



UNIVERSITY
OF
CALIFORNIA

Technology Commercialization Report

2018

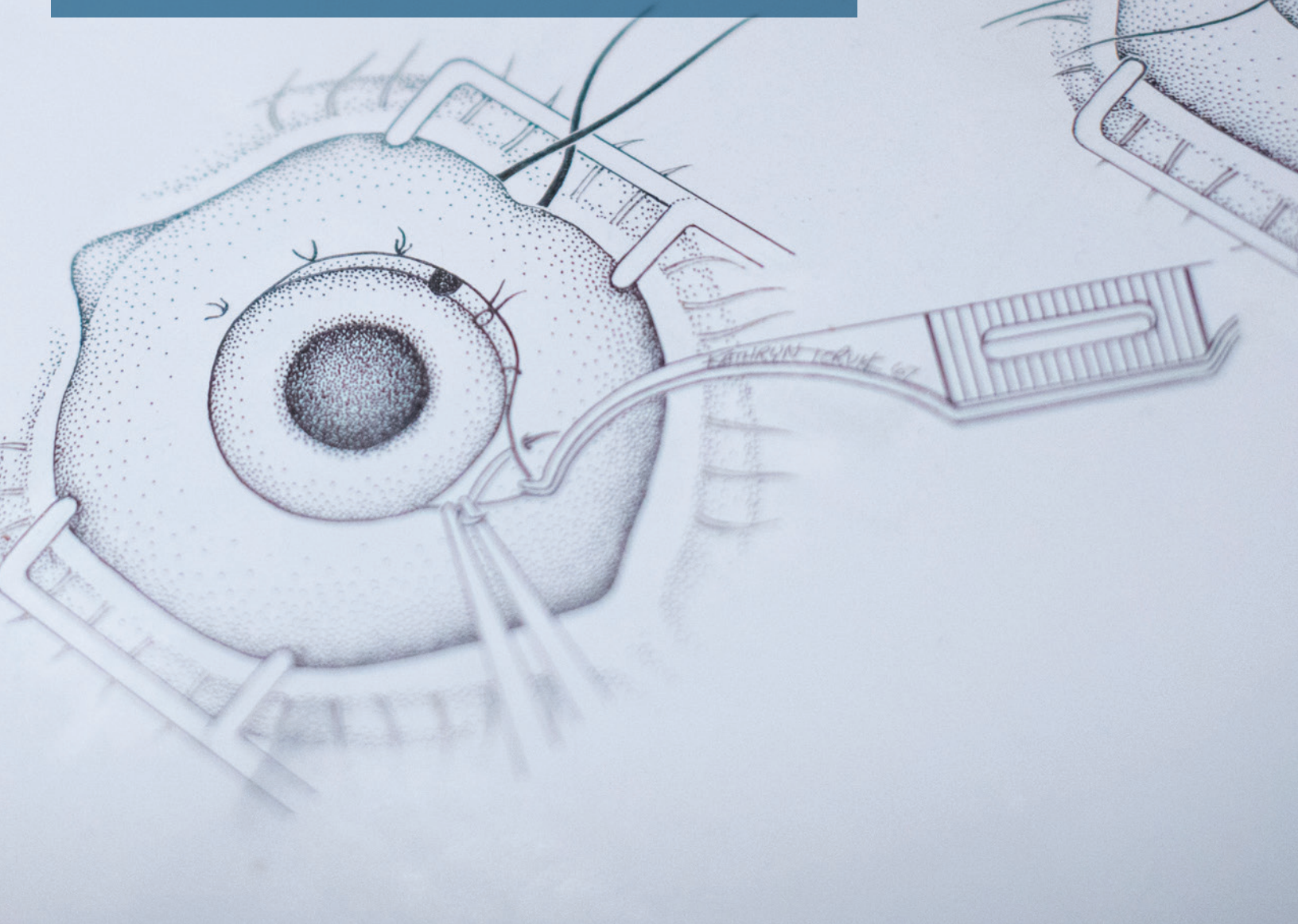
This report documents University of California technology commercialization activity for fiscal year 2018. Through a collaborative management approach, UC's Office of the President (UCOP), all 10 UC campuses and the Lawrence Berkeley National Laboratory (LBNL) share responsibility for these activities. The extraordinary innovations generated by our researchers originate at the campuses, affiliated medical centers and LBNL. As such, each campus or laboratory actively manages its invention portfolio, fosters relationships between inventors and industry, and nurtures entrepreneurs through its technology commercialization office.

