
Blue Ribbon

Committee to Review Technology Transfer and Commercialization

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Committee Charge

The committee was charged by Chancellor Katehi to recommend specific ways to improve technology transfer and commercialization at UC Davis. We interpret the overarching mission of this charge as improving the impact of UC Davis research on the region, state, country and world, and improving the long-term effectiveness of delivering this impact.

Shared Principles

As members of the UC Davis community, we recognize and value that,

- **The mission of the university is research, teaching, and outreach, and technology transfer and commercialization efforts must clearly support this mission.**
- **Technology transfer and commercialization (TT&C) is a multi-faceted and interdependent set of activities.**
- **Researchers (faculty, staff, and students) are the central motive force enabling successful technology transfer and commercialization (TT&C).**

We expand on these principles more fully in the following subsections.

The Mission of UC Davis

UC Davis has both the opportunity and the responsibility to be a global leader, as measured by the value and impact of its research to people and society. This opportunity aligns with the mission of the university:

The central purpose of UC Davis, as a comprehensive research university, is the generation, advancement, dissemination and application of knowledge.... UC Davis is committed to the tradition of the land-grant

university, the basis of its founding. This tradition—built on the premise that the broad purpose of a university is service to people and society—guides today the campus's special commitments and emphases.

Since the dedication of the UC Davis campus in 1908, UC Davis has emerged as an academic and research powerhouse with an annual research budget of \$622 million, placing it ahead of UC Berkeley in research expenditures and among the top research universities in the nation. UC Davis alumni include many regional, national and international leaders. The most comprehensive of all UC campuses, UC Davis is known for our commitment to interdisciplinary work, and consists of four colleges and six professional schools, one of the world's great medical facilities, and institutes and centers conducting specialized research in numerous fields.

UC Davis is committed to the tradition of the land-grant university—that the broad purpose of a university is service to people and society. The university's commitment to its technology transfer and communications activities should reflect this broader purpose. We offer the following recommendations in this spirit.

Technology Transfer and Commercialization

The formal process of transferring knowledge and innovation outside the university traditionally includes handling intellectual property disclosures, filing provisional and formal patent applications, marketing and licensing intellectual property, and negotiating commercial sponsored research agreements.

While these formal technology transfer practices are highly visible activities at major research universities, as an upcoming National Academy of Sciences report warns, a "growing focus on the formal aspects of intellectual property-based technology transfer—that is, invention disclosures, patents, licenses, new enterprises spun out of university research, and revenues" can overshadow other important mechanisms for the broader dissemination of knowledge generated by the university. Such mechanisms include¹:

- Highly skilled students moving into private/public employment;
- Publication of research in the open literature;
- Personal interactions between university and industry (e.g., professional meetings, conferences, seminars, etc.);
- Firm-sponsored (contract) research projects or multi-firm arrangements such as university-industry cooperative research centers;

¹ For a broader discussion, see R.K. Lester. 2005. *Universities, innovation, and the competitiveness of local economies*. MIT Industrial Performance Center Working Paper MIT-IPC-05-0101.

- Consulting relationships between researchers and private firms and government; and
- Entrepreneurial activities of faculty and students (with or without university-owned intellectual property).

The committee recognizes the need for formal technology transfer and commercialization efforts to advance the broader dissemination of university knowledge and technology, even at costs to the more formal and traditional metrics of technology transfer.

University Researchers as Motive Force in Technology Transfer

The committee recognizes that faculty, staff, and student researchers are the motive force in all of these technology transfer and commercialization activities. Without the active support and commitment of the initiating researchers, technology transfer and commercialization activities are unlikely to be effective at disseminating particular university research in the short run nor effective in developing the productive relationships within and outside the campus that foster technology transfer in the long run. Thus any formal technology transfer and commercialization practices and decision-making depend upon faculty engagement.

Process

The committee's review process entailed

- (1) examining the current technology transfer and commercialization activities on campus;
- (2) reviewing the practices of similar offices at peer institutions, both within the UC system and across the country;
- (3) reviewing available histories, descriptions, and policy papers regarding university technology transfer;
- (4) synthesizing these findings into a set of preliminary recommendations for improving the TT&C process at UC Davis;
- (5) soliciting feedback from an external review panel made up of individuals experienced with the technology transfer process across multiple universities and the relationship between universities and industry; and finally
- (6) integration of these comments into a final set of recommendations, listed below.

General Comments

Several important and general comments were raised in the committee meetings and the external review panel discussion. They are noted here:

“The new office of Technology Transfer should emphasize relationships (students, faculty, staff and industry partners) over intellectual property.”

“There is a window of opportunity to make significant changes here at UCD and a challenge to avoid historically similar efforts that failed.”

“The leadership must take great pains to simplify the process and avoid enacting new recommendations that create more bureaucracy.”

“There is a critical need for strategic investments of technology transfer support and attention to key areas of university research growth.”

“There must be an institutional patience that reflects the value placed on long-term perspective associated with technology transfer and commercialization”.

