

IPIRA Annual Report FY 2021

UC Berkeley Office of Intellectual Property & Industry Research Alliances

By the Numbers and Beyond, July 1, 2020—June 30, 2021

Office of Intellectual Property & Industry Research Alliances

Our Mission

To enhance the research enterprise of the world's top-rated public university by establishing multifaceted collaborations with companies.

IPIRA consists of two peer divisions working under a synergistic “push and pull” model to support UC Berkeley’s vast research enterprise and to translate research results into societal and economic impact, and to support innovation and entrepreneurship programs.

Industry Alliances Office

IAO establishes agreements with industry to sponsor research conducted by individual faculty, industry sponsored institutes, industry affiliate programs, and innovation and entrepreneurship programs. IAO also negotiates agreements for SBIR/STTR grants, incoming research data, materials, and software, and confidential information. IAO has signed contracts with more than 1,300 companies worldwide.

Office of Technology Licensing

OTL establishes intellectual property rights agreements with companies that commercialize technologies developed at UC Berkeley. The knowledge transfer benefits the public, funds campus research and education, and rewards university researchers for their ingenuity. More than 730 innovative products and 250 startup companies have been born out of technology licensed by OTL.

During FY 2021, planning began for establishment of an **Equity Solutions Group**, affiliated with OTL. ESG was established to diversify the types of transactions that result in company stock ownership, and maintain the quantity of shares owned in support of the university's mission. The ESG team collaborates with stakeholders across the startup equity lifecycle, from company formation, capital raises, and corporate actions to liquidity/exit events.

IPIRA CONSISTS OF TWO PEER DIVISIONS



IPIRA Agreements

Statistics in this section do not include activity of the Lawrence Berkeley National Laboratory (LBNL), which has its own, dedicated tech transfer office.

Invention and Software Disclosures

- Inventions disclosed: 187
- Software disclosed: 10

US and Foreign Patents Issued

- US patents issued: 118
- Foreign patents issued: 93

US and Foreign Patents Filed

- US first filings provisional: 105
- US first filings non-provisional: 6
- US secondary filings provisional: 19
- US secondary filings non-provisional: 157
- Foreign first filings: 86
- Total in FY 2021: 373

Active Patents

- US patents active: 839
- Foreign patents active: 907
- Total as of June 30, 2021: 1,746

Patent Costs

- US and foreign patent prosecution \$14.7M
- Patent cost reimbursements \$12M

Agreements Completed

- IP rights letter of intent agreements: 24
- IP rights option agreements: 9
- IP rights license agreements: 24
 - Exclusive: 19
 - Non-exclusive: 5
- IP rights inter-institutional agreements: 12
- Total in FY 2021 signed in IPIRA: 69
- Total agreements supported in FY 2021 that were signed in other Berkeley offices: more than 400.

Equity

- Number of agreements executed with private equity provisions in FY 2021: 16
- Number of agreements executed in FY 2021 that have participation rights: 8 startups
- Number of agreements executed in FY 2021 that have existing affiliated VC fund investments: 4 (SkyDeck & California Innovation Fund)

Researchers with the most US patent applications filed in FY 2021

- Jennifer Doudna (63)
- Martin Jinek (19)
- Krzysztof Chylinski (19)
- Emmanuelle Charpentier (19)
- Gerbrand Ceder (17)

Researchers with the most US patents issued between 2000 and 2021

- Jennifer Doudna (73)
- Jay Keasling (54)
- Carolyn Bertozzi (47)
- Emmanuelle Charpentier (46)
- Homayoon Kazerooni (39)

Support Provided to Research Institutes, Departments, Incubators & Accelerators, and Other UC Campuses

Examples:

- Continuous assistance with the [Laboratory for Genomics Research \(LGR\)](#), Apple Tree Partners programs and agreements, Energy and Biosciences Institute (EBI), and California Research Alliance (CARA).
- Continued support of LGR director and IGI director of IP and all the related IP matters.
- [Fast Tracking Founders Program](#): filing of a first provisional application for students in the capstone program at the College of engineering.
- Helped UC Davis with copyright questions while the campus was lacking staff expertise.
- Supported faculty with book chapter license agreements.
- Assisted with the [Outside Activities Tracking System \(OATS\) program](#).
- In collaboration with [UC Research Policy Analysis and Coordination \(RPAC\)](#) and companies, produced new internship and dual engagement agreements within the parameters of UC policy, reaching consensus among all parties.
- Bundled courseware from professors into a UC in-license followed by out-licensing for commercial use.
- Frequent support of [Sponsored Projects Office](#) agreements.
- Supported procurement agreements.
- Developed several IP management plans associated with incoming funding among various entities.
- Worked on the joint [UCSF-UCB Innovate for Health \(i4H\)](#) program and clarified how IP developed under the program will be managed.
- Helped the [Institute of Personality and Social Research \(IPSR\)](#) with a loan agreement to provide mosaic tiles from the IPSR archive for a museum exhibit at the Center for Architecture in New York City. The tiles, designed by world-renowned mid-century architects, were created during an IPSR study conducted at UC Berkeley in 1958-59, assessing what makes a person creative.
- Negotiated visitor agreements for various UC departments and other institutions that comply with UC policies.
- Assisted with policy changes to facilitate entrepreneurial activities.
- Created tools for organizing and managing equity holdings in companies generated from licensing and from incubators and accelerator programs across the campus.
- Supported campus-facing shared carry affiliated venture capital funds.

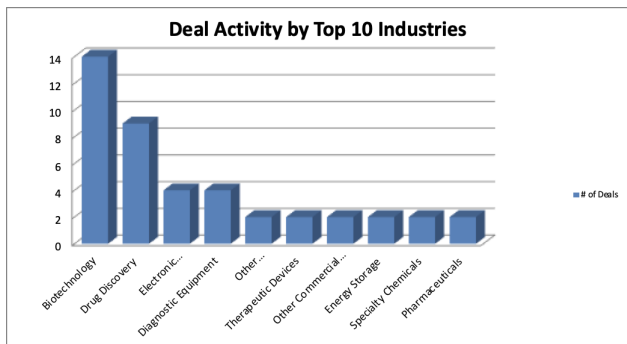
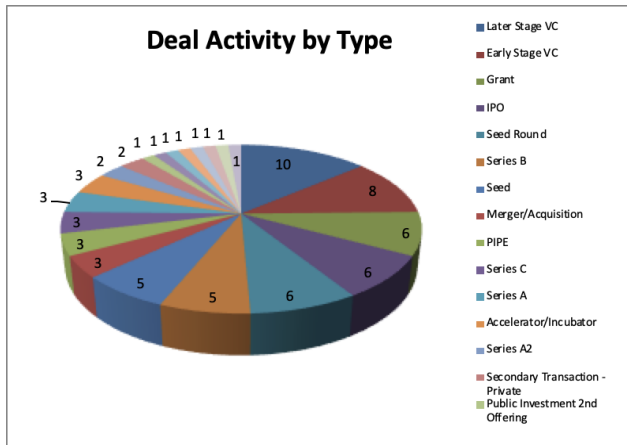
Startups Founded With an IP License from Berkeley

Number of Startups Founded in FY 2021: 11.

- Total number of startups licensed over all years as of June 30, 2021: 258.
Total Raised in FY 2021 by 39 startups: \$3.18B.

Top 10 Funding Deals by Size in FY 2021 (all IPIRA startups, regardless of year in which the company was founded)

Company	Size (millions)
Amyris	300.00
Vedere Bio	280.00
Berkeley Lights	258.00
Nurix	209.00
Ambrx	200.00
4DMT	193.20
Berkeley Lights	178.20
Iota Biosciences	176.50
Lucira Health	153.00
Nurix	139.50



Faculty with the most IPIRA startups founded between 2000 and June 30, 2021

- Jennifer Doudna (10)
- Boris Rubinsky (9)
- Luke Lee (9)
- Jay Keasling (6)
- David Schaffer (6)

IPIRA Revenue

Licensing Royalties and Fees

Statistics in this section do not include disclosures made by Berkeley researchers to the Lawrence Berkeley National Lab Technology Transfer Office.

