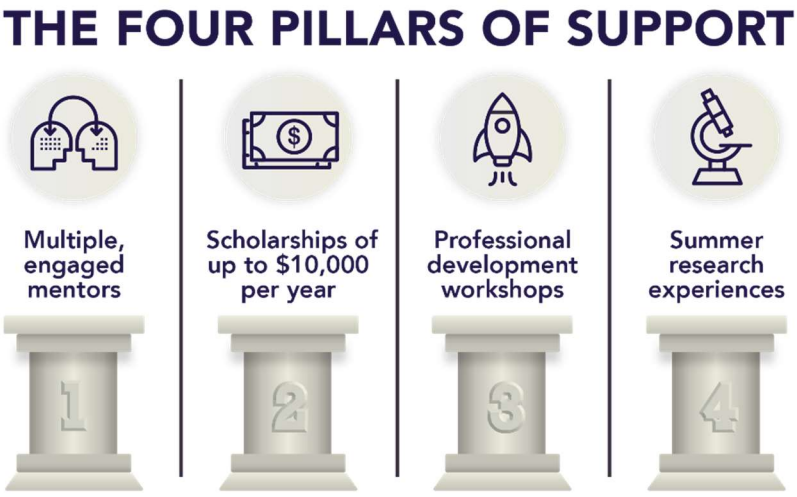
The author contends that, "by codifying the Cal-Bridge Program, it will directly address the lack of STEM diversity in all levels of California's higher education: undergraduate majors, doctoral (PhD) students, and the professoriate. By providing a suite of support (financial aid, intensive mentoring, professional development, and research opportunities) shown by research to promote success for students from groups historically underrepresented individuals in STEM education. This includes women, URMs, members of the LGBTQ+ community, disabled students. The Cal-Bridge Programs reduce inequities for and provide opportunities to these students not currently easily available, increasing the engagement of these students and promoting diversity in all levels of California's higher education system."

Cal-Bridge. The Cal-Bridge Program is a CSU-UC partnership designed for CSU students interested in pursuing a PhD in physics, astronomy, computer science, computer engineering, or related fields. The Cal-Bridge Program was founded in 2014, by Alexander Rudolph, PhD. And together with faculty from both the CSU and UC system, the Cal-Bridge Program has maintained operations for 10 years. The founder currently serves as the Executive Director of the Program and is a tenured faculty member at California State Polytechnic University, Pomona (Cal Poly Pomona). The Executive Director, along with the assistance of faculty from various campuses of the CSU and the UC operate the Cal-Bridget Program. Additionally, the faculty team has four staff members also employed at various campuses assisting in a variety of roles.

The Cal-Bridge Program utilizes research-validated selection methods to identify students from URM groups who display strong socioemotional competencies along with academic potential and provides them with the support necessary to successfully matriculate to a PhD program, ideally at a UC campus. Undergraduate students at all 23 CSU campuses, along with CCC students from the 115 brick and mortar CCC campuses who are transferring to a CSU and majoring in one of the current disciplines in the Cal-Bridge Program, are eligible to apply to join the Program.

The Cal-Bridge Program recruits CSU and CCC students entering their junior year at a CSU. Once selected, Cal-Bridge Scholars benefit from the four pillars of support (as referenced in the figure below) in: 1) joint intensive mentoring by two faculty, one from their home CSU campus, the other from a nearby UC campus; 2) substantial need-based scholarships up to $10,000 per year to allow the scholars to reduce their work hours to less than 10 hours per week and focus on

academics; 3) professional development workshops designed to prepare the scholars to successfully apply to PhD programs; and, 4) provide summer research opportunities, primarily through the Cal-Bridge Summer Program (also known as CAMPARE).



The Four Pillars of Support of the Cal-Bridge Program - Source: the NSF under Grant DUE-1741863

According to information provided by the author, students who have participated in the Cal-Bridge Program have a 70% acceptance rate into PhD programs with their first application. The first cohort of students have obtained not only their bachelor of science degrees, but their doctoral degrees as well, and have joined the ranks of faculty at the CCC, CSU, and UC.