“New metrics must be developed to displace old ones focused on patents filed and revenue generated.”

“There is a dire need to build and maintain strong networks within and outside of the university in order to support innovation.”

“Faculty commitment to the process of innovation (including patenting, licensing, and marketing) is critical. The process must be made transparent. Moreover, faculty involvement in the writing of patenting significantly improves the quality and reduces the costs.”

Committee Recommendations

In accordance with these principles, the committee makes the following high-level recommendations.

1. Establish and communicate clear objectives and priorities for the role of technology transfer and commercialization.

2. Create a new office combining Innovation Access with Industry Research Agreements and reporting into the Office of the Chancellor.

3. Concentrate decision-making authority within this new office for all technology licensing and industry research agreements.

4. Prioritize strategy and structure of new office with a primacy on fostering those long term relationships with industry that uphold the university's mission.

5. Establish standards for transparency, timeliness, and accountability of patenting, licensing, and processing industry research agreements.

6. Create a space within the culture on campus to enable faculty to increase their involvement in and commitment to technology transfer and commercialization.

7. Provide educational and networking opportunities for faculty, staff, and students to develop and demonstrate the commercial value of their inventions.

The following sections elucidate these recommendations, offer specific actions, and suggest possible metrics for ensuring these actions are effective.

1. Establish and communicate clear objectives and priorities for the role of technology transfer and commercialization.

- i. Recognize the primary objective of technology transfer and commercialization activities to be:
 - Advancing the research mission of the university.
 - Maximizing the dissemination of the knowledge, practice, and products generated within the university, recognizing both the central role of inventors as well as the time-sensitive value of the intellectual property.
 - Pursuing policies and contracts that promote long-term and beneficial relations with public and private sector partners and, when possible, supporting regional economic development of an innovation ecosystem that supports and facilitates further dissemination of knowledge, practice, and products.
- ii. Adopt the values of “9 Points to Consider in Licensing Technology” (see Appendix X).
 - In particular in retaining the right to address “unmet needs, such as those of neglected patient populations or geographic areas, giving particular attention to improved therapeutics, diagnostics and agricultural technologies for the developing world”.
- iii. Ensure that these revised and clarified objectives enable TT&C professionals to focus on mitigating rather than eliminating risks of conflict of interest and/or lost revenue.
- iv. Establish clear metrics for monitoring these objectives, and a system for soliciting feedback from all TT&C constituencies.

2. Create a new office combining Innovation Access with Industry Research Agreements and reporting into the Office of the Chancellor.

To accomplish this, we recommend the Chancellor:

- i. Create a single office combining technology patenting and licensing and industry research agreements with a strategy, structure, budget, and staffing to reflect the above objectives.
- ii. Reorganize new office to report into Office of the Chancellor in order to begin immediately the restructuring process.
- iii. Establish an oversight board for the new office chaired by Provost and comprised of faculty, staff, and external “observers.”

- iv. Identify the core competencies required to successfully accomplish the services provided by this new office and develop new position descriptions needed to achieve the stated objectives of this unit. Once position descriptions are reviewed and classified, reassign, retrain and/or hire staff accordingly.

3. Provide decision-making authority for all technology licensing and industry research agreements to this new office.

- i. Delegate authority to grant particular policy exceptions within the new office and leadership for patenting, licensing, and industry research agreements.
- ii. Ensure that inventors are involved in all aspects of patenting, marketing and licensing and that any potential conflicts of interest are appropriately recognized and managed in light of this involvement.

4. Prioritize strategy and structure of new office with a primacy on fostering those long-term relationships with industry that uphold the university's mission.

- i. Integrate licensing and industry research agreements, accounting for the predicted value of research agreements, durability and defensiveness of resulting IP; and inventor involvement.
- ii. Make the negotiation process with UC Davis transparent, simple, timely, and practical, reducing the time and uncertainty of negotiating licensing and sponsored research agreements, particularly through the use of standardized agreements.
- iii. Maximize support for research programs when building industry relationships (sponsored research, affiliate boards, translational research), recognizing the relative value of direct research support relative to total licensing income.

5. Establish standards for transparency, timeliness, and accountability of patenting, licensing, and processing industry research agreement practices within the new office.

- i. Reduce the time and uncertainty of patenting and licensing process through the following actions:
 - a. Create a tracking system for use by office, oversight board, and inventors that provides transparency, status, and accounting on all cases.

