



University of Colorado

Boulder | Colorado Springs | Denver | Anschutz Medical Campus

TECHNOLOGY TRANSFER

TECH TRANSFER

Annual Report 2012-13

Founded in Boulder in 1876, the University of Colorado has developed into a premier teaching and research university with four campuses: the University of Colorado Boulder, the University of Colorado Colorado Springs, the University of Colorado Denver and the University of Colorado Anschutz Medical Campus. With nearly 58,000 students, over 4,700 full-time instructional faculty members and an additional 1,200 research faculty members across the four campuses, CU is the largest institution of higher education in the state of Colorado.

CU research faculty secured over \$774M in sponsored research funding in fiscal year 2012-13, the fourth-highest total in CU history. Researchers at CU's Anschutz Medical Campus received more than \$395M in sponsored research funding. CU-Boulder researchers received nearly \$352M in sponsored research funding; CU Denver researchers received more than \$19M and UCCS received nearly \$8M.

www.cu.edu/techtransfer

Fiscal Year 2012-13 Summary

This fiscal year marked the start of a transition for the University of Colorado's Technology Transfer Office. CU, like its peers across the country, is facing important changes in the nature of the research enterprise; in particular, anticipated cuts in federal research funding have made industry engagement a top priority for research institutions. In the past, technology commercialization has often been an activity of the most entrepreneurial faculty, while a majority of faculty focused on their federally-funded programs (the fruits of which were then funneled into the technology transfer process). Going forward, industry partnerships will be an increasingly important type of research funding, and both investigators and companies will look to universities to provide creative and flexible approaches to intellectual property management in the context of larger, more complex industry relationships. TTO will play a central role in support of these changes, but our traditional IP management and licensing functions are likely to become the foundation of a larger system to support strategic industry engagement throughout the university.

In terms of TTO's key functions, we continued to serve faculty inventors with IP strategies and effective licensing operations. We have continued to build our portfolio of licensed technologies, invest in promising new patent applications, and deploy proof of concept funding through the State of Colorado's Bioscience Discovery Evaluation Grant program. This year, eight new startups were added to CU's portfolio, and CU startups as a group raised over \$200M in follow-on funding in FY2012-13; the total follow-on funding raised by these companies amounts to over \$6.1B.

TTO is also in leadership transition. Kate Tallman, who formerly directed TTO operations for the Boulder and Colorado Springs campuses, took the role of Interim Associate Vice President in July 2013, replacing Tom Smerdon (who continues to support TTO part-time after moving to Austin, Texas). We were very fortunate that veteran staff members remained and were able to take on greater responsibility following the transition of several experienced managers in the organization.

Despite these changes, TTO's continued proficiency is helping to position the university to be a leader in an innovation-centric culture. This was the 11th year since TTO's 2002 Strategic Plan laid out goals to achieve financial sustainability, increase the volume of disclosure, patent and license activity, create a new policy infrastructure, build a professional staff and provide communication and continual education. The team has executed on this plan and built an area of strength in technology transfer at CU. We have also seen an increase in faculty entrepreneurship and startup companies based on CU technologies, with a high level of engagement between faculty inventors, the TTO and the rich innovation ecosystem in our communities. Now CU has the opportunity to build on these successes, in its efforts to accelerate innovation and break new ground in collaborative industry engagement.

Warm regards,

Kate Tallman, Interim Associate Vice President, Technology Transfer

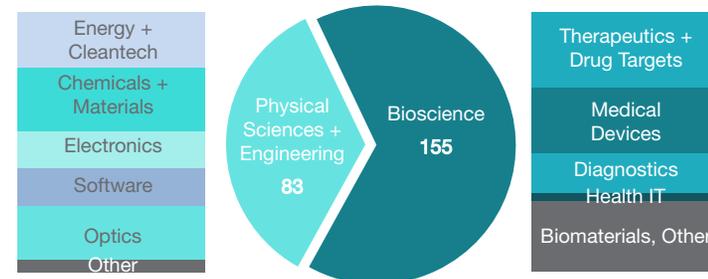
2013-14 Budget

Salaries, Benefits, Students	\$ 2,471,517
General Operating Expenses	300,000
System/UCB Overhead	261,121
Building Rentals	185,498
Patent Expense/Maintenance	1,230,000
Innovation Center of the Rockies	50,000
ULEHI Management Service Fee	40,000
Proof of Concept Programs	350,000
Total Expense	\$4,888,136

