



Our Mission

The Office of Intellectual Property and Industry Research Alliances (IPIRA) nurtures and manages Berkeley's IP portfolio, supports Berkeley's research enterprise by **fostering research collaborations** among scientists, entrepreneurs and corporations to **speed innovation and catalyze commercialization of game-changing technology solutions**.

IPIRA was founded to develop a multifaceted, relationship-based approach to our relations with industry. Within IPIRA, the Industry Alliances Office (IAO) and the Office of Technology Licensing (OTL) work synergistically to promote research that leads to IP; IP then spawns commercial uptake, new research, and other ways of giving back to Cal in a virtuous cycle.

At IPIRA, we provide services, innovate on the innovation process itself and deploy Berkeley research outputs to benefit society. We embrace a spectrum of IP management strategies, from heavy to light, that address diverse markets.

Success

Berkeley's stellar research reputation relies on its internationally recognized faculty and students across many disciplines.

Since IPIRA's establishment in 2004, hundreds of research projects have been sponsored by >500 companies. Berkeley is ranked 1 of the top 5 universities for industry to collaborate with.

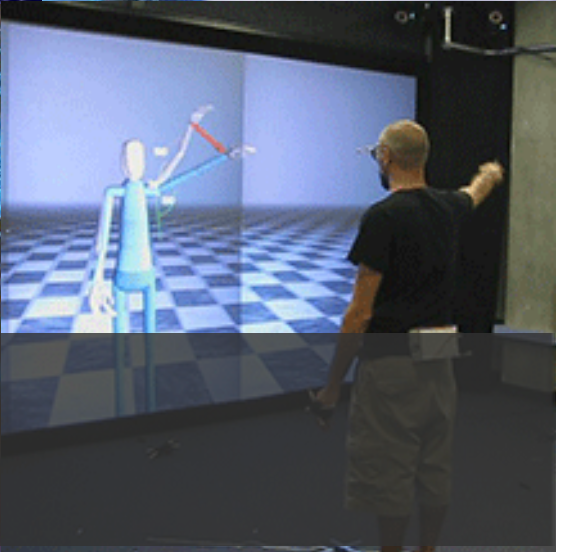
Berkeley IP licensees have **commercialized >100 products** and dozens more are in the R&D pipeline.

Over 150 start-up companies were founded to commercialize IP rights under license from Berkeley. **Startups from Berkeley have raised >\$1.3B in private capital** since 2007. 65 companies have raised an average of \$13.8M.

Berkeley is 1 of 5 universities that founded 2/3 of all biotechnology companies in California.

Berkeley Office of Intellectual Property and Industry Alliances
a service unit of the Vice Chancellor for Research

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Industry Alliances Office

IAO was founded as an industry-facing, dynamic office that works strategically with faculty and industry partners to implement optimal research collaboration models.

IAO helps increase corporate sponsored research on the Berkeley campus, meets with companies and delegations, advises faculty and students, and facilitates numerous forms of engagement with industry, from sponsored research to industry affiliate programs. Working in partnership with its sister office, the OTL, IAO facilitates the critical steps of translational research that help bring promising research results from bench to bedside, resulting in second generation, “improved” IP rights. The added proof of concept from translational research catalyzes industry uptake and investment in the IP rights. IAO also handles incoming Material Transfer Agreements (MTAs) to make scientific materials, data, or software available to Berkeley researchers, and reviews and executes Nondisclosure Agreements.

Industry Sponsorship Facts

Since 2004, 500+ companies have sponsored Berkeley research or joined Berkeley industry affiliates programs. 40% of companies sponsoring Berkeley research have sponsored more than once.

Highlights

- The Energy Biosciences Institute (EBI) was established with a \$500M grant over 10 years from BP, including \$350 million for research on bioenergy.
- Parallel Computing research was launched with \$10M from Intel and Microsoft.
- Over 600 agreements were signed in 2012.
- A single sponsored research agreement resulted in patents that have returned over \$33 million in royalties to Berkeley.

