

UCLA Ecosystem for Entrepreneurs, Part II:

Transition to a new technology transfer process

DISCUSSION DRAFT

September 30, 2011

I. The Call

UCLA and its faculty, as part of the University of California, are called to respond in three ways to the needs of the state and of the nation: teaching, research, and service to the broader society. Every faculty promotion is based on this call. Every major decision within the university is evaluated with respect to its fidelity to this call. What the university does best is to provide activities that fall within all three elements of that call.

From time to time, the larger world invites the university to play a leadership role in a new way, for example to engage the three parts of the call in creating environmental programs, improving public schools, or creating interdisciplinary approaches to medical technologies. In every such case, the new range of activities includes teaching, research, and service to the larger world. Because the university has responded to these opportunities with consistency and quality, our publics have grown accustomed to looking to UCLA and its sister institutions for leadership on the major social needs of every age. With ten campuses, each with its own unique areas of focus, our University of California can bring to bear world-class teaching, research, and public service on virtually any opportunity or problem under the sun.

Today, an invitation has been issued to UCLA: that we engage our call in the field of entrepreneurship. An increasing number of our students, ranging from undergraduates in all fields, to graduate students and postdoctoral fellows, want to study and to gain experience in entrepreneurship. Our faculty scholars, both those who pursue curiosity-driven research and those who pursue translational research, want to see their scholarly insights translated into real-world applications that solve pressing national needs, that save lives, that create new industries and new jobs. Los Angeles longs for UCLA to accept this leadership role by creating an intellectual center of gravity that will give coherence, visibility, and strength to the emergence of a new world-class technology city.

UCLA accepts this invitation and looks to the long tradition of its tripartite call to authorize major new initiatives in teaching, research, and service by creating a new Ecosystem for Entrepreneurs.

II. Taking Stock of the Present Situation at UCLA in Entrepreneurship

One important element of the campus infrastructure that supports all three elements of the call in the field of entrepreneurship is the set of activities that go under the generic

label of “technology transfer”. At UCLA, there are two major offices within that category: (1) the Office of Intellectual Property (OIP) that deals with patenting and licensing, and (2) the Office of Industry Sponsored Research (ISR), that manages faculty research that is undertaken with the financial support of one or more companies. These two offices are of central importance in bringing the inventions of UCLA scholars into the outside world and in supporting undergraduate, graduate, and postdoctoral studies in entrepreneurship. We should observe, though, that they deal largely with entrepreneurial activity in engineering, medicine, and in the physical and life sciences. Other UCLA scholars, including those in Digital Humanities, Music, Management, and Fine Arts routinely produce original inventions that might or might not be processed through these offices, and we celebrate their efforts. This report, however, will focus on the entrepreneurial activities that pass through the technology transfer offices at UCLA.

During the past fifteen months, UCLA has undertaken a review of its technology transfer processes. We interviewed more than one hundred professors, deans, outside entrepreneurs and investors and lawyers, as well as staff at other universities. Campus task forces have worked on one or another issue, and we have undertaken research into the practices of other universities. UCLA’s technology transfer office has been enthusiastically engaged in this analysis, as have various administrative offices of the UCLA central administration. As a result, our technology transfer office has launched several initiatives, some of which are already producing improved results. UCLA’s technology transfer staff has also contributed in great measure to the analysis and the plans that are contained in this paper.

Patenting and Licensing

In March of 2011, a report titled “An Ecosystem for Entrepreneurs at UCLA” was circulated to all faculty and staff. That report described the low financial yield of UCLA’s inventions compared to other UC campuses and to other major research universities. For example, UCLA’s receipts (adjusted gross income) from license royalties and fees from its inventions peaked at approximately \$33 million in fiscal year 2008 but had declined to \$21 million by fiscal year 2011 and are projected to continue to decline to less than \$10 million by 2014. The previous report noted that UCLA’s financial return on its research budget is well below UC Berkeley, UCSF, Stanford, and M.I.T. If UCLA were to produce financial returns on its research budget (more than \$1 billion annually) at the same rate as the best universities in the U.S., these receipts would be more than \$200 million per year.

