## Contents

- Background and Mission 4
- Industry Sponsored Research 6
- IP Licensing 8
- Startups 11
- Results 13
Background and Mission

Berkeley established the Office of Intellectual Property and Industry Research Alliances (IPIRA) in 2004 with goals to:

- Increase industry sponsored research (from $10M to $20M)
- Implement a “relationship approach” to campus interactions with industry,
- Accelerate the pace of innovation, and
- Catalyze commercial uptake.

In doing so, responsibilities and authorities for negotiating and signing contracts with industry were transferred from the campus Sponsored Projects Office (SPO) to IPIRA. (SPO continues to be responsible for federal, state, and other nonprofit contracts and grants).

IPIRA consists of two peer divisions, the Industry Alliances Office (IAO) and the Office of Tech Licensing (OTL). They work together to support a cycle of discovery, invention, commercialization and reinvestment into the research enterprise.

The IAO is responsible for bringing in industry funding, personnel, and materials to support Berkeley’s research enterprise (such as industry sponsored research agreements, industry affiliate program membership agreements, and incoming material transfers) with assistance from OTL. We refer to this as the “pull” component of technology transfer. When companies sponsor research at Berkeley, they are able to get access to results that are typically more applied, and therefore closer to commercial applicability, than federally sponsored research. Berkeley owns the IP rights but the corporate sponsor can license and commercialize the results. License fees and royalties paid on sales of licensed products are collected from companies and distributed to inventors, departments and the campus.
The OTL is responsible for transactions in the outgoing direction, such as patent protection, IP licensing to companies that commercialize our inventions and copyrights, outgoing material transfers, and licensing to startups. We refer to this as the “push” component of technology transfer. In FY15, OTL filed 68 foreign patent applications (68 foreign patents were issued) and 195 US patent applications (55 US patents were issued).

The pull and push elements work together to create a virtuous cycle. After all, companies are likely to be interested in licensing IP rights that they fund the development of. On average, 25% of our ~220 new invention disclosures per year are sponsored by industry.
Since 2000, IPIRA has brought in close to $1B in external funds to the campus through industry-sponsored research and licensing revenue. IPIRA has also assisted professors and departments with research gift funding from companies that amounts to millions of dollars.

**Industry-Sponsored Research**

![Image]

Since its launch in 2004, IPIRA has negotiated thousands of contracts with >825 companies bringing in >$750M in academic, industry-sponsored research. IPIRA currently brings in over $80M in annual industry-sponsored research funding (over 8 fold increase compared to ~$10M in 2004).

The biggest success to date on the industry “technology PULL” side of the house is the groundbreaking, $500M sponsored research agreement with BP that established Berkeley’s Energy Biosciences Institute. It’s still the largest industry-university sponsored research agreement in existence. Our proposal won a global competition among 46 applicants. It’s a research collaboration between Berkeley, Lawrence Berkeley National Lab and the Univ. of Illinois at Urbana Champaign. The agreement is between Berkeley and BP. We send funding to our collaborators at LBNL and UIUC.
through subawards. Indirect costs from the agreement (along with $70M from the State) funded the Energy Biosciences Building, an asset that will survive long after the agreement expires. See: “Our Generation’s Moonshot: Launching the Energy Biosciences Institute. The focus is on the feasibility of making biofuels from lignocellulosic plant materials and enables multidisciplinary research at the intersection of chemistry, molecular and cell biology, engineering, land use, public policy, law, sociology, agricultural economics, physics and plant and microbial biology.

For this deal, we were recognized by the Licensing Executives Society, an international body, as a Deal of Distinction.

There are hundreds of additional examples of industry-funding, including Parallel Computing, the Intel Research Lab at Berkeley, and one sponsored research project that generated DNA sequencing reagents and instruments under IP licenses that have returned over $33M in royalties to date.

Since the BP deal, additional industry-sponsored institutes and initiatives have been launched at Berkeley with agreements negotiated and signed in IPIRA. These include the California Research Alliance by BASF (on new materials), the Innovative Genomics Institute (on genome editing with gift funding from a foundation and industry support from Astra-Zeneca and Agilent) and in March, 2016 the Immunotherapeutics and Vaccine Research Initiative will launch (biological sciences) under sponsorship of Aduro Biotech.
Today IPIRA has supported 18 industry affiliate programs, 13 of which are still active, supporting 11 Schools and Colleges. Over 12% of research expenditures at Berkeley are funded by industry. Amongst peer universities Berkeley’s percentage of Industry-sponsored research is second to MIT, where over 14% of research expenditures are funded by industry. UC Berkeley receives the fifth largest amount of industry-sponsored research by total dollars among US research universities when pharmaceutical-initiated clinical trials are included in the total. Pharmaceutical-sponsored clinical trials are highly directed, “work for hire” tasks that are performed under a human subjects protocol, and are not the same as industry-sponsored academic research that is carried out under the direction of a professor.