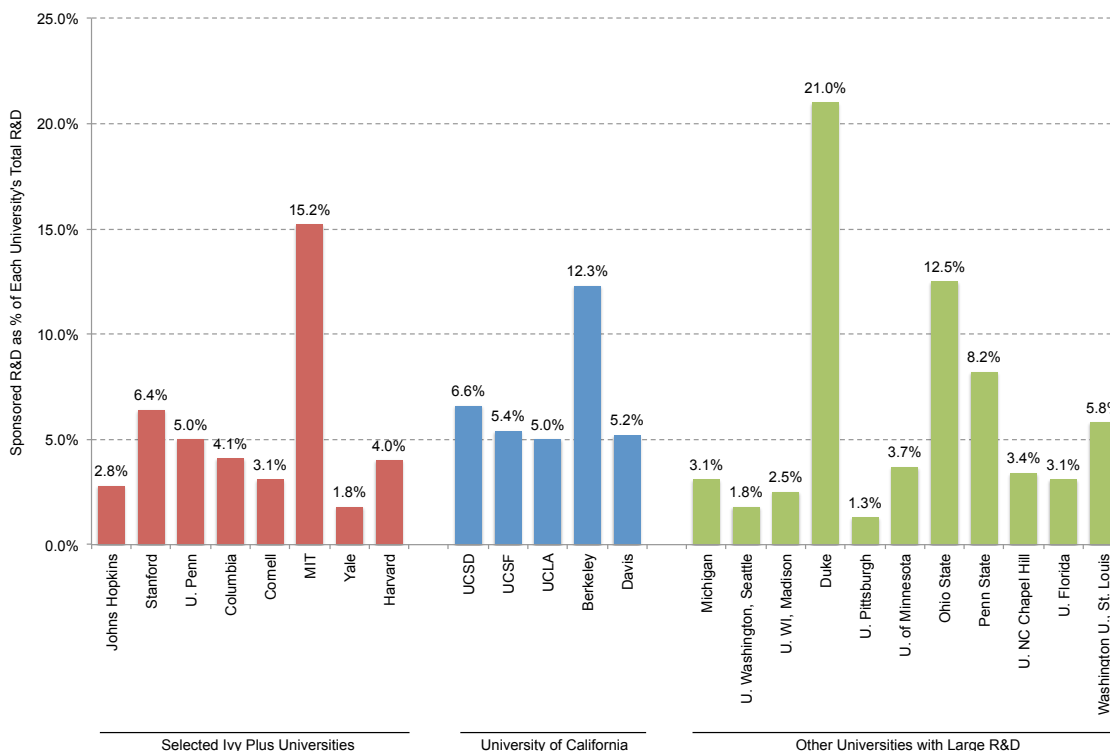
Facilitating Research Gifts

Because IAO meets with companies at all stages of campus engagement, it often helps facilitate industry participation on campus by discussing options, making introductions, and providing referrals. Often a company’s strategic partnership needs are best met by providing unrestricted research gifts. IAO partners with Berkeley colleagues in corporate relations in this critical decision process.

Supporting Federal, State and Foundation Awards

IAO advises the Sponsored Projects Office of intellectual property and confidentiality terms in federal, state, and foundation awards, and provides periodic guidance and negotiation assistance on industry matters in “federal flow through” awards.

Percentage of Industry Sponsored R&D Expenditure by Educational Institution, FY 2011



University	Total R&D (\$MM)
Johns Hopkins	2,145
Stanford	908
U. Penn	886
Columbia	879
Cornell	782
MIT	724
Yale	657
Harvard	650
UCSD	1,009
UCSF	995
UCLA	982
Berkeley	708
Davis	708
Michigan	1,279
U. Washington, Seattle	1,149
U. WI, Madison	1,112
Duke	1,022
U. Pittsburgh	899
U. of Minnesota	847
Ohio State	832
Penn State	795
U. NC Chapel Hill	767
U. Florida	740
Washington U., St. Louis	725

Source: NSF.gov.
Note: Duke has a very large clinical trials infrastructure and corresponding funding from pharmaceutical companies.

Industry sponsored research expenditures at Berkeley in FY 2011 were \$87 million, placing Berkeley second only to MIT’s \$110 million.