UCLA currently receives about 320 disclosures of new inventions each year from its faculty. Were we at the national average for a research budget of our size, we would be receiving approximately 550 disclosures per year. If we were performing as well as Columbia University or another high-performing system, we would be at 650 disclosures per year. The number of disclosures is important due to two factors: (1) where royalties to the university are concerned, “home runs” matter; (2) there is unanimous agreement among universities that at the disclosure stage, no one can tell which disclosure is going to produce a home run. Beyond the financial impact of having a large number of disclosures, it is important that our scientists feel that they face a helpful university system that

encourages them to pursue their work all the way to an invention that will have value to the world outside of our campus. We have the opportunity to make it easier for our scholars to disclose inventions and to have UCLA pursue patents on their behalf, and thus to make UCLA a more attractive environment for our scholar-inventors and for their students.

Industry Sponsored Research

The second half of UCLA's technology transfer process is Industry Sponsored Research (ISR). These are grants in which a company or non-profit industry consortium seeks to sponsor research by a UCLA investigator. ISR grants carry an indirect cost recovery that contributes to covering the expenses of maintaining UCLA as a world-class center of scholarship and teaching. Over the past five years, gross revenues have fluctuated in a range of \$28 million to \$38 million per year. Most of these grants are in the range of \$25,000-\$75,000, with a few outstanding exceptions in the million-dollar per year range. However, UCLA has yet to win a major industry sponsored contract that spans several departments and several years. Increasingly, multi-million dollar ISR grants are central to the funding of research universities, although large industry grants sometimes bring with them controversy. One such example of both size and controversy is the 2007 announcement by UC Berkeley of a \$500 million biofuels industry sponsored grant with BP and other partners.

If UCLA were to operate at the same ratio as the leading research universities, our annual ISR gross revenues should be in the range of \$150 million per year or more. We note that in FY 2010 (the most recent fiscal year for which final figures are available), UC Berkeley recorded \$34 million of these contracts, UCSF \$24 million, and UC San Diego \$30 million, compared to \$19 million at UCLA (these figures do not include clinical trials). Preliminary results suggest that final FY 2011 results will be up sharply at all four campuses. The National Science Foundation gives us access to a broader set of universities for 2009 but reports expenditures instead of awards and includes revenues from clinical trials, unlike the previous comparisons: Duke Univ.- \$183 million; M.I.T. - \$103 million; Penn. State (all campuses) - \$103 million; Ohio State (all campuses) \$120 million; SUNY Albany - \$77 million; and Univ. Washington - \$77 million. Compare these to: UC Berkeley - \$71 million; UCSF - \$65 million; UCSD - \$62 million; UCLA - \$47 million.

We interpret these results to mean that our UCLA scholar-inventors are not fully exposed to many of the potential sources of industry funding for their research. In particular, while single scholars at UCLA often receive research sponsorships of modest size, UCLA has great unrealized potential to win multi-discipline, multi-year, major industry sponsored research contracts.

III. The Vision

The Vision for Los Angeles and the Nation

Silicon Valley, Route 128, Austin, and San Diego each has a place on the mental map of every inventor and entrepreneurial student in the nation and in much of the world. Each has a distinctive style of starting new companies, transferring inventions to existing companies, and launching careers. Each is a job-creating magnet that draws people, ideas, and capital. Los Angeles will soon take its place on that map with UCLA professors playing the pivotal role.

UCLA scientists produce arguably the largest research budget of any U.S. university. Almost alone among universities, UCLA has on one campus great professors of engineering and applied science, medicine, dentistry, the basic sciences, law, management, and a UCLA-owned research hospital with a network of affiliated hospitals and 76 community clinics that provide an unrivalled research patient flow. Scientists and students from several disciplines can readily collaborate on research and have next-door access to shared laboratories. Future entrepreneurs can learn the scientific, legal, and business skills they will need. Many great universities lack either a medical school, an engineering school, or their own research hospital. Others have the medical school and the engineering school located a great distance from each other. UCLA has everything, and in one spot.