LBNL is a DOE national laboratory managed by UC. Its operations differ from those on the campuses in certain respects. LBNL's fiscal year runs from October to September; UC's fiscal year runs from July to June. UC campus offices contract with attorneys at outside law firms for all patent prosecution activity; LBNL manages most U.S. patent filings internally through its own legal department and contracts out only for selected matters, such as foreign prosecution.

LBNL maintains proprietary databases that track its technology commercialization operations. This report includes LBNL data in systemwide totals whenever possible, and notes those metrics where LBNL data is not available for inclusion.

UCOP manages a small portfolio of laboratory inventions from LBNL and Lawrence Livermore National Laboratory (LLNL). Most of these cases involve UC co-inventors. The metrics derived from these inventions are not displayed separately, but are included in the systemwide totals.

UC startups counted in this report meet the following criteria: a legally organized and/or incorporated company that acquired rights to UC technology under a license, option or letter of intent; this agreement was essential to the startup's formation; the startup was founded to develop products and services based on UC technology; the startup operates independently of any pre-existing company when formed; and the startup's operations are not integrated into the operations of another company.



Message from the UC Office of the President

The University of California stands at the forefront of cutting-edge research and technology development which lie at the heart of its ten campuses, five medical centers, and three affiliated national laboratories. UC is focused on strengthening existing programs and developing new programs to stimulate innovation and identify effective approaches for transferring knowledge and expertise with the clear goal of maximizing public benefit for all Californians.

UC is a leader in the technology transfer world. For example, among the top 100 global research universities, UC has had the most U.S. utility patents issued annually for at least the last five years. Transfer of knowledge and technology at UC occurs in countless ways, including:

- Hands-on education of UC's diverse community of undergraduate and graduate students and of postdoctoral scholars;
- Publication and sharing of research results and discoveries that can be built upon and leveraged;
- Relationships with industry partners who can translate our discoveries into useful products for the marketplace; and
- Encouragement of start-up companies that help drive, diversify, and grow the economy of California and beyond.

With an eye toward the future, a new partnership was recently formed between the Office of Innovation & Entrepreneurship and the Division of Academic Affairs with the establishment of the Knowledge Transfer Office (KTO) in the Division. This organizational structure will more efficiently drive innovation and knowledge transfer from all UC locations. An essential element of this effort is the creation of a Knowledge Transfer Advisory Committee (KTAC) with members from all UC campuses as well as the UC-affiliated national laboratories, Agriculture and Natural Resources, and the Academic Senate. This group of UC leaders is charged with helping develop a long-term strategic roadmap for the University's efforts in innovation, entrepreneurship, technology commercialization, and professional service.

Innovation continues to thrive at UC through the system's scholars and students, who work with cutting-edge tools and facilities as part of myriad academic programs to support knowledge transfer throughout UC's robust innovation ecosystem. We are proud of the incredible advances UC has made and look forward to reaching even greater heights.

Sincerely,



Michael T. Brown
Provost and Executive Vice President,
Academic Affairs



Christine Gulbranson, Ph.D, M.B.A.
Senior Vice President and
Chief Innovation Officer



Arthur B. Ellis
Vice President,
Research and Graduate Studies

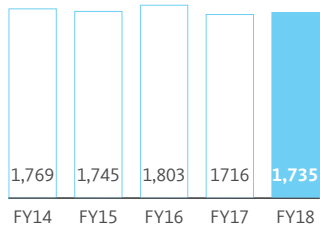
All charts indicate systemwide figures, unless otherwise noted.