Total Revenue in FY 2021: \$27,822,356

- Includes \$17,614,159 from the sale of equity in FY21
 - The equity sold in FY 2021 was obtained in licenses that were signed 8-9 years before equity cash-out.
- Total revenue (over all years) as of June 30, 2021: \$246,312,019
- Total funding from campus to the Office of Technology Licensing as of June 30, 2021: \$10.8M. This excludes funding to the Industry Alliances Office division of IPIRA.

Income Distributions in FY 2021

- Paid to inventors: \$1,707,866
- Distributed to academic departments: \$3,332,412.89
 - Includes early distribution from the sale of Berkeley Lights stock
 - Net: \$11,400,593 (\$11,665,307 Berkeley portfolio, less \$264,713 for UCOP expenses and OTT Berkeley portfolio)
 - Retained for two years of budget for OTL: \$5,371,631
- Net transferred to VCRO: \$5,081,801

Equity

- Funds received from sale of private equity agreements in FY 2021: \$18M

Funding from Industry

Total Funding from Active Industry Partnerships in FY 2021: \$45 million

- Grants and contracts (*excluding federal flow through*): \$36.4 million
- Membership programs: \$8 million
- Innovation services: \$0.39 million

Research Agreements with Industry

Negotiated and signed by Industry Alliances Office

Total Agreements Completed in FY 2021 (excluding awards with federal flow through): 136

- Research with industry: 84
- Research with non profit businesses: 4
- Memberships Signed: 33
- Innovation Services: 9
- Collaboration Agreements with Industry: 6

Material Transfer Agreements

- MTA Requests: 423
- MTAs Executed: 310

Data Use Agreements: 124

Nondisclosure Agreements: 81

Success Stories

These corporate sponsored research programs support and expand UC Berkeley innovation and entrepreneurship. The cycle of innovation starts with these agreements. Some are revenue generating, while others are not.

Industry Sponsored Research

- **Merck Inc Master Sponsored Research Agreement.** 11 research projects totalling \$1,810,553.
- **Vedere Bio II Inc. Professor Udi Isacoff.** \$6,244,620 over 4 years for vision restoration.
- **Pfizer Inc. Professor Joseph Lewnard.** \$472,180 for 1 year for **COVID-19**.
- **Total Including Professor Scott Moura. Install electric charging stations.** Contracts to build the EV charging service. Supports creating new technology and using campus for proof of concept. Funds support installation. \$250,000 current FY. \$1.3M cumulatively since 2016.
- **Calico Inc. Professor Dan Nomura.** Two agreements totaling \$640,000.
- **Janssen Inc. Professor Richard Sarpong.** First project is \$250,000.
- **Volkswagen Inc. Professors Persson/Ceder.** New amendment adds \$1,200,000 over 3 years, for a total \$2,223,000 since 2018. Supports energy storage.

SBIR/STTR Grants

Berkeley startups that licensed Berkeley IP rights and sponsored campus research

- **4D Molecular Therapeutics**, LLC. Sponsored Research Agreement, \$1.3M. Went public in December.

Industry Affiliate Program Agreements

- 6 new Industry Affiliate Program memberships totaling \$2,032,500 in the Berkeley Sensor and Actuator Center (BSAC), Berkeley Artificial Intelligence Research Lab (BAIR), Center for Innovation in Vision and Optics (CIVO), and Cool Climate Network (CCN).
- Signed on a new industry partner to the [UC-wide Drug Discovery Consortium](#) (UC DDC).

