



University of Colorado

Boulder • Colorado Springs • Denver

ANNUAL REPORT 2007-08 TECH TRANSFER

For scientific and technical research to be of direct use to society, the research process doesn't stop with completion of a study, publication of a paper, or graduation of students. When discoveries have inventive characteristics, the appropriate way to protect the research-based intellectual property (IP) asset is through patents. Research dissemination then continues by facilitating movement of the IP asset into businesses. To convey this IP into the public sphere, it is necessary to create a bridge between the university and innovative commercial adopters of early-stage technology. University-based technology transfer is the system of support and service based on policies, people and processes that forms this bridge. Unlike in industry, where transfer often takes place as an actual sale of an IP asset, universities in almost all cases accomplish transfer of intellectual property through the licensing process. The CU Technology Transfer Office handles all aspects of this process, from securing faculty-created inventions through patents to further development of the assets and licensing of the IP to companies who build products and services that benefit society.

FY 2008 TTO Performance at a Glance

Invention Disclosures	237
U.S. Patent Applications Filed	188
U.S. Patents Granted	28
Total Options & Licenses	58
Exclusive Options & Licenses	45
Non-exclusive Licenses	13
Start-up Companies Formed from CU IP	11
Service Agreements Executed (see note)	759
Revenue (in millions)	\$6.1
IP-induced Sponsored Research (in millions)	\$11.5
Ratio of legal fee reimbursements to legal expenditures	65%

Notes: The criteria used for TTO's performance metrics conform to the standards used by the Association of University Technology Managers (see www.autm.net). Service measures include material transfer agreements, confidential disclosure, software evaluation, and interinstitutional and IP agreements.

TTO Portfolio Snapshot as of July 1, 2008

U.S. Patents in Force	269
U.S. Patent Applications in Prosecution	267
Exclusive Licenses in Force	113
Non-exclusive Licenses in Force	190
Companies created based on CU IP, still in business	71
Companies in which University License Equity Holdings, Inc. (ULEHI) currently holds equity	40

TTO Budget for FY 2009

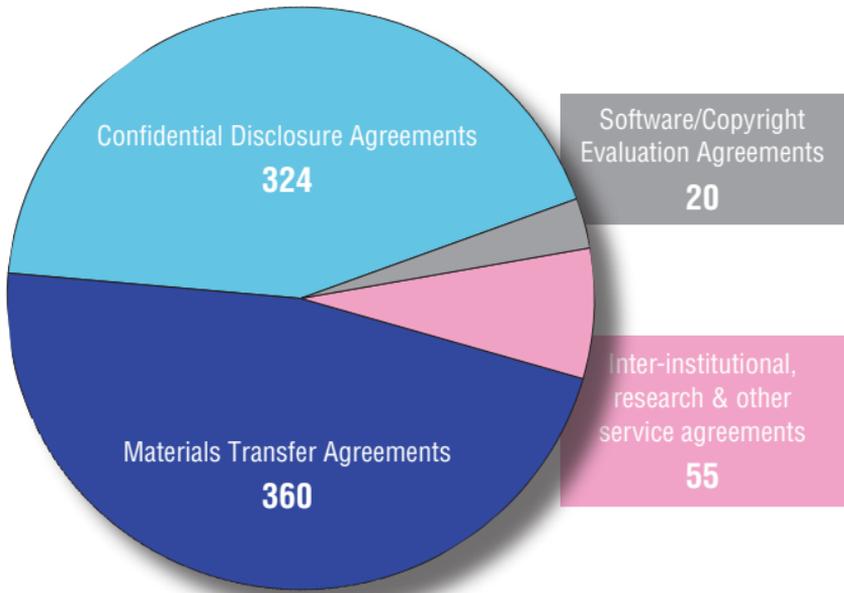
Salaries and benefits	\$2,105,578
General operating	327,128
Rent	165,579
Patent costs and legal expenses	1,388,110
Drug Development Institute and Boulder Innovation Center	100,000
ULEHI management fee	72,000
Proof of concept programs	1,000,000
Total — all expenses	\$5,158,395

About the University of Colorado

Founded in 1876 with a campus in Boulder, the University of Colorado includes three unique campuses with a combined fall 2008 enrollment of 53,755. In fiscal year 2008 CU continued to be a national leader in research funding by attracting some \$661M, led by a \$14M increase at the University of Colorado at Boulder (FY 07 – \$266 million to FY 08 – \$280 million). The University of Colorado Denver is the top research institution in the State of Colorado, with \$371.5M in research funding, the majority from the National Institutes of Health. The University of Colorado at Colorado Springs attracted \$9.2M. Over the last decade, research awards at CU's three universities have increased nearly 86 percent.