IP Licensing

IPIRA has received over 2,000 invention disclosures from Berkeley Faculty, Students and Staff over the last 15 years.
Over the same period, IPIRA has filed over 2,000 patent applications in the US alone.

Over 780 companies have licensed IP rights from UC Berkeley. There are over 600+ products that have been commercialized under an IP license from Berkeley. In addition to licencing agreements, IPIRA supports faculty members by facilitating material transfer agreements, confidentiality disclosure agreements, data transfer agreements, and interinstitutional agreements amongst others.
Since IPIRA has brought in over $208M in IP licensing income of which inventors received ~$46M, departments ~$49M and the campus ~$103M.

The biggest success on the “technology PUSH” side of the house is the cancer drug, YervoyTM, which is sold by Bristol-Myers Squibb. It was the first drug approved by the FDA to treat phase IV melanoma. We monetized our running royalties for $87.5M in 2011 with the possibility of two additional, $20M milestones based on global sales. Here is a write up: Scientist’s Drive Put the Brakes on Cancer.

This windfall revenue was distributed entirely to the inventors, to research departments and the campus. Even the “office share” of revenue was distributed to campus due to dire needs of the campus in 2011.

~$26M was distributed to inventors, and $62M funded:

- Cancer Research Lab core facilities
- Two new biology teaching labs
- Molecular and Cell Biology funds for recruitment, retention, and infrastructure development
- Shared equipment for Li Ka Shing Building research
Flow Cytometry Facility in Li Ka Shing building operated under Cancer Research Laboratory

Equipment for vivarium - Laboratory Animal Care

Service on campus bonds to complete the neuroscience labs in Li Ka Shing building

Startups

UC Berkeley has a vast entrepreneurial ecosystem, consisting of numerous units and organizations on campus that support entrepreneurs.

One hundred seventy-six startup companies have been founded with an IP license from Berkeley, which is the second highest number within the UC system. These startups have created thousands of jobs in California (66 alone created 1,543 jobs), have raised over $1.6 billion in VC funding since 2005, and have generated over $8.1 billion through mergers and acquisitions.
A 2014 study by the San Francisco Business Times analyzed 24 UC-licensed startups in the Bay Area from UC San Francisco and UC Berkeley. 18 of the 24 were from Berkeley. Updates since that time include:

Atheer Labs raised $8.9M
iDiAssess has raised $2M in seed funding


Caribou raised an $11M Series A in April, 2015

Intellia Therapeutics raised $70M in Series B

4D Molecular did a development deal with Roche upfront payment was undisclosed

Cerebrotech has raised at least $3.5M in rounds from 2012 and early 2014

Berkeley Lights raised $90M series A
Results

Other examples include the Parallel Computing Laboratory in Engineering, funded with $10M from Intel and Microsoft. Intel also funded an Intel Research Lablet, bringing in over $24M in research funding. Another sponsored research project generated DNA sequencing reagents and instruments under IP licenses that have returned over $33M in royalties to date.

Additional industry-sponsored institutes and initiatives have been launched at Berkeley with agreements negotiated and signed in IPIRA. These include over $10M at the California Research Alliance by BASF (on new materials), the Innovative Genomics Institute (on genome editing with gift funding from a foundation and over $2M in industry support from Astra-Zeneca and Agilent).

In 2013, MARCO, a consortium of companies, committed $28M in the formation of the Terraswarm Research Center at Berkeley. This funding supported 10 Berkeley faculty members and 9 other institutions to perform fundamental research in the semiconductor space.

Most recently in March, 2016 the Immunotherapeutics and Vaccine Research Initiative will launch (biological sciences) under sponsorship of Aduro Biotech.

IPIRA developed a socially responsible licensing program in 2004 by creating “humanitarian use” contract clauses in research and IP license agreements that result in access to technology invented at Berkeley by the world’s poorest. One of the highest-profile success stories under the program is the development of a low-cost malaria drug that was created through a partnership among UC Berkeley (through Jay Keasling, lead inventor of the patents), Berkeley’s startup company, Amyris, and the Institute for One World Health (now PATH) with funding from the Bill and Melinda Gates Foundation. Later, Sanofi Aventis joined the partnership as the ultimate commercialization partner. To implement the program three contracts were negotiated and signed by IPIRA, a deal that earned IPIRA an inaugural Patents for Humanity award from the US Patent and Trademark Office.

IPIRA’s approach to Tech Transfer, including that deal, was highlighted by the National Academy of Sciences Institute of Medicine in its Breakthrough Business Models publication: see pages 71-78 of this chapter.