Industry Alliances Office

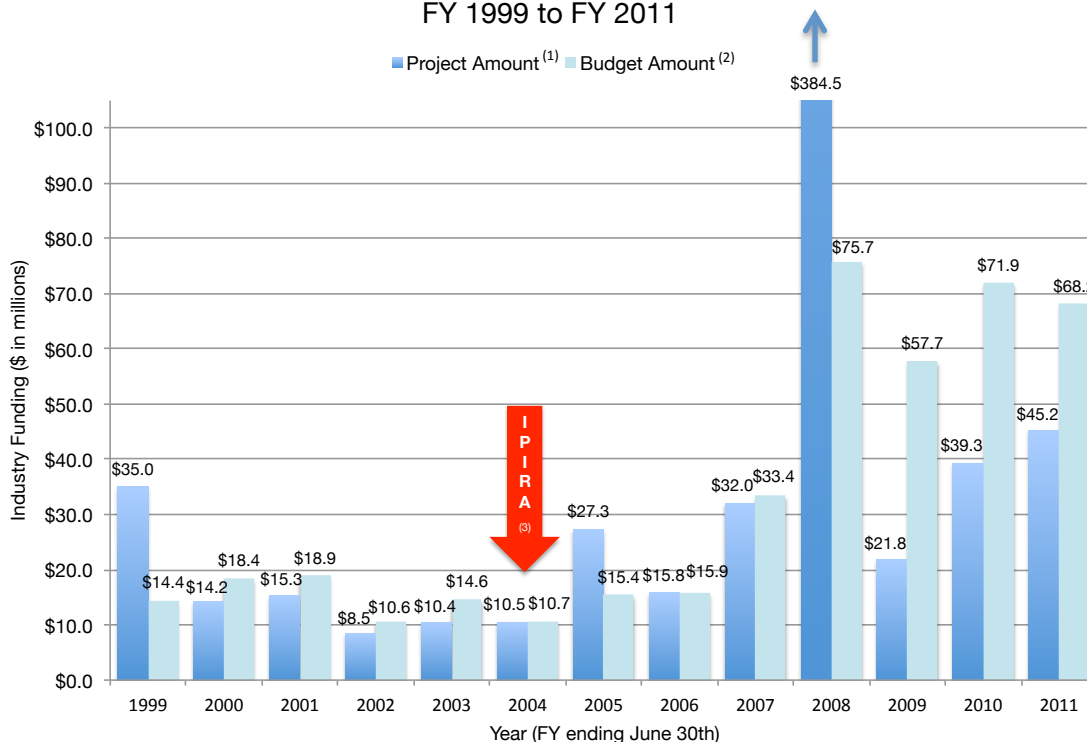
Whether helping form a new Industry Affiliate Program, or providing guidance to historic programs, the IAO plays a key role in strategic thinking on collaboration models, handling intellectual property rights, and membership agreements. Below are some of the programs contracted by IAO:

Industry Affiliate Programs

- BCGC (Berkeley Center for Green Chemistry)
- BSAC (Berkeley Sensor and Actuator Center)
- BSL (Berkeley Seismological Laboratory)
- CBE (Center for the Built Environment)
- CCN (Cool Climate Network)
- CELDi (Center for Excellence in Logistics and Distribution)
- CHESS (Center for Hybrid Embedded Software Systems)
- iCyPhy (Industrial Cyber-Physical Systems Center)
- IMPACT (Integrated Modeling Process & Computation for Technology)
- PEER (Pacific Earthquake Engineering Research Center)
- SBI (Synthetic Biology Institute)
- SynBERC (Synthetic Biology Engineering Research Center)
- SWARM Lab (Ubiquitous SWARM lab at UC Berkeley)
- TRUST (Team for Research in Ubiquitous Secure Technology)
- VITAL (Vehicle Infrastructure Transportation Affiliates Laboratory)



UC Berkeley Industry Funding
FY 1999 to FY 2011



Footnotes:

- (1) Industry funding is recognized as the total industry sponsored amount in the year in which the agreement was signed.
- (2) Industry funding is evenly distributed per year over the length of sponsor agreement.
- (3) UC Berkeley's Office of Intellectual Property and Industry Research Alliances (IPIRA) was established in 2004.

