UNIVERSITY OF CALIFORNIA

Steven W. Cheung
Chair, Assembly of the Academic Senate
Faculty Representative, UC Board of Regents

Academic Senate

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June 9, 2025

Theresa Maldonado
Vice President, Research and Innovation

Re: Five-Year Review of the Bioengineering Institute of California

Dear Vice President Maldonado,

At its May 28, 2025 meeting, the Academic Council approved the attached five-year review of the Bioengineering Institute of California (BIC) Multicampus Research Unit (MRU). Following procedures outlined in the Compendium, the review was performed by a joint Senate review committee led by the University Committee on Research Policy (UCORP), with input from the University Committee on Planning and Budget (UCPB) and the Coordinating Committee on Graduate Affairs (CCGA). We ask that you forward the attached report to the BIC director.

The review committee recognized the BIC's role in promoting cross-campus collaboration and visibility in bioengineering through programs such as the annual systemwide symposium. However, the review also identified serious concerns regarding the BIC's governance, strategic planning, and preparedness to maintain its mission in the face of major challenges. As such, the committee recommends that the BIC be renewed on a two-year probationary basis, with the expectation that BIC will:

- Develop bylaws and clarify the roles and expectations of its steering committee and advisory board;
- Secure replacement funding for expiring support from the California Institute for Regenerative Medicine (CIRM);
- Engage in strategic planning to review its mission and both short- and long-term goals;
- Clarify the role and vetting process for the Industry Liaison Committee;
- Assess the implications of expanding the annual symposium to include the participation of non-UC institutions.

The Academic Council appreciates the time and effort the review committee spent preparing this report. In particular, I want to recognize the contributions of UCORP Chair Susanne Nicholas, who led the review.

Thank you for the opportunity to opine. Please do not hesitate to contact me if you have any questions.

Sincerely,

Steven W. Cheung
Chair, Academic Council

Encl.

cc: Academic Council
UCORP
UC Research Initiatives Director Ward
Senate Division Executive Directors
Senate Executive Director Lin

UNIVERSITY OF CALIFORNIA Academic Senate

BIOENGINEERING INSTITUTE OF CALIFORNIA FIVE-YEAR REVIEW

Conducted on behalf of the Academic Senate by the University Committee on Research Policy (UCORP), with input from the Coordinating Committee on Graduate Affairs (CCGA) and University Committee on Planning and Budget (UCPB)

May 21, 2025

OVERALL IMPRESSION

Since its founding in 2003, the Bioengineering Institute of California's (BIC) mission has been to facilitate bioengineering research across all 10 UC campuses. This is accomplished primarily by hosting an annual UC Systemwide Bioengineering Symposium where faculty and students can network, present their research, and foster professional connections. Each year, the Symposium includes an early career faculty lecture program. Other activities of the BIC include a junior faculty seminar program, a distinguished lecture series (through the newly established California Academy of Bioengineering, CAB), and hosting a reception at the national Bioengineering conference. This MRU collectively spotlights UC bioengineering on the national and international stage and brings attention to world-class research being done in this field at UC. The Institute has a well-thought-out structure, and it has managed to accomplish much of its mission with comparatively little funding (almost all from UC campuses and industry).

The BIC has attempted to address recommendations from its prior review, albeit superficially and with varying degrees of success; for instance, making efforts to increase diversity, equity, and inclusion (recommendation #4) in its membership and outreach, and strengthening connections with industry (recommendation #3). However, there is still room for improvement in terms of clarifying how BIC articulates with the individual curriculum and research programs of discrete UC bioengineering departments (recommendation #2) and potentially re-visioning the disciplinary scope of the institute (recommendation #5).

It is noted that the current five-year review period includes the Covid-19 pandemic, which substantially interrupted operations across the UC system and beyond.

MAJOR ACHIEVEMENTS AND SIGNIFICANT CONTRIBUTIONS: *(Research goals and impact, undergraduate and graduate education, recognitions of excellence, and public service and outreach.)*

Strengths

- Organization and delivery of annual UC Systemwide Bioengineering Symposia (2020 symposium was cancelled due to Covid-19 pandemic) that rotate across UC campuses.
- The UC Systemwide Bioengineering Symposium is beneficial for faculty as well as graduate students, who are provided with opportunities to present talks and posters.
- The UC Bioengineering Reception at the National Biomedical Engineering Society (BMES) Conference is beneficial for graduate students in providing an opportunity for networking.