UCLA will break ground in the autumn of 2011 on the renovation of the former UCLA Hospital. This project will make available nearly 800,000 square feet of new research space in the middle of campus. There will be massive space on campus for large-scale and small-scale basic and translational research, and space in which industry sponsored research can take place within easy reach of UCLA scientists. This scientific force will spin out new lifesaving therapies, new companies, and new jobs. We foresee a new high-tech corridor that will stretch from Westwood Village to the Pacific on land that is presently available for development.

With a full complement of world-class scholars in a huge variety of disciplines, the brightest students anywhere, an on-campus industrial/research park, and the nation's largest research budget, UCLA will generate a gravitational force that will attract new scholars, students, companies, jobs, and industries to Los Angeles. High-tech Los Angeles will have reality, vitality, and coherence.

The Vision for UCLA Scholar-Inventors and Students

We should never forget that UCLA's most precious asset is its world-class faculty. The goal of our technology transfer staff is to serve these great scholars and give them user-friendly access to the world outside of our campus. Our vision is that every scholar-inventor will work in an environment in which conflict of interest policies are designed not to prevent entrepreneurship but to encourage entrepreneurs while managing potential conflicts of interest in a proactive way.

The staff of the Technology Transfer Center will assign a single contact staff person to each active inventor. Each contact staff person will be integrated into a multi-disciplinary team that will handle her faculty's needs for everything from industry sponsored contracts and material transfer agreements to patent applications and the marketing of your invention to licensees. That team will also include experienced entrepreneurs from the affiliated Business of Science Center, from the Samueli School of Engineering and Applied Science's ITA, and from the Anderson School of Management's Price Center for Entrepreneurial Studies, who will help the inventor to clarify the commercial potential of her invention, to meet prospective investors, and in some cases, to start a new company.

Postdoctoral fellows, doctoral students, and advanced graduate students will be eligible to enroll in courses that provide a hands-on experience in entrepreneurship, from learning to properly characterize an unmet need, to developing a business plan, to filing a U.S. Provisional Patent Application.

Undergraduate students will be able to enroll in courses that will give them hands-on experience in taking an idea from concept to business plan and will learn from experienced inventors and entrepreneurs.

Postdoctoral and student interns will have the chance to work for a year or more in various phases of the entrepreneurial process, gaining experience and meeting businesspeople who are like minded. Investors, some of whom already understand what UCLA has to offer, will flock to the campus, and technology-based companies will be regular visitors in larger numbers than today.

While not every UCLA scholar or student will be attracted to these activities, everyone will benefit from the liveliness, the additional financial resources, and the energy that will develop.

IV. The Needs: Business Judgment, Financial Capital, and Market-Based Compensation

To realize this vision, UCLA must design a new approach to technology transfer that will provide three crucial elements that are now missing: business judgment, financial capital, and academic market-based compensation for the technology transfer staff.

Business Judgment

In one important sense, the technology transfer process in a university consists of making a series of risk-based investment decisions about which patents and which inventions are best suited for commercialization. For example, the decision to file patent applications for a family of related inventions can cost \$30,000-\$200,000 in legal fees paid to outside counsel. If the invention is truly a breakthrough, the delay to issuance of the patent can be ten or twelve years, during which another \$30,000-\$50,000 in annual legal fees might be incurred. Who within our university is experienced enough to make this \$800,000 decision? Although the technology transfer staff at UCLA is the equal of

that at any top university, and despite their commitment to constant improvement, no university staff should be left with this risk-based decision task. A fiduciary board that includes several businesspeople of long experience will be best equipped to make prudent decisions in these cases. At the same time, a board of this type will serve as a bridge between the worlds of business and of academe.

In like manner, the decision to license a patent to a company involves making decisions about exactly what rights to grant and which to withhold, and in some cases involves choosing between two or more competing companies. Which of our campus specialists has the years of business experience necessary to wisely evaluate that decision?

When UCLA licenses a patent to a startup company, it may decide to take an equity interest instead of requiring a cash reimbursement of legal fees, requiring another potentially large and risky decision. In the absence of a board of directors that includes several experienced businesspeople, our usual practice is instead to demand that the fledging company reimburse UCLA in cash for the legal fees that have been incurred.