Inventions

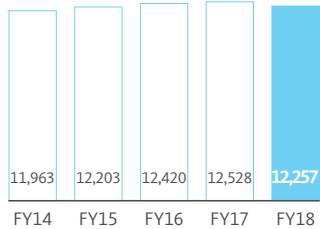
Patents

Licensing

INVENTIONS DISCLOSED

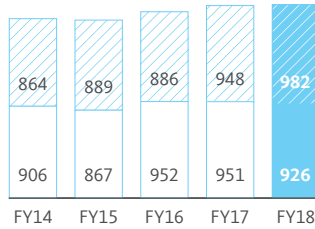


TOTAL ACTIVE INVENTIONS



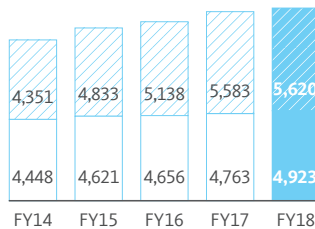
Figures do not include LBNL

U.S. PATENT APPLICATIONS FILED



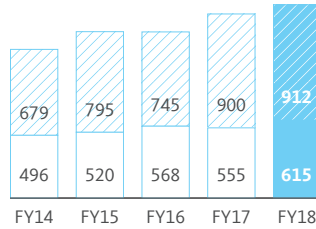
Applications - Secondary Filings
 Applications - First Filings

TOTAL ACTIVE PATENTS



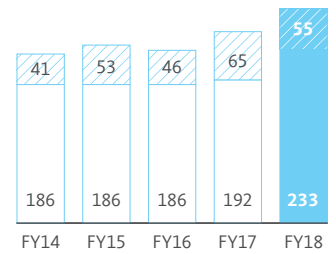
Total Active Foreign Patents
 Total Active U.S. Patents
 Figures do not include LBNL

PATENTS ISSUED



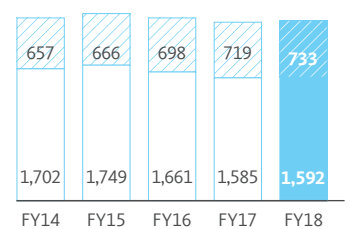
Foreign Patents Issued
 U.S. Patents Issued

LICENSES ISSUED



Plant Licenses
 Utility Licenses

TOTAL ACTIVE LICENSES



Plant Licenses
 Utility Licenses

1,735

New inventions disclosed by UC researchers in 2018

12,257*

Active inventions in UC's portfolio

1,908

U.S. patent applications filed based on UC inventions in 2018

615

U.S. patents issued for UC inventions in 2018

4,923*

Active U.S. patents covering UC inventions

233

New licenses for UC's utility inventions in 2018

55

New licenses for plant cultivars in 2018

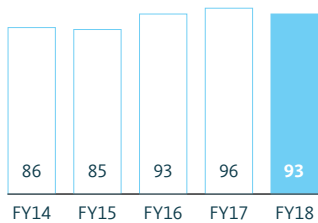
*These statistics are not available for LBNL-managed inventions for FY2018 and are excluded from systemwide totals.

Startups

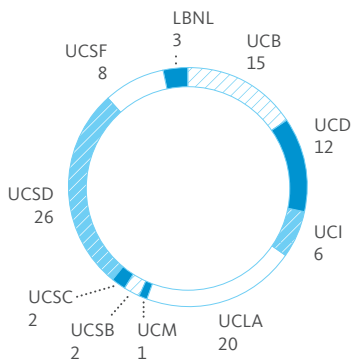
Income

Top-earning inventions

STARTUP COMPANIES FORMED

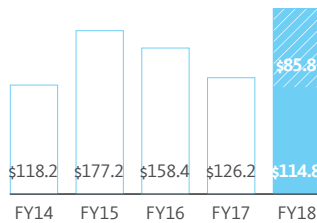


STARTUP COMPANIES FORMED BY CAMPUS, FY 2018



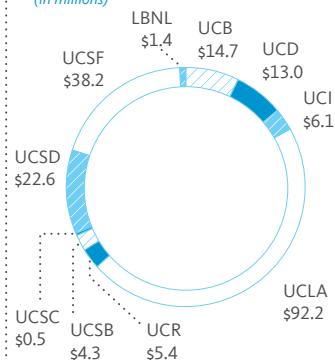
Campus numbers may include startups formed by more than one campus.

PATENT ROYALTY AND FEE INCOME (in millions)



■ Extraordinary income in FY2018 comes from a legal settlement
□ Ordinary income

PATENT ROYALTY AND FEE INCOME BY CAMPUS, FY 2018 (in millions)



UCLA Income includes extraordinary income in FY2018 from a legal settlement. Campus totals do not include \$2.4 million from previous National Laboratory inventions and other income credited to UCOP.