Nomenclature used throughout this report refers to the fact that, as of July 2004, the two campuses in Denver and Health Sciences Center administratively merged into one, which in fall 2007 was renamed the University of Colorado Denver, with a Downtown Campus in Denver and the Anschutz Medical Campus in Aurora.

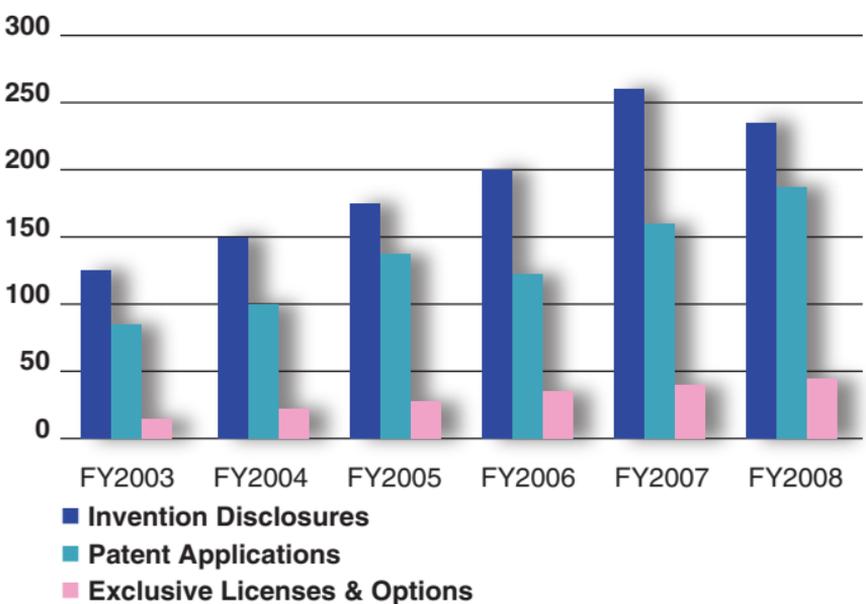
Service Agreements



Types of Inventions by Major Category

BIOSCIENCE		PHYSICAL SCIENCES/ ENGINEERING	
Therapeutics & Drug Targets	37%	Optics & Electronics	23%
Diagnostics	30%	Software	20%
Medical Devices	19%	Chemicals and Materials	13%
Research Tools	9%	Processes	12%
Biomaterials	2%	Energy & Cleantech	11%
Drug Delivery	2%	Mechanical Devices	7%
Total:	143	Other	14%
		Total:	94

Invention Disclosures, Patent Applications and Exclusive Licenses/Options



Summary: Fiscal Year 2007-08

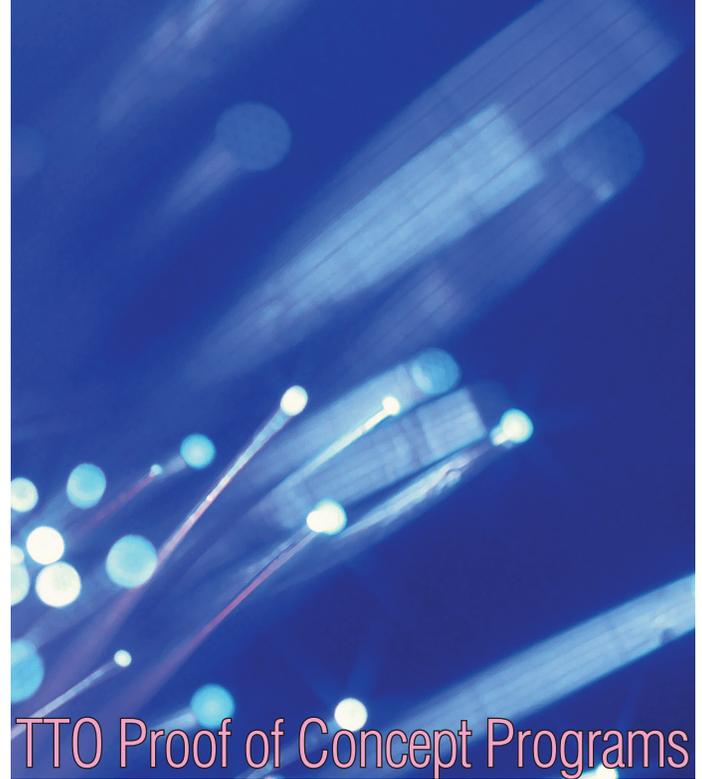
In FY 2007-08, the University of Colorado Technology Transfer Office (TTO) worked with CU research investigators and technology entrepreneurs to deliver another year of solid performance. The pipeline of CU technologies is expanding, and the overall operation is maturing to a level increasingly recognized as nationally relevant.