These investment decisions should take account of the academic credibility of the inventor but should not be dominated by the internal politics of a campus. If these investment decisions are left to campus personnel, the full force of academic status and rank will come into play, no matter how high the rank of the academic decision-maker. These decisions should be made by an independent board, a majority of whose members have experience in science-based businesses, in entrepreneurship, and whose sole objective is to assist UCLA. An advisory board will not suffice for this task, since it is in the end only advisory, with the final decision in the hands of academic persons who have neither the business experience necessary to weigh the advice given, nor to arrive at an independent business decision of their own.

Financial Capital

Some patents, particularly those that involve breakthrough technologies, may require an investment in legal fees of \$100,000 up to many hundreds of thousands of dollars. UCLA has no financial capital allocated to this purpose. The result, summarized above, is that UCLA often abandons patent applications after thirty months, the length of time that preliminary patent protection can be obtained for a modest expenditure of about \$15,000. After thirty months, UCLA will either abandon the patent or will typically seek patent protection for the U.S. market only, giving up protection for its invention in overseas markets due to the high costs of filing to preserve those foreign rights. If the invention turns out to have great value, though, UCLA will have lost its ability to earn royalties in a large part of the world market.

An analysis of the patent and licensing experience at Columbia University shows that after thirty months, fewer than one-third of inventions have been licensed (of all patents that are eventually licensed). The implication of the Columbia University study is that

UCLA is abandoning roughly ninety percent of its potential revenues from licenses due to its lack of financial capital to stay the course.

When a UCLA faculty patent is abandoned for lack of funds, it is possible that no company will ever bring that invention to the marketplace. Once a patent has been abandoned, it moves into the public domain, where anyone may use the invention without permission. One unanticipated consequence is that, lacking the ability to protect its product, no company will make the investment necessary to develop the invention into a product and bring it to the marketplace. A good idea will instead simply disappear from the earth.

A second need for financial capital is for UCLA to make proof-of-concept grants in selected cases when a compelling business opportunity is present. Increasingly, large companies are showing a preference for licensing inventions later rather than earlier in their development. This means that to remain competitive with other universities, UCLA must be able to assess both the scientific and business merit of its inventions and, where appropriate, invest in the further development of selected inventions.

A third need for financial capital is to improve the success rate of UCLA startup companies. In approximately 70% of startup companies, UCLA demands reimbursement in cash of the legal fees that it has incurred in the patenting process. The most successful universities typically demand cash reimbursement in about 20% of their startups. Startup companies are chronically short of cash, and to demand cash reimbursement might reduce the likelihood that a startup will succeed. UCLA should accept an equity interest in lieu of cash in more of its startups, but to do so will take financial capital.

The advice that we have received from other universities is that the financial capital of a technology transfer office must be shielded from the financial demands that every university faces during hard times. It may appear that the capital allocated to technology transfer can be diverted to more immediate needs for a year or two, but to do so will undermine the future returns to the university. Experience has demonstrated that university administrations are not reliably capable of sustaining their financial commitment to investment in the development of intellectual property, except in those cases (e.g. Univ. of Wisconsin, Columbia Univ.) where the university has adopted structural measures that provide a barrier against those temptations.

Academic Market-Based Compensation

In our interviews of several score of UCLA faculty inventors, we frequently heard the complaint that the staff of OIP and ISR are not provided with incentive compensation that relies upon success in patenting and licensing inventions and winning industry sponsored research contracts. Many of the staff reported that they are not responsible for the commercial success of their office and that their compensation is not related to any financial goals. It is important that the goals of staff be aligned with the goals of UCLA inventors and the long-term goals of the university. While small incentives can be provided within the UCLA compensation system, these are typically not material in

comparison with base salary and thus do not meet the need to align staff and faculty goals. Successful universities typically compensate their staff based on market rates of pay and using a substantial dose of incentive-based compensation. UCLA will never apply a simple-minded form of financial incentive that will encourage behavior that in the end is adverse to the university or the public. However, the freedom to combine seasoned judgment with selected quantitative measures of performance is desirable.

In order to cure these two problems, we conclude that the staff of our technology transfer office should be compensated outside of the UCLA system.