INVENTIONS FY 2018 (campus, year disclosed)

ROYALTY & FEE INCOME (in thousands)

Prostate Cancer Drug* (UCLA, 2003, 2004, 2005, 2006, 2007)	\$158,000
Gene-editing Tools and Reagents (UCB, 2012)	\$12,406
Nephropathic Cystinosis Treatment (UCSD, 2006, 2017)	\$11,975
Hepatitis-B Vaccine (UCSF, 1979, 1981)	\$8,850
Ablation Device for Treating Atrial Fibrillation (UCSF, 1998)	\$6,600
Subtotal (Top 5 Inventions)	\$197,831
Bovine Growth Hormone (UCSF, 1980)	\$5,000
Tango Mandarin (UCR, 2005)	\$4,338
Micro Implant to treat Glaucoma (UCI, 2000)	\$4,143
Golden Hills Pistachio (UCD, 2004)	\$2,278
Chromosome Painting (LLNL, 1985, 1995)	\$2,167
Prostate Cancer Drug (UCLA, 2006)	\$2,133
Monterey Strawberry (UCD, 2008)	\$1,879
Macromolecules for Drug/Diagnostic Delivery (UCSD, 1998)	\$1,866
Sickle Cell Disease Research Tools (UCSF, 2012)	\$1,834
San Andreas Strawberry (UCD, 2008)	\$1,697
EGF Receptor Antibodies (UCSD, 1983)	\$1,414
Tear Osmometer for Dry Eye Disease Diagnosis (UCSD, 2002)	\$1,325
Albion Strawberry (UCD, 2004)	\$1,210
Portola Strawberry (UCD, 2008)	\$909
Fronteras Strawberry (UCD, 2014)	\$825
Dynamic Skin Cooling Device (UCI, 1993)	\$786
Cellular Libraries for Peptide Sequences (UCSB, 2003, 2006, 2007)	\$645
High Electron Mobility Transistors fabrication method (UCSB, 2004)	\$541
Blood Cooling Device (UCLA, 1999)	\$471
Camarosa Strawberry (UCD, 1992)	\$376
Subtotal (Top 25 Inventions)	\$233,668
Total (All Inventions)	\$271,150
% of Total from Top 5 Inventions	73.0%
% of Total from Top 25 Inventions	86.2%

93

New startup companies formed in 2018 from UC inventions

1,218

Startups founded on UC inventions since 1980

\$200.6M*

Total technology commercialization income to UC in 2018

*Includes extraordinary income in FY2018 from a legal settlement

This list is limited to revenue-generating inventions that have been commercialized.

*Income from a legal settlement; not all income from this settlement is reflected in the FY2018 campus and systemwide totals

UC Technology Commercialization Program – FY2018

Summary Table

	UCB	UCD	UCI	UCLA	UCM	UCR	UCSB	UCSC	UCSD	UCSF	LBNL	UC system	% change from FY17
Inventions*													
Inventions Disclosed	201	167	134	347	4	66	84	59	404	232	51	1,735	1.1%
Total Active Inventions (FY end)	1,568	1,575	1,061	2,373	32	537	520	275	2,539	1,988	**	12,257**	-2.2%
Patent Prosecution*													
U.S. Applications Filed													
First Filings	123	69	86	233	1	55	52	18	168	88	50	926	-2.6%
Secondary Filings	94	80	71	305	1	59	41	31	111	91	86	982	3.6%
Total U.S. Filings	217	149	157	538	2	114	93	49	279	179	136	1,908	0.5%
First Foreign Filings	73	49	30	160	1	17	24	15	92	70	14	532	2.9%
Patents Issued													
U.S. Patents Issued	95	45	68	114	2	28	40	19	109	60	44	615	10.8%
Total Active U.S. Patents	739	412	539	1,098	12	182	474	159	879	514	**	4923**	3.4%
Foreign Patents Issued	128	67	126	254	1	31	30	17	91	199	22	912	1.3%
Total Active Foreign Patents	796	510	495	1,450	5	238	261	88	984	927	**	5620**	0.7%
Licensing*													
Letters of Intent (LOI) Issued	31	27	16	45	0	1	12	0	26	30	4	189	-7.4%
Options Issued	15	7	5	8	0	0	7	2	3	5	6	57	-5.0%
Total Active Options	46	12	8	17	0	1	18	0	7	12	8	128	4.1%
Utility Licenses Issued	24	20	6	49	0	4	5	3	76	42	6	233	21.4%
Total Active Utility Licenses	261	146	103	284	3	23	58	21	357	341	42	1,592	0.4%
Plant Licenses Issued	0	55	0	0	0	0	0	0	0	0	0	55	-15.4%
Total Active Plant Licenses	0	565	0	0	0	196	0	0	0	0	0	733	1.9%
Startup Companies													
Startup Companies Formed	15	12	6	20	1	0	2	2	26	8	3	93	-2.1%
Royalty & Fee Income (in thousands)†													
Extraordinary Income‡	\$0	\$0	\$0	\$85,796	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$85,796	N/A
Running Royalties	\$714	\$11,563	\$4,387	\$1,173	\$0	\$5,214	\$1,250	\$58	\$15,523	\$10,295	\$124	\$52,034	4.7%
Equity Income	\$0	\$0	\$0	\$133	\$0	\$0	\$0	\$122	\$48	\$1,832	\$0	\$2,135	20.1%
Other Royalty and Fee Income	\$13,947	\$1,459	\$1,709	\$5,122	\$0	\$233	\$3,016	\$329	\$7,008	\$26,034	\$1,242	\$60,651	-18.9%
Total Royalty and Fee Income	\$14,661	\$13,022	\$6,096	\$92,224	\$0	\$5,447	\$4,266	\$509	\$22,579	\$38,161	\$1,366	\$200,616	58.9%
Distributions (in thousands)†													
Inventor Shares Distributed	\$1,443	\$3,557	\$1,991	\$1,897	\$0	\$2,396	\$5,735	\$71	\$6,201	\$6,187	\$436	\$31,046	-52.9%