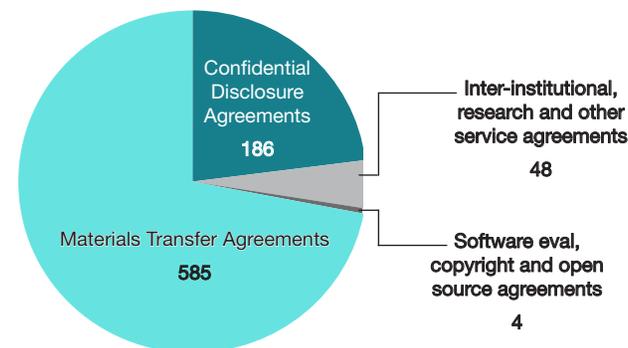
Portfolio Snapshot (as of July 1, 2013)

U.S. Patents in Force	369
U.S. Patent Applications in Prosecution	322
Exclusive Licenses in Force	160
Non-exclusive Licenses in Force	188
Active companies created based on CU IP	105
Companies in which University License Equity Holdings, Inc. (ULEHI) holds equity	64

New Inventions



Service Agreements



TTO Performance (FY2012-13)

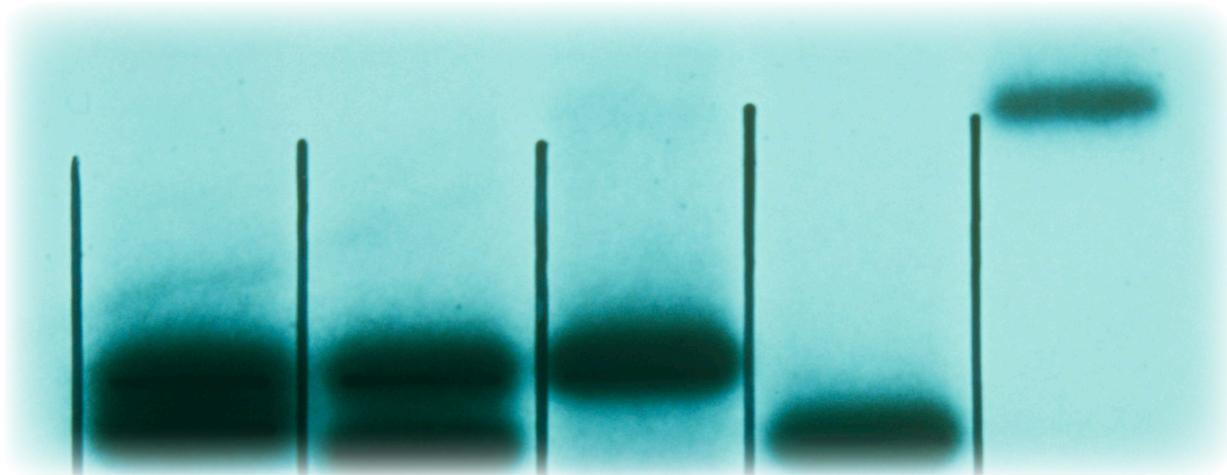
Invention Disclosures	238
New Patent Filings	119
Follow-on Patent Filings	250
U.S. Patents Granted	37
Total Options & Licenses	45
Exclusive Options & Licenses	29
Non-exclusive Licenses	16
Start-up Companies Formed from CU IP	8
Service Agreements Executed	823
Revenue (in millions)	16.5
Patent investment (in millions)	1.35

CU Startup Sustainability

In the last 20 years, 132 companies have been formed based on CU IP. 27 are known to be non-operational.

Of the 105 companies known to be operating,

- 89 have headquarters or research operations in Colorado
- 19 have received CU Technology Transfer Office Proof of Concept investments
- 30 have received matching grants under the Colorado Office of Economic Development & International Trade's Bioscience Discovery & Evaluation Grant program
- 7 have "gone public," becoming publicly traded companies (through an IPO or a reverse merger)
- 18 have been acquired by public companies (including all of the above seven that have gone public)



Grants/Gifts	\$100,000
Federal Grants	2,118,637
Seed/Bridge	5,275,000
Series A	1,000,000
Series B	2,000,000
Series C/D/E/F/other	59,300,000
State funding	2,220,105
SBIR/STTR	2,226,793
Acquisition/Merger	125,000,000
Other	870,000
Total Financing	\$200,110,535

Major Financing Events for CU Startups

Based on approximately 20 transactions, companies created based on CU technology secured over \$200M of follow-on financing in FY2012-13. This figure represents a return to an average that has hovered around \$200M per year over the last several years, barring two exceptional years dominated by single, large transactions. This year's financing events were led by the \$125M acquisition of LineRate Systems by F5 Networks in 2013, and significant financings of ClarVista Medical, EndoShape, Xeris Pharmaceuticals, Flashback Technologies and others.