V. Creating A New Technology Transfer System

Technology transfer at UCLA can be improved in several ways. Some improvements simply require adopting new practices, and many of these kinds of changes are already underway. The crucial improvements described above, however, cannot be achieved within the current UCLA organization. These require the creation of a new entity. This new UCLA subsidiary will manage the industry sponsored research and the intellectual property of UCLA's scholars, while the patents themselves will remain the property of The Regents of the University of California, as is now the case.

The new Technology Transfer Center (TTC) will combine the existing staffs of the Office of Intellectual Property and the Office of Industry Sponsored Research, along with some new staff who will be hired. Some of the present employees in these two offices have indicated a desire to remain employees of UCLA, while others will likely choose to become employees of the new TTC. In order to accommodate both desires, we considered several alternative structures. Our design objective was an organization that satisfies the desires of some to continue to be UCLA employees and of others to be employees of the new UCLA subsidiary, yet to combine the two types of employees in one integrated working team.

We also considered whether OIP and ISR had to be kept together, as is now the case. We have concluded that neither office can succeed at its full potential without an integrated partnership with the other. Industry Sponsored Research is increasingly moving to large-scale, multidisciplinary, multiyear contracts. In order to succeed in this very competitive market, the university must be able to offer to its research sponsors an integrated package of agreements that covers not only the research to be conducted but also encompasses a master license agreement for the inventions that result and for the nondisclosure agreements and the material transfer agreements that will accompany the research. In certain cases, the initial contract will also have to include a phase one clinical trial agreement. UCLA is exceptionally well positioned to carry out this kind of sponsored research, but to win these contracts requires an integrated team effort between the two offices of OIP and ISR.

While OIP can in theory operate without a close relationship to ISR, we believe that in practice it cannot prosper alone. OIP has revenues based on patent licenses. These payments are very volatile as big patents come online or go off-patent. OIP needs a steady

source of revenue to fund its work and to provide the capital necessary for its investments in patents and in proof-of-concept grants, and its natural financial partner is ISR. In addition, OIP will benefit as ISR develops long-term sponsored research relationships with companies that might license a variety of UCLA patents. Faculty inventors will be greatly relieved to have one integrated staff that knows their work and knows their research sponsors.

This analysis has led us to recommend that UCLA should form a new nonprofit, wholly –owned subsidiary that will conduct all technology transfer activities, in essence managing for the benefit of UCLA the intellectual property that is created by UCLA faculty and staff and owned by The Regents. This new organization will be headed by an independent board comprised of experienced business executives from science-based backgrounds along with representatives of the UCLA Chancellor and senior faculty. They will be the decision-makers on these risk-based investment decisions. The subsidiary will build investment capital to be used to pursue patents and make proof-of-concept grants and will establish the compensation of its employees. Ultimately, it will make annual payments to UCLA to support research activities. This subsidiary should include a transitional hybrid organization that will accommodate the desires of those who prefer to continue as UCLA employees and those who prefer to be employed by the new subsidiary.

Our recommended transitional hybrid organization

With these several goals in mind, we discovered in our research that the UC Berkeley Investment Management Company and the new UCLA Investment Company faced very similar design challenges. They have developed nearly identical organizational solutions, and we find that although their purpose is quite different from that of our technology transfer organization, their legal structure is well suited to our needs. Each of these investment management companies at UC Berkeley and at UCLA has formed a wholly owned subsidiary of its campus foundation. Each subsidiary manages the endowment of its respective foundation, which continues to own the assets. At the UCLA Investment Company, staff are employees of the UCLA Investment Company and not of the university.

In our recommended new organization, the salaries of those who remain UCLA employees will continue to mirror those of other UC technology transfer employees, while the salaries of those employed by the subsidiary will mirror the external market for similar jobs in non-UC universities and in research institutes. The dollar value of retirement benefits will be the same for employees whether they work for the subsidiary or the university, although the structure is a pension system for the university employees and a defined contribution plan for the employees of the subsidiary. In essence, employees of the subsidiary will have a slightly lower retirement benefit percentage but based typically on a higher salary, thus yielding the same dollar value in retirement pay. Which of the retirement systems is more favorable depends on the length of service, age, and tastes of each employee. We propose to embody all of these practices in our new organization.