This report chronicles the year in review and progress over the past few years. The story is told in the charts, graphs and summaries. What might not be evident is the context in which CU technology transfer operates. In this light, the following nine items identify positive aspects of CU's technology transfer eco-system:

- ◆ Strong base of discovery-oriented research and serial inventors, and growth in key areas such as renewable energy and bioscience
- ◆ Institutional priority and commitment to success as evident in financial commitment and overall administrative support
- ◆ Existence of a funding model that has produced a sustainable, financially self-sufficient technology transfer enterprise
- ◆ Best practice technology transfer operations as evidenced in IP policy, licensing procedures and performance evaluation
- ◆ Administrative transparency and accountability of TTO, and administration and faculty oversight
- ◆ Adequate size staff with business/legal/IP/scientific acumen who have a keen understanding of university culture and an investigator service orientation
- ◆ An active and meaningful engagement with the Colorado technology enterprise business community
- ◆ One of the nation's leading technology maturation strategies through the TTO Proof of Concept programs
- ◆ Deal-responsive early-stage venture capital and business angel leaders who understand university commercialization

In recent years TTO has been reporting an expected revenue decline over a four year period. Indeed, FY 2007-08 licensing revenue declined to \$6.2M from levels three times that over the past four years. These declines were based on the expiration of a three-year monetized royalty stream and a patent expiration leading to termination of a medical diagnostic license that produced over \$12M royalty the past few years.

Although annual licensing revenue will not be sufficient to cover TTO's operating expenses over the next three years, TTO's financial viability is ensured through drawing funds from TTO's long-term investment account managed by the CU Treasury. These funds were generated from the CU System share of a legal action that ended in 2004 and through investment returns. Although TTO has drawn on this account for its Proof of Concept programs, the fund had a year-end closing balance of \$7.5M. These reserves will be necessary to cover the revenue shortfall until revenues exceed the break-even point again in FY 2011-12. For the years to come, TTO will continue its delivery of high quality IP and licensing service to CU, and will continue to play a key role in producing economic opportunity, clinical impact and social benefit for the University, Colorado and beyond.



In fall 2005 TTO began its Proof of Concept (POC) program. Three elements comprise the TTO POC program. First, TTO provides CU inventors grants up to \$25k to enhance patentability and commercial adoption. Second, TTO in conjunction with the State of Colorado provides competitively reviewed POC grants to CU bioscience investigators up to \$200k. Awards with a pre-clinical and/or product development focus are granted in the fields of therapeutics, diagnostics, medical devices and biofuels. Third, TTO provides \$100k POC "seed" investments in the form of convertible debt to new CU licensee companies. Since 2005, TTO has provided approximately \$3.5M in POC grants and \$1.5 in POC investments. The POC awards from FY 2008 are identified below:

Brian DeDecker, Department of Molecular, Biological and Developmental Biology, CU-Boulder. "Mechanism by which noble metals disrupt autoimmune disease."

Manish Vachharajani, Department of Electrical and Computer Engineering, CU-Boulder. "Line-rate filtering and monitoring of multi-gigabit ethernet traffic on commodity hardware."

Bart J. van Zeghbroeck, Department of Electrical and Computer Engineering, CU-Boulder. "Laser diode powered THz source."

Alan W. Weimer, Department of Chemical and Biological Engineering, CU-Boulder. "ALD Catalytic Microchannel Reactors for Converting Biosyngas to Biofuels."

Edward Dempsey, School of Medicine, Cardiovascular Pulmonary Research Laboratory, UC Denver. "Moving Bryostatins-1 from lab to clinic for treatment of pulmonary hypertension."