Office of Technology Licensing

The OTL manages Berkeley's IP Rights to achieve positive impact.

The OTL manages Berkeley patent and copyrightable software rights, supports Berkeley's vast research enterprise (through industry agreements, visitor and collaboration agreements and support of researchers and entrepreneurship), markets and nurtures high commercial potential technologies, licenses IP rights to industry to translate science and engineering results into commercial products and services for the public good. The OTL assists the IAO and other campus units with IP terms in a range of contracts and relationships, and assists a diverse array of stakeholders in our local and national innovation ecosystem on a broad array of matters ranging from science and innovation policy, to IP management strategies to meet diverse needs and the evolving public-private interface.

Mission

- Advance Berkeley's academic excellence, research activity and public service.
- Generate revenue for Berkeley through technology licensing and related contracts to support Berkeley education and research activities.
- Support entrepreneurship and economic development.

Highlights

- ★ ~\$200 million in gross revenue. Inventors and copyright authors have received >\$44 million in direct payments and departments have received an equal amount.
- ★ As of 2012, >400 inventions are under IP agreements, >780 companies have signed IP agreements with Berkeley, 31% more than once. Berkeley has ~700 issued US and ~500 issued foreign patents.
- ★ Scores of products commercialized under license include:
 - Therapeutics: to treat melanoma, malaria.
 - DNA sequencing instruments and reagents.
 - Diagnostic platforms, drug discovery platforms.
 - Software for search, CAD, security, geo-mapping, protein modeling, traffic flow, earthquake engineering.
 - Fluorescent compounds for medical imaging, biomed research.
 - Robotics, CAD-CAM, RFID technology.
 - Nanofluidic-based genomics.
 - Biofuels, flavors & fragrances, emollients, lubricants.
 - Solid state lighting, LEDs.
 - Tumor ablation device, micro-needles, catheters, diagnostics.
- ★ A **drug royalty** was monetized for \$87.5M to fund biological research facilities, students, faculty recruitment and retention, and new initiatives
- ★ Berkeley received a **Patents for Humanity award** for its Socially Responsible Licensing Program.
- ★ Gilead Sciences **donated \$1.8M** to support Biochemistry & Molecular biology research.

Berkeley Inventions Disclosed
FY 2012 Ending June 30

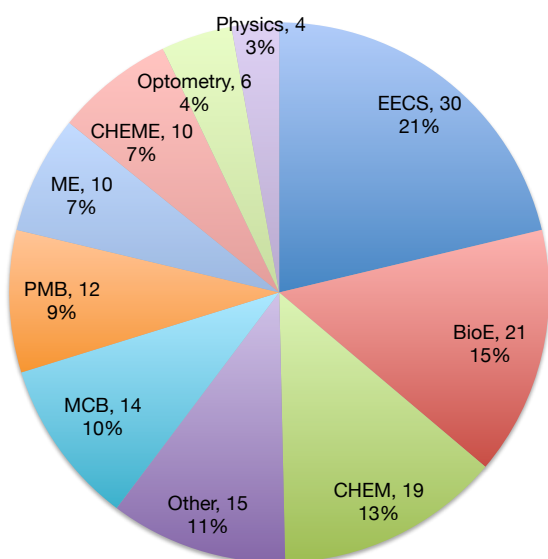
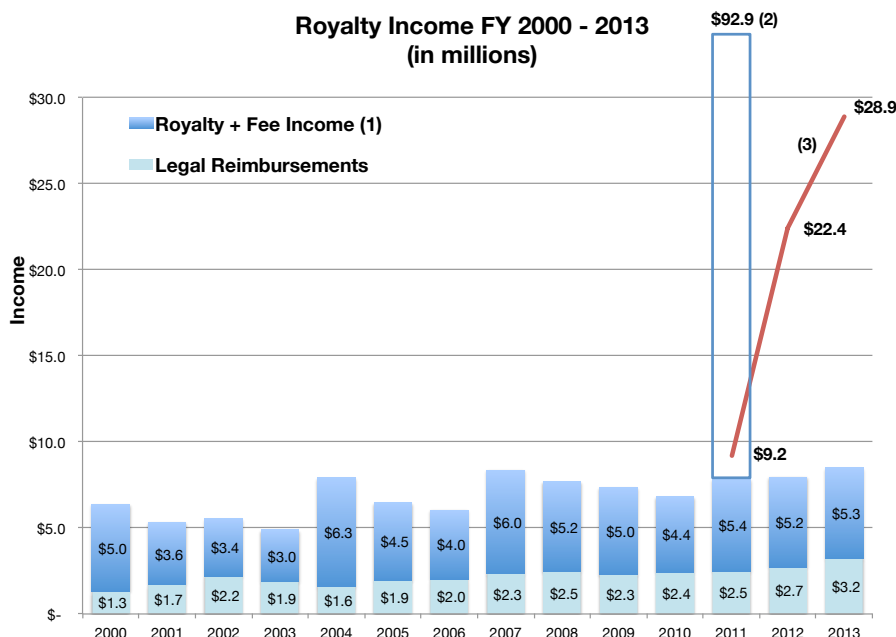