We propose that those employees who wish to continue as UCLA employees may do so. They will report to a board that will be chaired by the Vice Chancellor for Research. The others will become employees of the newly formed subsidiary, which will be headed by a board of directors described below. The Chancellor will have the right to terminate the service of all board members and to appoint a new board, should that need arise. In time, as retirements and resignations naturally occur among the UCLA employees continuing to perform technology transfer functions, all new hires will be employees of the subsidiary rather than of UCLA.

Governance and relationship to UCLA and to The Regents

The board of the subsidiary will recruit a President and Chief Executive Officer, who will be responsible for the management of the intellectual property created by UCLA inventors and owned by The Regents. That President and CEO will serve at the pleasure of the board of directors of the subsidiary. The initial board will be appointed by the chancellor and will fill retirements and resignations through its own internal process. As described above, the chancellor will hold the ultimate authority to dismiss any or all of the board members and to appoint their replacements, should that need arise.

The board will undertake a salary survey to determine market wages among non-UC universities and UC campuses and among research institutes and will establish pay practices for its employees. The subsidiary will seek to obtain from The Regents either a contract to manage UCLA's intellectual property on behalf of The Regents or a license for all UCLA intellectual property with a right to sub-license those rights. All UCLA inventions will be disclosed to the subsidiary rather than directly to a UCLA unit. Unlike the UC Berkley Investment Management Company and the UCLA Investment Company, each of which is a subsidiary of its respective university foundation, the TTC will be a subsidiary of The Regents and/or of UCLA. Certain employees of the subsidiary will have "dotted line" reporting relationships to the UCLA Vice Chancellor for Legal Affairs or to other Vice Chancellors.

Funding of the subsidiary

The subsidiary will be funded through a share of the indirect cost recovery (overheads) associated with the industry sponsored research that it manages and through a share of the royalty income from the patents that it manages. The subsidiary will maintain accounts at the UCLA Foundation and will build the capital necessary to fund its work. As the proceeds of the subsidiary build, distributions will be made to the Chancellor and to deans or departments. The shares of royalties to be paid to inventors will not change from the present arrangements. Our research revealed that other successful university technology transfer offices operate with the budgetary goal of consuming a maximum of 15% of license income to fund operations and have managed to fund their operations well below that limit. Our subsidiary will have relatively small license revenues in its early years but will be able to supplement these with a share of the overhead revenue from industry sponsored research contracts. We anticipate that the 15% cost maximum used by other universities will likely be appropriate for the new subsidiary (although if total

revenues reach \$200 million, for example, total subsidiary costs will surely be less than 10%).

Combining daily operations of the two hybrid organizations

Although there will be employees of two different organizations, all of them will work in the same space and under the day-to-day direction of the President of the subsidiary. For the UCLA employees, the subsidiary will be their client, and although their salary and annual evaluations will be the responsibility of the Vice Chancellor for Research and his or her board, their duties will be to serve the business needs established for them by the President of the subsidiary. In time, as those who are UCLA employees retire or resign, their replacements and all new hires will be employees of the subsidiary, so that in time, no UCLA employees will remain working at the subsidiary.

Other UCLA support services provided to the subsidiary

Administrative support activities that currently take place in a variety of UCLA offices, including accounting, finance, and other activities, will not be affected by these changes. Because the sole purpose of the new subsidiary will be to manage UCLA's inventions and sponsored research for the benefit of UCLA and of The Regents, we foresee no great difficulty as the parties encounter future challenges that we have not foreseen.

VI. Next Steps

This discussion draft will receive broad circulation within the UCLA campus. We will solicit comments and will create from those a final set of recommendations. Several important details remain, and these will be resolved within the coming weeks.

We will continue to fully engage the current leadership of our OIP and ISR offices in this planning process. We will in addition solicit broad input from all employees within those offices.

Once all of these preparations have been completed and the necessary approvals have been obtained, we intend to commence operations of the new subsidiary on July 1, 2012.

This draft is the product of inputs from many people. These include faculty, administration, technology transfer staff, and others. However, the inevitable flaws in it are entirely the result of the drafting by Prof. William Ouchi of the UCLA Anderson School of Management.