

In Support of Project 2 on Interdisciplinary Teaching, Research, and Creative Work: comments and additional items to note on financial & other benefits

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General comments on Project 2 in Academic Futures draft: We appreciate that the draft report of Academic Futures calls out “Interdisciplinary Teaching, Research, and Creative Work” as one of the five projects for “concentrated effort”, and in particular that it mentions the white paper on page 50 that many of us authored/supported titled [“Improving research, teaching, and innovation via shared equipment resources”](#). We feel that this section of the report captures well the reasoning why campus needs to grow in this direction and provided good recommendations including suggestions to “dramatically increase campus support for interdisciplinary teaching, research, and creative work” and to “develop the necessary administrative infrastructure to support interdisciplinary teaching, research, and creative work”. While some may express reluctance in supporting another administrative role on campus to oversee this interdisciplinary advancement, in this case, if we are truly going to overcome “silos” between departments/institutes and be strategic with resources across departmental boundaries, then the creation of a position that leads, oversees, and is responsible for this effort from a university level is necessary. Thus, we support the idea of a Vice Chancellor for Interdisciplinary Teaching, Research and Creative Work. However, we also suggest the creation of committees that include faculty, staff, and students to provide input to the new VC on various aspects of this interdisciplinary progression.

Financial benefits to the university are expected to result from investment in interdisciplinary advancement:

-Attracting Talent: Students and faculty have interest in an interdisciplinary environment: As described in the section on Project 2, students want education that crosses discipline boundaries. Cross-disciplinary research is also a growing interest to faculty which can be seen through the interdisciplinary research that is emerging within campus departments such as Bio-Mechanical Engineering and Bio-Geosciences. By investing in interdisciplinary advancement on campus, this is not only expected to attract students to CU Boulder and provide them with the educational experiences they seek, but also it is expected to attract talented faculty (and associated staff) on the cutting edge of emerging cross-disciplinary research fields. Talented faculty, in turn, bring in sponsored research funding and the associated indirect cost funding to campus.

-Avoiding redundancies means efficiency and allows for more strategic decision-making with available resources: The Project 2 description of Academic Futures includes mention of inefficiencies that result from campus not being more developed in this area. For example, within the recommendation to “review major interdisciplinary investments and activities on campus”, it states “the Boulder campus could do a better job at eliminating redundant efforts in teaching, research, and creative work through strategic integration of existing resources.” We certainly agree with this point and, in fact, one of the key takeaways from our white paper referenced above is the financial benefits that could result from reducing redundancies by enhancing managed, shared research equipment resources on campus. This would lead to:

- **Optimal use of research funds* and new scientist start-up packages through:**
 - Avoided duplicate equipment purchases, thus enabling strategic use of funding to fulfill equipment needs of the campus research community
 - An innovation grant funded by SVC/CFO Kelly Fox is demonstrating the untapped potential to identify and share existing equipment resources already found within campus research labs. Just four months

after a manager was hired to organize and facilitate shared equipment efforts in MCDB/EBIO/IPHY, there is now coordinated sharing of 123 pieces of equipment by 30 researchers in 14 labs in these 3 departments by this manager.

- The existing [Shared Instrumentation Network](#) is helping scientists identify and locate equipment on campus, but is currently only capturing a small fraction of what campus truly has to offer. Efforts are underway to try to improve this, but more support is needed to expand the list of equipment and the impact that this site could have on reducing redundancies and benefiting strategic planning.
- Saving researchers' time
 - [A case study written by CU Green Labs](#) concluded that there is significant time savings for scientists as a result of the work done on their behalf by a manager of a shared cell culture facility in Biochemistry. The resulting avoided costs from that time saved is the largest component of the \$195,000/year in cost avoidance for the 16 labs sharing this facility.
 - Shared resources allow scientists (whether new to campus or starting a new project) to begin a new research direction immediately without the need to first purchase and set up new equipment.
- Access to expertise provided by managers of shared equipment resources to aid with experimentation outside of a researcher's area of knowledge and avoid inefficiencies that may come from inexperience

*Please note that optimal use of research funding can also lead to more funding. The more research scientists can accomplish within existing budgets, the more publications and data they can present for the next grant proposal cycle. This improves success of receiving a grant award.

- **Better laboratory space utilization, minimized utility costs and building infrastructure needs**
 - Avoided duplication of equipment means less lab space needed to house equipment
 - For example, the [case study by CU Green Labs](#) conservatively estimated a 30% reduction in lab space needs when 16 laboratories are sharing cell culture equipment rather than each lab having their own.
 - Sharing means equipment will continue to be used efficiently and lab space does not become equipment storage space when a lab's research changes direction.
 - Avoided duplication of equipment means fewer utilities and less building infrastructure are required to support research.
- **Significant benefits to academics and students**
 - Enables opportunities for class learning experiences at shared equipment facilities, easier access to a wider variety of equipment resources for student projects, and boosts student opportunities in research laboratories
 - See a more detailed list in [our white paper](#) – the 5 bullets at the top of page 2.

Compliance with federal regulations is expected to improve with additional leadership and support for interdisciplinary development on campus:

- **When new shared equipment facilities are created on campus:** At present, it is not well known among the campus community who should be contacted to understand rules for setting up a new shared equipment facility. As a result, shared equipment resources are established in departments/institutes that unknowingly may be out of compliance with federal or campus regulations. Having a VC lead these efforts moving forward will clarify where the community should go for information and help to ensure this problem doesn't continue on campus.
- **With Code of Federal Regulations (CFRs) requiring equipment sharing and avoiding duplicative purchases:**
[2 CFR 200.318 d](#) and [2 CFR 200.313 c2](#)

Outside resources that CU Boulder may find helpful for enhancing shared equipment resources on campus:

- FASEB (Federation of American Societies for Experimental Biology) released a report in late 2017 on [Maximizing Shared Research Resources](#)
- A 2015 Report on a NIH-ABRF (Association of Biomolecular Research Facilities) workshop on "[Enhancing Efficiency of Research Core Facilities](#)" (Recommended reading: Univ. of Utah pg. 12, Univ. of California Davis pg. 14, New York Univ. Langone Medical Center pg. 19, Univ. of Texas pg. 21, and NIH Core Consolidation Grants pg. 5).