Chart key:

EECS – Electrical Engineering & Computer Sciences
 BioE – Bioengineering
 CHEM – Chemistry
 MCB – Molecular and Cell Biology
 PMB – Plant & Microbial Biology
 ME – Mechanical Engineering
 CHEME – Chemical and Biomolecular Eng.

Other includes Nutritional Sciences & Toxicology, Psychology, Civil and Environmental Engineering, Material Science & Engineering, Neuroscience, and QB3

Royalty Income FY 2000 - 2013
(in millions)



1) Royalties + Fees from patent and copyright licensing (Note: UCOP Regents report excludes copyright revenue).

2) Royalties were received in a lump-sum, up-front payment of \$87.5 million in 2011.

3) Red line represents royalty and fee income for FY 2011, 2012 and 2013 if royalties from the monetized patent had been collected in the respective fiscal years.

Office of Technology Licensing

>150 startup companies have been founded to commercialize technology from Berkeley under IP licenses.

“See Success Stories” page on our website at: <http://ipira.berkeley.edu>



Ensignta Security | 2013

Cyber security startup founded by CS Professor Dawn Song and accelerated at Berkeley SkyDeck. Acquired by FireEye, a leader in cyber security and valued at >\$1.2B.

CommandCAD | 2007

A design for manufacturability startup founded by 3 graduate students. Provided IC layout optimization for commercial EDA. Acquired by Cadence Design Systems in 2007.

Euclid Media | 2011

Founded by 2 graduate students, centered around a digital brand graphics insertion technology for video advertising. Licensed core technology to Pandoodle in 2011.

Inktomi | 2003

Founded in 1996 by CS Professor Eric Brewer and his student. Inktomi was prominent in search in the dot-com era. Acquired by Yahoo! for \$235MM in 2003.

CellScope | 2009

Spinout from Prof. Dan Fletcher's bioengineering lab. Smartphone clinical-quality diagnostic microscope with 60x magnification. Inaugural Rock Health incubator batch backed by Khosla Ventures.

Oncobionic | 2003

Startup founded by Mech. Engr. Prof. Boris Rubinsky & his team members to commercialize NanoKnife™ for minimally invasive surgical treatment of tumors. Acquired by Angiodynamics in 2006.

UrbanScan | 2007

Acquired by Google in 2007 based on software for web-based 3D reconstruction of urban landscapes such as Google Earth. Founded by EECS Professor Avidesh Zakhor.

Renovis | 2000

Biotech startup founded by MCB Professors Corey Goodman and Tito Serafini to treat neurological and inflammatory diseases. Acquired for \$152M in stock by Evotec in 2008.

Mendel Biotechnology | 1997

Agbio-bioenergy crops, row crop yields founded by Plant & Microbial Bio. Prof. Brian Staskawicz. Raised \$90M to date.

