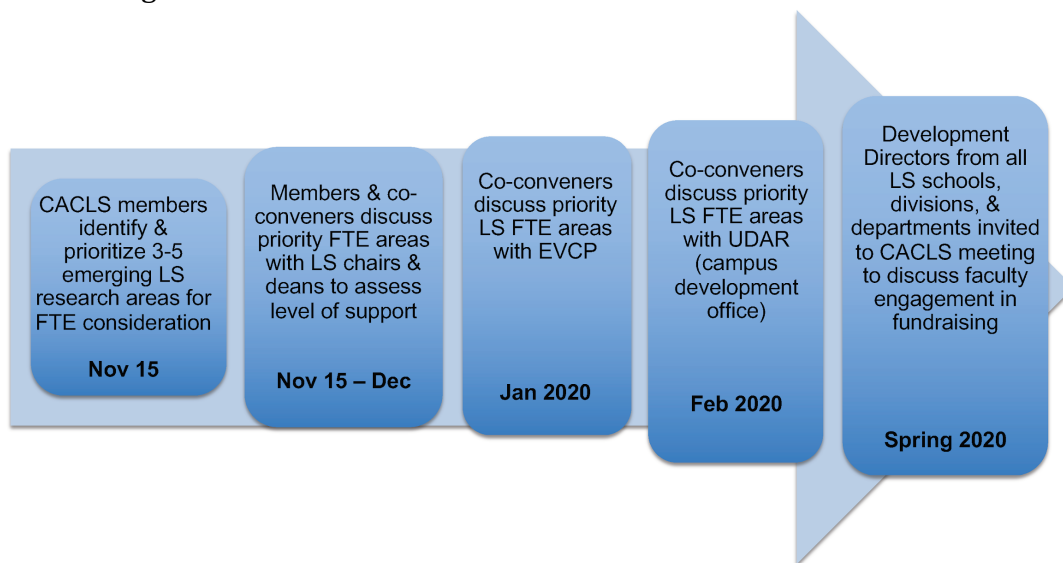# CACLS Vision for Hubs of Cluster Hires Across Biology: 2019-2020

Goals:
1. **A proposed vision for unifying UC Berkeley life sciences research with critical global Grand Challenges.** We propose 'hub' FTE considerations, underpinned by cluster hires and research seed funding. We see hubs and cluster hires as a means to effective coordination and integration of research across biology. We envision hubs as building bridges between faculty and trainees with diverse expertise, uniting core aspects of UC Berkeley to push forward humankind's understanding and capabilities.

2. **To bolster UC Berkeley campaign priorities by aligning research themes**. Importantly, the hubs and cluster hires align with UC Berkeley campus and unit priorities, coalescing current and anticipated department-level FTE requests. Our goal is to fortify and enhance both the relevance and impact of the UC Berkeley life sciences research enterprise in a manner that is straightforward to articulate.

CACLS members identify & prioritize 3-5 emerging LS research areas for FTE consideration **Nov 15**	Members & co-conveners discuss priority FTE areas with LS chairs & deans to assess level of support **Nov 15 – Dec**	Co-conveners discuss priority LS FTE areas with EVCP **Jan 2020**	Co-conveners discuss priority LS FTE areas with UDAR (campus development office) **Feb 2020**	Development Directors from all LS schools, divisions, & departments invited to CACLS meeting to discuss faculty engagement in fundraising **Spring 2020**

Proposed hubs:

1. <u>Climate Change Biology</u>

The climate emergency is the defining issue of our times and an area where Berkeley must remain at the forefront. Research on its impacts and possible solutions span agriculture (endangering food security), ocean and coastal zone dynamics, natural disasters, shifting of species distributions and extinction, and the behavior of vector-borne diseases. Key areas with deep relevance to California include management and conservation of grasslands and forests, marine and coastal ecosystems, and understanding the impact and prevention of wildfires. Notably, the long-term hiring plans of IB, PMB and ESPM all include a focus on climate change

biology; this is an opportunity to coordinate a cluster hire across the departments and create a hub with substantial long-term benefits.