Funding for the first eight years of the Cal-Bridge Program came exclusively from the NSF. The last two years the Cal-Bridge Program received one-year funding in the Annual Budget Act: $5 million in 2022-23 and $4 million in 2023-24. All the NSF funding was directed to Cal Poly Pomona as well as half the $5 million from the State received in 2022-23. The other half has been administered by a faculty at UC Santa Cruz along with the $4 million received in 2023-24.

Committee comments. Committee Staff understands that this measure is meant to codify the Cal-Bridge Program and centralize the administration at one participating campus.

Committee Staff also understands that the author, in concert with this measure, has submitted a five-year budget request for the Cal-Bridge Program, totaling $89.6 million. The table below itemizes the budget request. The budget request for fiscal year one (2024-25) is $12.8 million. (Roughly 75% of the funding request will go directly to supporting students.)

	5-year Budget request				
	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
UG Financial Aid	$ 3,410,000	$ 3,000,000	$ 3,680,000	$ 4,430,000	$ 5,190,000
Undergradate research at UCs	$ 940,000	$ 1,160,000	$ 1,440,000	$ 1,710,000	$ 2,000,000
Scholar support prior to first PhD year	$ 250,000	$ 450,000	$ 540,000	$ 710,000	$ 810,000
PhD Fellowships	$ 3,000,000	$ 3,150,000	$ 5,400,000	$ 6,600,000	$ 8,700,000
Postdoc salaries and benefits	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,800,000	$ 2,000,000
Scholar professional development	$ 1,050,000	$ 1,220,000	$ 1,450,000	$ 1,860,000	$ 2,120,000
Administration (Faculty and Staff support)	$ 3,120,000	$ 3,360,000	$ 3,710,000	$ 4,020,000	$ 4,340,000
Total	**$ 12,800,000**	**$ 13,300,000**	**$ 17,200,000**	**$ 21,100,000**	**$ 25,200,000**
Direct payments to scholars	$ 8,600,000	$ 8,800,000	$ 12,100,000	$ 15,300,000	$ 18,700,000
% direct payments to scholars	67%	66%	70%	73%	74%
# CSU scholars	152	182	227	281	328
# UC scholars	57	75	106	147	203

Five-year budget request for the Cal-Bridge Program

Arguments in support. The Council of UC Faculty Associations (CUCFA), an umbrella organization for the Faculty Associations (FAs) at each UC campus and dedicated to protecting the interests of UC faculty stated, "CUCFA supports AB 2349 for several reasons. The program's unique approach of knitting together all the segments of the California Higher Education system has propelled more than 70% of its undergraduate scholars into PhD programs, many of whom enrich our own graduate programs throughout the UC system – a success rate that is unprecedented in programs of this nature. Its focus on supporting those students both financially and academically throughout their graduate studies here at UC promises to prepare them well for faculty and STEM leadership positions here in California, leveraging the program's efforts by providing role models for future students that will compel them to persevere in pursuit of their academic goals. It's long been a goal of UC faculty to attain a demographic makeup more reflective of our State's population. We are excited to support the Cal-Bridge Program as a promising avenue for achieving that goal, and one that is notable for how it has grown from the "grass roots" of the faculty of our three Higher Education systems."

The CUCFA contends that "this bill would help stabilize this unique program across these three frequently siloed segments of our Higher Education system."

REGISTERED SUPPORT / OPPOSITION:

Support

Cal-Bridge Alumni Council
California Life Sciences
Council of UC Faculty Associations
Faculty Association of California Community Colleges
UC Santa Cruz Graduate Student Association
University of California Student Association
Individuals (28)

Opposition

None on file.

Analysis Prepared by: Jeanice Warden / HIGHER ED. / (916) 319-3960