Linda F. van Dyk, School of Medicine, Department of Microbiology, UC Denver. "Development of microRNA diagnostic assays."

Stephanie J. Bryant, Department of Chemical and Biological Engineering, CU-Boulder. "Bioreactor to mechanically load soft material under tension."

Thomas T. Perkins, Department of Molecular, Cellular and Developmental Biology, CU-Boulder. "Towards a nanoscale milling machine."

Ryan T. Gill and James W. Medlin, Department of Chemical and Biological Engineering, CU-Boulder. "Molecular Biorefining to Liquid Alkanes and Alcohols."

J. David Port, School of Medicine, Department of Cardiology. "MicroRNAs as therapeutic targets in heart failure."

TTO also made one Proof of Concept investment (POCI) to Hiberna Corp., "Identification of novel therapeutic targets for preventing or reversing metabolic disorders."

New Business Development Based on CU Intellectual Property

In the last 15 years, 83 companies have been formed based on CU IP. 12 are known to be nonoperational. Of the 71 companies still in business:

- ◆ 67 have operations in Colorado (although the headquarters may be located out-of-state)
- ◆ 14 have received CU Technology Transfer Office (TTO) Proof of Concept investments
- ◆ 5 have “gone public,” becoming publicly traded companies
- ◆ 10 have been acquired by public companies (including four from the above five that have gone public)

Companies Created Based on CU IP, FY 2007-08

2C Tech Corp.	Method for treating vision loss and blindness due to retinal damage
3QMatrix, Inc.	Degradable thiolene hydrogel for wound care and drug delivery
BioAMPS International, LLC	Antimicrobial compounds for treatment of lethal infectious diseases
HepQuant, LLC	Non-invasive method to measure liver function for diagnosing liver disease and monitoring therapeutic efficacy
Cello Bioengineering, Inc.	Novel soft matter testing technology for tissue regeneration applications
Peak Aging, Inc.	Neurological wellness and assessment tools for elderly care management
Precision Biopsy, LLC	Optical biopsy needle for improved diagnosis of prostate and other cancers
Sierra Neuropharmaceuticals, Inc.	Drug reformulations and system for delivering antipsychotic drugs directly to the brain
Taiga Biotechnologies, Inc.	Stem cell based method for treatment of immune deficiency, cancer and leukemia
BlueSun, Inc.	Web-based self-help service for post-traumatic recovery of individuals suffering from mental trauma
V-Clip Pharmaceuticals, Inc.	Immune-based therapeutics for treatment of viral and autoimmune diseases

Major Financing Events for CU Licensees

Based on 25 separate financial transactions, FY 2007-2008 witnessed slightly more than \$160M of financing for companies created based on CU IP. Funding occurred in all categories except for IPOs and acquisitions. The distribution of financings is skewed by two deals, a Series “B” round for Taligen, Inc. and a Series “C” round for GlobeImmune, Inc.

Type of Funding	FY 07-08 Amount
Grants	\$1,051,550
Federal Grant	\$2,664,698
Seed/Bridge	\$6,973,162
Series A	\$30,610,000
Series B	\$85,100,000
Series C, D, E, F	\$41,200,000
TTO POCi	\$100,000
SBIR/STTR	\$3,171,019
Total Financing	\$170,870,429

Recognizing Excellence in Technology Transfer

The CU Technology Transfer Office presented its annual awards January 14, 2008 at the historic Tivoli Turnhalle, CU Denver. The event was attended by more than 200 business leaders and faculty inventors. Following an address by Governor Bill Ritter, awards were presented to inventors, companies and others who demonstrate best practices in technology transfer. Awards were given to:

Michael Larson, New Inventor of the Year, UCCS
Lia Gore & Deborah DeRyckere, New Inventors of the Year, UCD
Stephanie J. Bryant, New Inventor of the Year, UCB
Paul A. Bunn, Inventor of the Year, UCD
Douglas L. Gin, Inventor of the Year, UCB

Dan Mitchell, Bioscience Business Advisor of the Year
Paul Nelson, Physical Sciences Business Advisor of the Year
BaroFold, Inc., Bioscience Company of the Year
ColorLink, Inc., Physical Sciences Company of the Year

Inductees into the CU Pinnacles of Inventorship:
Myron J. Levin, UC Denver
John M. Stewart, UC Denver

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