1. <u>The Last Black Box: Microbial interactions underpinning life.</u>

Microbes are essential for life on earth. Microbes drive carbon and nitrogen geochemical cycles, form essential symbiotic relationships with plants and animals and are causal agents of devastating diseases. New technologies have revealed that most, if not all, multicellular life on earth has a microbial component; more than 85 trillion microbes are in the human gut. The discovery of microbial diversity, new protein functions, such as CRISPR systems, microbial functions in ecosystems and human health, integrates cross-disciplinary approaches spanning molecular and microbiology, genomics, evolution, engineering, chemistry, immunology, and data science. Microbial genomes are a rich source of natural products for drug discovery and can be engineered and leveraged for clean energy, specialty chemical, textile and food production. We see microbial research as an invaluable source of innovation, with prominent recent examples including the discovery of CRISPR, the production of new plant and microbial-based foods, and development of bioremediation strategies to combat pollution. Again the long term strategic aims of IB, PMB, ESPM, MCB and SPH align with this broad theme providing another opportunity for co-ordinated cluster hires and the development of a cross disciplinary hub.

2. <u>The Science of Health</u>

There is a rich opportunity to expand the impact of human biology on campus, as Berkeley is uniquely positioned to play central roles in understanding and mitigating the most critical emerging global health issues. Indeed, the recently announced Weill Neurohub will serve as a model for how to forge and nurture new, interdisciplinary collaborations towards a common goal (in the Neurohub case, development of therapies for neurological disease). Similarly focused efforts towards in other key areas will position and retain UC Berkeley as a leader in yielding new biology and approaches that impact human health. This will require a holistic approach, spanning biological anthropology, human physiology and developmental biology to the molecular underpinnings of disease and metabolism. There are also unique opportunities for synergy with Public Health and the Data Sciences program through bioethical research using human biological data. There is a clear strategic alignment across CNR, BSD, Chemistry, Bioengineering, Optometry, Data Science, and SPH in this area, which again makes a compelling case for coordination.

3. <u>Design for the Future: Coalescing the power of UC Berkeley's talent</u>

We are a powerful contributor to advances in understanding and capability across the life sciences, including in clinical medicine. We propose to utilize the hub model to nucleate new centers of excellence among our campus' faculty and trainees. To do this, we propose that UC Berkeley establish an enduring resource of seed funding for competitive support of emerging grand challenge areas, as proposed by those who know the cutting edge of biological research best: the world leading

researchers who are already leading research groups at UC Berkeley. A highly visible, dependable, competitive mechanism through which our faculty can seek seed funding to support new collaborative, 'hub' research efforts should be established. Nothing drives new collaborations like tangible financial research support. We envision these nascent 2- to 3-year projects – funded at the level of 1.5 to 2 Graduate Student Researchers (perhaps as named fellowships) and nominal supplies – as a way to 'crowdsource' identification of emerging research areas, create hubs of world-class excellence in the emerging areas (typically at the interface of disciplines), solidify deep connections between our faculty and trainees, and form the basis for seeking future larger-scale funding.

Strengths and opportunities unique to cluster hiring within the 'hub' model:
The above, broadly interconnected areas have been identified as targets of opportunity of central importance to the field of life sciences and of deep relevance to the citizens of California, where UC Berkeley has the unique opportunity to make transformative advances through interdisciplinary and collaborative research. Simultaneous strategic hiring of multiple new faculty in these areas, rather than piecemeal hiring, is essential to nucleate these hubs of excellence. We see this as a powerful mechanism to bring together researchers from different disciplines to work towards common goals. How to effectively stimulate interdisciplinary research among existing faculty remains a challenge, in part because it often requires a rethinking of established programs or interactions. The hub model provides new opportunities to break these barriers.

This vision builds on the success of the recent life science cluster hires towards increasing the diversity of the faculty, and indeed we envision using similar DEI metrics in the hiring process. Cluster hires would also encourage cross-unit collaboration to identify the best home department for applicants during the hiring phase. However, the research hubs layer important new features onto this model. Bringing in a cohort of new hires with complementary research interests -- who would be housed in different departments -- will nucleate cross-departmental collaborations, which can expand and coalesce over many years—thereby reducing siloing of departments and faculty. Building a critical mass in these areas will also attract talented graduate students and postdocs, raise our national prominence, and draw new sources of funding (be they NSF/NIH centers or philanthropy).

Importantly, we view these cluster hires as an excellent opportunity to develop effective, evidence-based mentoring strategies for faculty new to UC Berkeley, for example in areas related to navigating the complexities of the new PI experience at Berkeley, training in laboratory management and graduate student mentoring, and assembling collaborative grant proposals. Supportive networks such as these increase feelings of belonging of a diverse cohort of faculty, as well as building loyalty to the UC Berkeley campus. These hubs could further expand through seed grants to stimulate collaborations with existing faculty and/or graduate student fellowships. There is also cost-saving potential through pooled resources for shared facilities, as faculty with shared interests will likely have overlapping major equipment and facility needs.