CU Startups (FY2012-13)

Apsara Antibody-based treatment for the orphan disease neuromyelitis optica

Aurora Oncology Novel therapeutics for the treatment of bladder cancer

Chiario Technologies 3D machine vision solutions for robotics, automation, and manufacturing

FAST Ceramics Fast, low-energy manufacturing of traditional and technical ceramic materials

Nanoly Bioscience Thermo-stabilized vaccines for refrigeration-free use in rural and developing areas

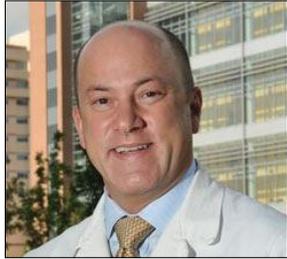
SixOne Solutions Compounds targeting a novel transcription factor/ phosphatase to treat tumors and metastatic cancers

Solid Power Ultra high energy, safe and low-cost all solid-state rechargeable batteries

Tissue Fusion Laser devices for wound closure and tissue fusion

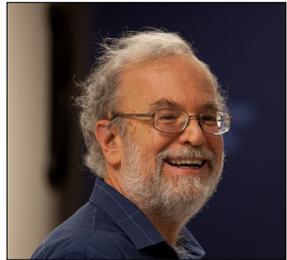
Success Stories

The CU Technology Transfer Office presented its annual awards in spring 2013 to university researchers and companies who represent best practices in commercialization of university technologies. The researchers and companies recognized this year are developing technologies ranging from less-toxic cancer treatments and better influenza vaccines to efficient building systems and next-generation computer networking. The stories below are examples of the impact of successful technology transfer.



Jeffrey Bennett, MD, PhD
Inventor of the Year, CU Denver|Anschutz

Dr. Bennett, a professor of neurology and ophthalmology, developed a new treatment for neuromyelitis optica, a rare autoimmune disease. With his collaborators, Dr. Bennett created a human recombinant monoclonal antibody to target NMO; this technology has been optioned to a venture-backed startup company cofounded by the inventors.



Robert Camley, PhD
Inventor of the Year, UCCS

Dr. Camley, a professor of physics, conducts research into solid state physics, including optical signal processing. In addition to his own research, he has collaborated on inventions across the UCCS campus, from human therapeutics in the biology department to millimeter wave wireless components in the physics department. He has actively mentored new inventors in the technology transfer and patent process.



Xuedong Liu, PhD
Inventor of the Year, CU-Boulder

Dr. Liu, a professor of chemistry and biochemistry, is creating novel, less-toxic kinase inhibitor drugs to treat cancer. Liu has founded two companies based on his inventions, most recently OnKure, which is commercializing a new cancer therapy developed by Liu and his colleagues.



Moncef Krarti, PhD
New Inventor of the Year, CU-Boulder

Dr. Krarti, a professor of civil, environmental and architectural engineering, focuses his research on improving building energy management. He is collaborating with CU Cleantech and TTO to commercialize building assessment technology through a Boulder company.



Douglas Seals, PhD
New Inventor of the Year, CU-Boulder

Dr. Seals, a professor of integrative physiology, is exploring promising research into dietary supplements that could enhance heart health. He is working with TTO to optimize the intellectual property, and with the Innovation Center of the Rockies to optimize the commercial opportunity.



David Lacey, MD, Business Advisor of the Year

Dr. Lacey is a former Senior Vice President and Head of Discovery Research at Amgen with over 30 years of basic and clinical research experience. Since his retirement, Dr. Lacey remains active in the biopharmaceutical industry, advising a number of academic institutions, biotechnology companies and venture capital firms. He has served as an advisor to the Colorado Bioscience Discovery and Evaluation Grant (BDEG) program, and has generously advised the university on commercialization matters, development programs, and transactions.



PeptiVir, Company of the Year

PeptiVir (Aurora, CO) is an early stage biopharma company focused on the commercialization of a conformationally-constrained, synthetic peptide-based vaccine platform for the prevention of viral diseases. PeptiVir's lead product, PVI-1000, has the potential to be a "universal" influenza vaccine protecting across multiple strains, with either one-time administration or occasional boosters providing protection for multiple seasons. The underlying research program was one of the first to receive funding from the State of Colorado Bioscience and Discovery Evaluation Grant (BDEG) program; the company also received funding through the matching grant portion of the BDEG program.



LineRate Systems, Company of the Year

LineRate Systems (Louisville, CO) is developing technologies around software-defined networking, a computer networking approach that allows network behavior to be governed by high-level software programming, rather than by the low-level configurations of the network's devices, making networks easier to configure, manage, troubleshoot, and debug. The company was acquired by F5 Networks in February 2013.