- b. Impose schedules and deadlines for invention review and decision-making and to monitor performance and expedite timely dissemination of university knowledge, practices and products.
 - c. Establish faculty patent review board to provide input to patent decisions.
 - d. Communicate the criteria for decision-making relating to all invention ownership and patent process decisions. These criteria should clarify how individual inventions are evaluated for their patent potential.
 - e. Develop a methodology for managing and communicating how the overall patent portfolio is managed for investment, maintenance, and divestment in the intellectual property assets belonging to the university
 - f. Install templates for standard patenting and licensing agreements such as pre-ROIs, ROIs, licensing agreements, MTAs, waivers of ownership, and disclaimers of ownership as well as relevant supporting documentation.
 - g. Develop differentiated policies for managing university IP that account for the differences between disciplines and end-use markets (i.e., between life sciences and engineering, or human and veterinary medicine).
- ii. Reduce the costs of patent prosecution and licensing in order to provide more control and strategic choice in the patenting decisions and to improve the revenue accruing to campus.
 - a. Establish flat fee (unit pricing) for provisional and patent applications with limited number of law firms.
 - b. Assign the management and payment of legal fees to exclusive licensees (while retaining “client” status and approval authority)
- iii. Improve the effectiveness of licensing practices in the following ways:
 - a. Upgrade methods and metrics for marketing UCD IP, including greater involvement of inventors and others in recognizing potential licensees, in developing more effective communication materials, and in more targeted marketing.
 - b. Utilize UC Davis alumni and external partners who can informally assist with marketing and serve as mentors and brokers.
 - c. Recognize the need for and support inventor involvement in marketing of IP, recognizing that inventor involvement is a central criterion for successful patenting and licensing.
 - d. Integrate IP and licensing with industry research agreements to balance the benefits of licensing income with short- and long-term industry research relationships.

- iv. In the interest of maximizing dissemination of knowledge, practice, and products developed within the university, and recognizing the central role played by inventors in this dissemination, the university should waive ownership of IP to inventors if they desire it and with their informed consent regarding risks of conflicts of interest and ongoing campus research limitations.

6. Create a space within the culture on campus to enable faculty to increase their involvement in and commitment to technology transfer and commercialization.

- i. Communicate the value and central mission of TT&C at senior leadership levels (Chancellor, Provost, OVCR, and Deans) and publicize across campus and to the general public.
- ii. Establish clear expectations around faculty role, choice, responsibilities, and recourse in engaging in TT&C activities.
- iii. Recognize, visibly and publicly, the inventors, laboratories, departments, and colleges that disseminate knowledge, form spinout companies, generate licensing income, or otherwise bring returns to campus through innovation and entrepreneurship.
- iv. Recognize positive role of TT&C activities in Tenure and Promotion process (e.g. establish innovation and entrepreneurship activities, such as patents granted and/or licensed, as distinct teaching or outreach service).
- v. Establish clear policies for leave of absence and time off tenure clock for engaging in TT&C activities (similar to other public service opportunities).
- vi. Initiate strong leadership within the new TT&C office to build trust and engagement within and outside UCD.
- vii. Adopt clear guidelines for when and how TLO can waive ownership (or disclaim) and increase ability and propensity when appropriate.
- viii. Assign ombuds responsibilities for addressing issues involving TT&C and inventors.
- ix. Support researchers who choose to engage in TT&C efforts outside of TLO and IRA by
 - a. Connecting researchers with industry, entrepreneurs, investors, grant writing support etc, through technology transfer & commercialization as well as networks of other centers on campus (e.g., Center for Entrepreneurship and Development Office)
 - b. Provide training in pursuit of SBIR/STTR and other funding opportunities.

7. Provide educational and networking opportunities for faculty, staff, and students to develop and demonstrate the commercial value of their inventions.

- i. Establish a Proof of Concept Center that helps identify appropriate strategies and, through competitive funding of internal grants to demonstrate the value and reduce the risks associated with inherently early-stage university inventions.
- ii. Increase collaboration with the Center for Entrepreneurship around existing and new educational and networking programs, such as the business development certificates for science and engineering researchers, Entrepreneurship Academies, Big and Little Bang business competitions, coursework in Innovation and Entrepreneurship, and entrepreneurial mentor networks.
- iii. Establish Davis alumni and affiliate network to better connect researchers with valuable partners across spectrum of TT&C activities.

Special Projects

The committee's review of technology transfer and commercialization has revealed the need for more in-depth review and recommendations, which it deemed best managed by the new office or by those charged with establishing and staffing this new office.

We thus recommend the following set of specific projects:

- i. Review plant and utility patent policies to ensure decision criteria, licensing terms, structure and governance are in accordance with new objectives of TT&C.
- ii. Develop and implement case management system for tracking and communicating all patenting, marketing, licensing, and industry research agreements associated with inventions and faculty. Consider adapting existing solutions for rapid implementation and reduced development costs.
- iii. Develop and implement portfolio management system to organize, evaluate, prioritize, and track UCD IP portfolio through investment, maintenance, and divestment decisions.
- iv. Develop organizational structure and job descriptions for all staff in TLO + IRA functions.
- v. Outline major processes of TLO + IRA, establish baseline metrics, and benchmark best practices (including patenting, marketing, licensing, industrial research agreements, etc.)
- vi. Establish criteria and tool for evaluating and disposing of inventions, and communicating decision criteria, and tracking effectiveness.
- vii. Establish clear guidelines for when and how TLO can waive ownership (or disclaim) intellectual property as disclosed by inventors.
- viii. Develop the means to collect and review feedback from those who engage with the TT&C office.