This table only reports technology commercialization activity governed by the UC Patent Policy for inventions managed by all UC technology commercialization offices, including LBNL. It does not include copyright, trademark and material transfer agreement activity that is also carried out by the campus and laboratory offices.

* Technology commercialization activity related to inventions having one or more inventors at each campus/lab. A number of inventions involve inventors from multiple UC campuses and/or LBNL. Activity statistics for these inventions are reported multiple times, once for each campus/lab involved. Thus, for any given measure of activity, the sum of individual campus numbers may be greater than the systemwide totals reported in the right-hand column.

** These statistics are not available for LBNL-managed inventions for FY2018, and are excluded from systemwide totals.

† Financial activity related to inventions having one or more inventors at each campus/lab. A number of inventions involve inventors from multiple UC campuses and/or LBNL. Financial activity statistics for these inventions are pro-rated among the campuses and LBNL according to the number of inventors each campus/lab has. Since some financial activity reported here is credited to UC inventors who are not associated with a campus or with LBNL (including staff at other DOE laboratories), the sum of individual campus numbers may not equal the systemwide totals reported in the right-hand column.

‡ FY2018, UCLA received a legal settlement for \$158MM - \$85.8M is listed here as Extraordinary Income. The campus received an early distribution of \$72.2M in the same fiscal year and the Inventors received their distributions in FY2019 as per UC policy.

UC Technology Commercialization Sites

Available Technologies	Website
Systemwide	techtransfer.universityofcalifornia.edu

Technology Commercialization Offices	Websites
UC Berkeley (UCB) Intellectual Property & Industry Research Alliances (IPIRA)	ipira.berkeley.edu
UC Davis (UCD) InnovationAccess	research.ucdavis.edu/industry/ia
UC Irvine (UCI) Research Translation Group (RTG)	innovation.uci.edu/about/research-translation
UC Los Angeles (UCLA) Technology Development Group (TDG)	tdg.ucla.edu
UC Merced (UCM) Office of Business Development (OBD)	bd.ucmerced.edu
UC Office of the President (UCOP) Knowledge Transfer Office (KTO)	ucop.edu/innovation-alliances-services/index.html
UC Riverside (UCR) Office of Technology Partnerships (OTP)	techpartnerships.ucr.edu
UC San Diego (UCSD) Office of Innovation and Commercialization (OIC)	innovation.ucsd.edu
UC San Francisco (UCSF) Office of Technology Management (OTM)	innovation.ucsf.edu/venture/office-technology-management
UC Santa Barbara (UCSB) Technology & Industry Alliances (TIA)	tia.ucsb.edu
UC Santa Cruz (UCSC) Industry Alliances & Technology Commercialization (IATC)	officeofresearch.ucsc.edu/iatc
Lawrence Berkeley National Laboratory (LBNL) Intellectual Property Office (IPO)	ipo.lbl.gov



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