- Formation of the Industry Liaison Committee (ILC) to strengthen connections to industry; ILC helped to organize and deliver webinars focused on career development.
- The ILC, formed in 2020 provides graduate students with exposure to biotech, medtech, and biopharma. The ILC has organized 8 webinars between 2021-2023.
- Inauguration of the Junior Faculty Seminar Program that enables early career faculty to deliver talks/seminars at other UC campuses

Weaknesses

- There is no clear outreach or public service strategy described in the report. However, at the March 9th meeting, incoming director Abraham Lee outlined a plan for the future for leveraging small seed funding into additional grant funding via a membership-based California consortium.
- While the formation of the ILC is a step to fostering closer collaboration with industry, it was noted in the report that the ILC is being consulted on curriculum development. There is a potential risk that industry partners might overstep in this area. Faculty should be guiding curriculum development, and the BIC may consider developing a set of guidelines specifying the exact role of industry partners in curricular development. These guidelines could be developed in consultation with the Steering Committee and Advisory Board.
- It is unclear how the founding of the California Academy of Bioengineering (CAB), an honor society for distinguished bioengineers that included launch of distinguished lecture series, relates to the BIC and if it is funded and/or where that funding may come from. The status of this initiative is unclear – there seems to be no activity since 2023.

MULTI-CAMPUS OPERATIONS: *(Is the unit visible and active at multiple UC campuses? Is there evidence of effective interaction with related units, e.g., departments, other campus entities, and, where appropriate, national Labs? Does the MRU strive to create opportunities for multi-campus collaborations and training?)*

Strengths

- BIC is visible on all campuses, if only because its Steering Committee is composed of chairs of bioengineering departments on all campuses.
- Each year, the UC Systemwide Annual Symposium offers an opportunity for UC bioengineers to come together and connect face-to-face, precisely the sort of interactions that lead to collaborative research.
- The newly inaugurated Junior Faculty Seminar Program makes strides in fostering multi-campus collaboration as early career faculty in bioengineering are invited to present on other UC campuses.

Weaknesses

- It was revealed by the BIC directors at their interview with UCORP at the March 9th meeting that the Advisory Board, which is supposed to be composed of the Vice Chancellors of Research of each of the ten campuses, has not met for years. It would be prudent to have clear plans regarding future meetings and any change in the roles/membership of the Advisory Board.
- It seems like the decentralized, rotating structure has worked well for governance and succession; however, there is room for improvement in day-to-day operations (e.g.,

maintaining the BIC's website, creating an updated calendar of events, writing a newsletter).

- It is unclear whether staff administrative time is compensated out of BIC funds. This could become an issue for future Directorships, depending on the home campus.
- No evidence is presented for the stated goal of inter-campus collaboration, training, and mentoring.

FUTURE GOALS: *(Does the MRU have an innovative vision going forward to better serve the UC, and people and infrastructure, of California? Planned activities, improvements, research activities, public service? Does the MRU have an effective plan for obtaining additional funding and resources or adjustments in leadership, scope, or new faculty/staff recruitment to meet future goals?)*

Strengths

- Continuance of the annual UC Systemwide Bioengineering Symposium will continue to foster collaboration between UC campuses.
- The stated goal of further expanding industry engagement is commendable.
- Junior Faculty and CAB lecture series bring awareness to UC research in bioengineering

Weaknesses

- Limited dedicated strategies to facilitate extramural funding to support collaborations, e.g. pilot grants or fellowships for co-mentoring students or student exchange programs among laboratories on different campuses.
- There are numerous potential overlaps/duplications with programming efforts being made at the department level and intercampus programs. For instance, the prior MRU report noted that UC bioengineering departments already have cultivated robust industry collaborations, or, in another example, what is the relationship between the BIC and the UCSF-UCB Bioengineering Joint PhD program?
- In the Report, the plan for the future is continuity rather than innovation. However, during the March 10th interview with director-elect Abraham Lee, he described plans for a membership-based model similar to a center that Dr. Lee runs at UC Irvine that will leverage funding from industry partners.

BUDGET: *(Does the unit make cost-effective uses of UC funds? Has the unit been successful in garnering extramural support to augment UC funding?)*

Strengths

- Total expenses averaging around $100-200k per year is modest for a unit that involves all ten campuses. So far, BIC has been self-sustaining, relying on contributions from each campus, CIRM conference grants, and industry partners and very little from systemwide support. In recent years, BIC was successful in securing extramural support from industry and the state, however it will need to compensate for the loss of funding support from CIRM.