Exelixis | 1994

Biotech drug development to treat cancer. Founded by MCB Professors Gerald Rubin and Corey Goodman.

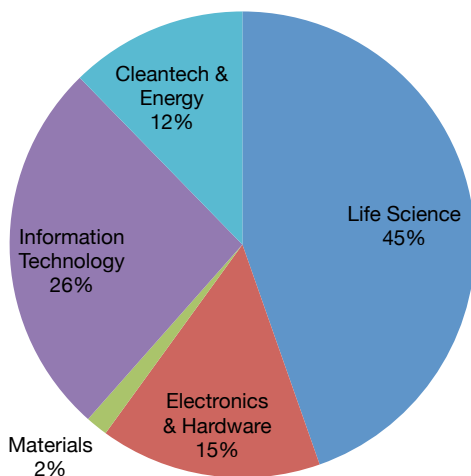
Acacia Biosciences | 1994

Acacia was founded by MCB Professor Jasper Rine and team members to speed drug development at lower cost. Acquired by Rosetta/Merck in 1999.

Tularik | 1991

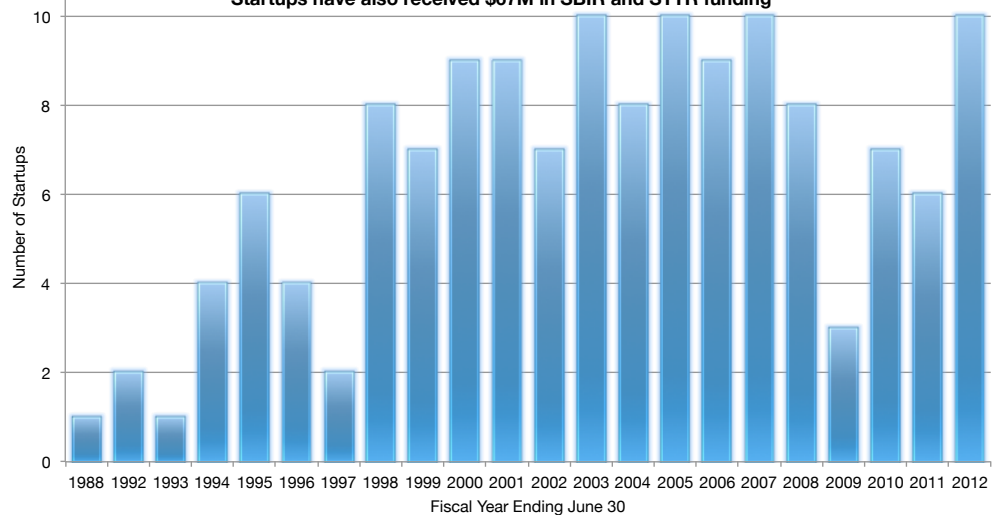
Biopharmaceutical startup founded by MCB Professor Robert Tjian and his team members to commercialize therapeutics based on transcription factors. Acquired by Amgen in 2004.

Sector Distribution of UC Berkeley Private Startup Companies



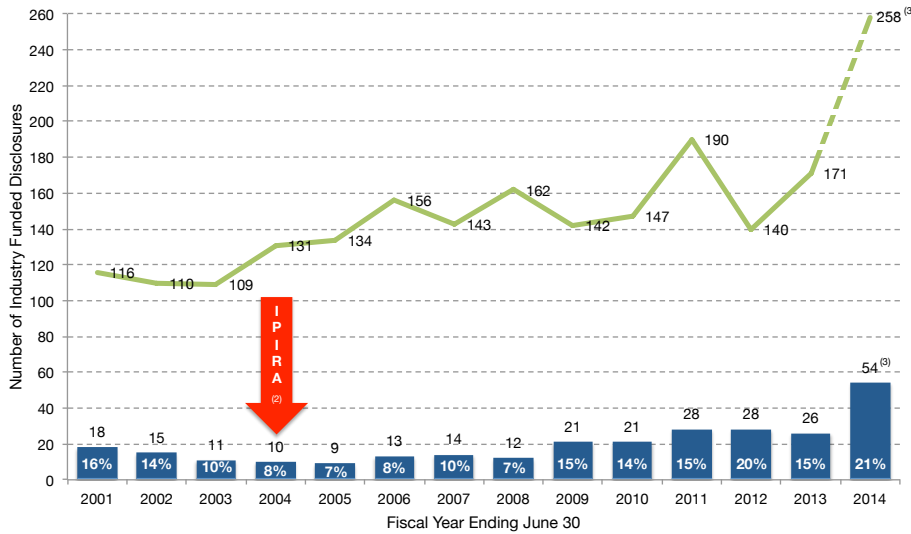
of Tracked Startups Founded to Commercialize Berkeley Licensed Inventions = 141 (as of 2012)