Industry Sponsored Institutes

- **BASF–California Research Alliance (CARA)**. 8 new projects totaling \$1,240,648.
- **Shell–Energy Biosciences Institute (EBI)**. 2 new awards totaling \$645,284.
- **GSK–Laboratory for Genomic Research (LGR)**. 1 new project totaling \$100,000.
- **C3.ai–Digital Transformation Institute (DTI)**. Shell membership for \$250,000. (Plus an early 2020 heavy lift to bring in \$1,536,000 to date in funding for UC Berkeley projects.)
- **Apple Tree Partners-Center for CRISPR Target Discovery (CCTD)**. 4 new projects totaling \$5,450,000.

Innovation Services Agreements

- IPIRA led the development and management of the **Berkeley Research Infrastructure Commons** (Berkeley RIC). The Berkeley RIC is a group of core campus research and development facilities, startup incubator labs, and other resources that are available for shared use. Berkeley RIC facilities are available to industry users for commercial purposes under commercial rate structures and business-friendly intellectual property terms. The Berkeley RIC has more than 20 facilities totaling about 100,000 square feet of R&D space. In the 2021 calendar year, Berkeley RIC facilities established 66 shared-use agreements with companies.
- **Berkeley RIC Faculty Lab eXceptional-use for Innovation & Entrepreneurship (FLEXIE) program** (fka SSUFIE) **agreements**: 3 new (Fit Genetics, Equator Biosciences, and Spectacular Labs), and 2 renewals (Zest Bio and Calyx, Inc.). The Berkeley RIC FLEXIE program enables early stage startup companies that are affiliated with UC Berkeley's startup accelerators to temporarily conduct new product R&D in faculty labs under robust oversight.
- IPIRA supported SkyDeck in the launch of **Berkeley SkyDeck Europe, Milano**, an accelerator program delivered in Milan Italy with LendLease and Cariplo Factory for \$876,000 / year, including a commercial trademark license.
- **SkyDeck Global Innovation Program**: 12 new partners, and 1 renewal.
- **SkyDeck sourcing/agent agreement with GlobalSF**: A finder's agreement to identify prospective SkyDeck global partners.

- **SCET Global Partners Program:** For international universities sending visiting entrepreneurs. 5 new agreements at \$50k/annual fee + X-Lab Option at \$25k per additional project.

Data Use Agreements

- **Covid-tracking mobile app beta tests.** Maya Peterson and Art Reingold. Mobius and Bitmark, newly drafted agreements. Impact: [safe campus initiative](#), [covid tracking](#)
- **Embee Mobile. Raja Sengupta.** Mobility data for COVID-19 research. Impact: see [article and report](#).
- **Swiss RE** shared **covid-19 data** under the CDAR Industry Affiliate Program.
- **USGS. Richard Allen (BSL).** License to operate USGS **ShakeAlert system** in California.
- Supporting **California Policy Lab (CPL)** with complex data use agreements with state, county, city agencies for novel California policy research.
- **D-Lab - complex Data Use Agreements** for its “**Applied Data Analytics Training Platform**” (**ADAPT**), a new data sciences **training platform in data sciences**. State data from California Department of Social Services (CDSS) is hosted by the Coleridge Initiative and made available to Berkeley D-Lab for training in data science.

Material Transfer Agreements

- **Sarah Stanley: covid research, BSL-3 facility** (for SARS-2-cov, plus materials to test).
- **Julia Schaletzky. CEND.** Drug discovery and compound testing for [covid](#).

OTHER

- **Co-investment rights /participation rights - sharing the rights with campus-facing, shared return funds.**
- **Student Programs**
 - **Haas Masters in Financial Engineering** program featuring agreements with top companies to fund student projects. \$0. Fosters industry relationships: Citadel, MPG, HQ Asset Management.
- **Side Letter Agreement for Internship to Clarify IP**
- **Support to UDAR for Gifts**
 - **Novo Nordisk. Maya Petersen.** Negotiated a \$3M gift.
 - **Agilent. College of Chemistry.** Transitioned Agilent industry affiliate program to a philanthropic program supporting the new Agilent Biodesign Program.