- In the minimal budget provided in BIC's Five-Year Report, the source of extramural funds is not clear. Some funds are from industry, but it is unclear where "Other" is coming from (i.e., are these funds a portion of a faculty member's grant? CIRM?)

Weaknesses

- Loss of CIRM funding will have a big impact and alternate funding sources will be required.
- The budget information provided was not clear. $150k+ for a two-day conference for <300 people seems high. More detail on these expenses would provide more transparency. (The prior MRU report noted a cost of $85k to put on the Systemwide symposium—have costs almost doubled in less than five years? It would be useful to have additional description for the increased costs, which may assist with future budget planning).
- It is not clear how the junior faculty seminar program and CAB are funded. These programs are not included in the budget summary.

ADMINISTRATION AND GOVERNANCE*:*

Strengths

- Well-thought-out leadership structure and succession plans with Director and Director-elect.
- Past directors seem to have success garnering resources (both financial and in-kind) from home campuses to support the administration of BIC.
- Rotating structure seems to work well to spread out fiscal and administrative responsibilities across UC campuses.

Weaknesses

- It is unclear whether the duties of administering the BIC are sufficiently compensated, as local staff at the Director's home campus are on "in-kind" support basis. This could become an issue for future directors, depending on the home campus.
- Over the last three years, it was noted that the Systemwide Bioengineering Symposium was opened to other institutions outside the UC system, including USC, community colleges, and several CSUs. USC has started to contribute financially to the symposium as well. Does the BIC have a plan to expand membership, and if so, how would this impact the mission of the Institute?
- Limited efforts to increase equity, diversity, and inclusion.

ADVISORY COMMITTEE:

Strengths

- The Steering Committee is composed of bioengineering departmental chairs from all ten campuses. The report states that the Advisory Board consists of VCRs from all campuses.
- The composition of an Industry Liaison Committee (ILC) has helped to foster industry connections.

Weaknesses

- The Advisory Board seems to be in name only and has not met in years.

- It is unclear how the Industry Liaison Committee members are vetted. Is there a set of guidelines for the selection, duties, and responsibilities (and conflict of interest) for ILC members?

CONCLUSIONS AND RECOMMENDATIONS: *(Does the MRU provide a unique service to the UC in research, support of graduate education, and public service that would not otherwise be accomplished? Are there significant problems or needs that prevent the MRU from fulfilling its mission effectively and what actions should be taken to address them? Is the unit's continuance as a separate entity justified and what would be lost if the unit did not exist? How can the MRU improve to better serve the University and people of California?)*

While the BIC provides a unique service to UC by hosting the annual UC Systemwide Bioengineering Symposium and its other activities, the review committee has some concerns about the continuance of the MRU. After a poor presentation to the MRU review committee at the UCORP meeting on March 9th and partial answers in response to follow-up questions sent after the meeting, particularly related to request for additional specifics on future plans, the review group recommends that the BIC be renewed on a probationary basis for two years.

We would like to provide the following recommendations for consideration during the subsequent two years: the BIC Directors should consider creation of a set of bylaws for governance; provide clear roles for the Advisory Board including frequency of meetings and expectations in support of the MRU function; and work to secure funding to replace the CIRM grant.

Following recommendation #5 of the 2020 MRU review, the Institute should consider review of its mission and scope as well as its short- and long-term goals. After 21 years, it seems like an opportune time for the BIC to engage in strategic planning, particularly in light of expansion beyond UC as described below.

Further, given the BIC's main program activity—the annual Systemwide Bioengineering Symposium—has been opened to other institutions over the last three years, including community colleges, CSUs, and USC, it seems that the Institute is expanding its mission to foster collaboration in bioengineering across California higher education, not just the UC system. While UC is still the anchor, the Steering Committee and Advisory Board should discuss how this expansion could affect the BIC mission and its role across the University.

We also advise that the Steering Committee review and/or create guidelines for the Industry Liaison Committee (ILC) specifying a vetting process, terms of appointment, duties and responsibilities, and term limits.

With its annual UC Systemwide Bioengineering Symposium and hosted BMES receptions, the BIC provides valuable opportunities for face-to-face networking and collaboration among faculty and students across the UC system. The bioengineering field will continue to benefit from this MRU if the leaders can plan strategically for moving forward in the future.