65 companies have raised an average of \$13.8M in private funding
Startups have also received \$67M in SBIR and STTR funding



Office of Technology Licensing

UC Berkeley Invention Disclosures
FY 2001 to FY 2013⁽¹⁾



1) Percentages show the number of industry-funded disclosures as % of total number of disclosures.
 2) IPIRA was established in 2004.
 3) FY 2014 numbers are projected using linear extrapolation on FY 2014's first four months of data from July 2014 to October 2014 (# disclosures = 86, # sponsored disclosures = 18).

Sample Berkeley Licensing Opportunities

1. Automated smart grid thermostats
2. Nuclear fuel assembly reactivity control system
3. Miniature diamond gyroscope
4. 3D printed structural concrete polymer
5. Self-powered wireless sensors
6. Carbon dioxide capture
7. Heavy oil bioconversion
8. Biologically inspired self-activated building regulation
9. Photonic gene circuits
10. Biodegradable micro-needles
11. Mir34a cell reprogramming
12. Synthetic surfaces for human cell culture
13. DNA repair proteins for metabolism, obesity, diabetes
14. Microfluidic assays for Hepatitis C diagnostics
15. Anti-anthrax compounds
16. Asthma therapy
17. Live imaging of cornea lymphatic vessels
18. DNA design and management
19. Web-based inquiry algorithm, secure cloud browsing

Venture Capital Partners and Campus Partners for Entrepreneurship



SkyDeck

The first research university startup accelerator developed to foster entrepreneurial excellence through personalized engagement and key alliances among the university, national lab, local government and private sector.



Lester Center for Entrepreneurship

Internationally recognized program and the primary locus at Berkeley for the study and promotion of entrepreneurship and new enterprise development.



Center for Entrepreneurship & Technology (CET)

Academic center and industry partnership at Berkeley's College of Engineering. Through teaching, programs and research interlaced with strong industry participation, the Center equips engineers and scientists as it relates to individual venture creation and innovation in existing entities.



California Institute for Quantitative Biosciences (QB3)

An incubator created by the University of California to tackle "quantitative biosciences" for better health and a sustainable environment. The 62 companies born at QB3 have created more than 280 jobs and attracted more than \$230 million in investment. QB3 also connects UC scientists to global industry through innovative partnerships such as its \$3.5 million/year alliance with Pfizer.



Center for Information Technology Research in the Interest of Society (CITRIS)

With a focus to commercialize information technology research for the most pressing social, environmental and healthcare problems, CITRIS facilitates partnerships among faculty and students at four University of California campuses (Berkeley, Davis, Merced, and Santa Cruz) with industrial researchers from over 60 corporations.

Bakar Fellows Program

Bakar Fellows Program

Supports innovative research by early career faculty at Berkeley with special focus on projects that hold commercial promise in Engineering, Computer Science, Chemistry, Biological Sciences, Physical Sciences, and in multidisciplinary work in these areas.

Contact an IPIRA Officer to advance your invention

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Looking for corporate sponsors and funds for your research? Contact an IAO Officer ----->

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Wish to submit a patent or copyright disclosure for review? ----->

Patent:
<http://ipira.berkeley.edu/invention-disclosure-information>

Software:
<http://ipira.berkeley.edu/software-disclosure-information>

Make an appointment with any officer at our new Thursday Stanley Hall office hours ----->


Email: ipira@berkeley.edu

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