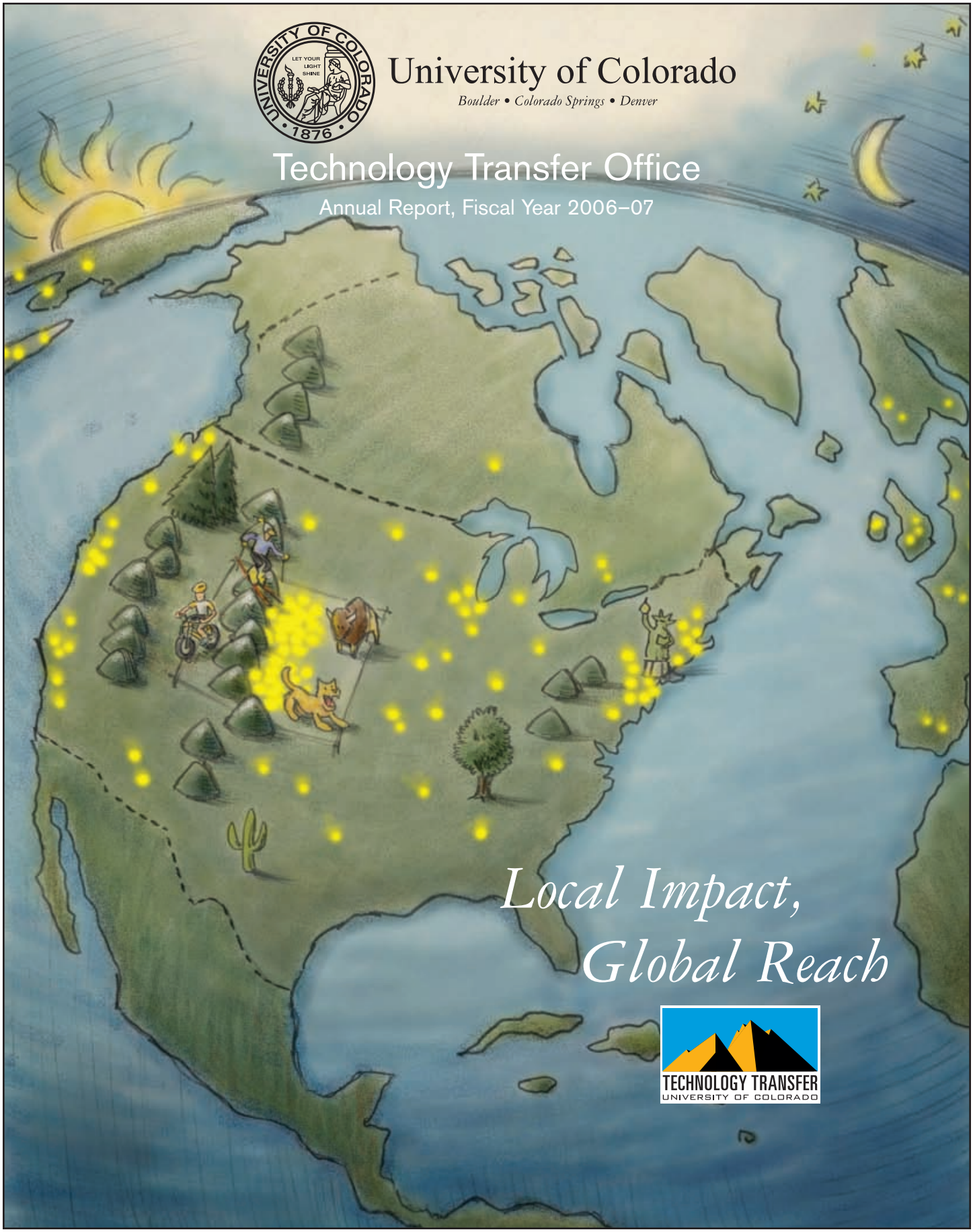


University of Colorado

Boulder • Colorado Springs • Denver

Technology Transfer Office

Annual Report, Fiscal Year 2006–07

Local Impact, Global Reach

TECHNOLOGY TRANSFER
UNIVERSITY OF COLORADO

From the President

Researchers at the University of Colorado are among the best in the world. In addition to the significant teaching and learning benefits their work fosters, the discovery and innovation in CU research laboratories has a larger societal benefit.

CU's Technology Transfer Office is a key link in the chain between the university and society. It provides a continuation of the research process by protecting the intellectual property of university researchers and licensing it to innovative companies. The technology transfer process affords the university the opportunity to partner with entrepreneurial companies that produce products that make our world a better place.

Companies utilizing CU intellectual property are producing tissue-based tests for cancer diagnoses, furthering methods for selective treatment of tumors, promoting non-invasive diagnostics for analyzing blood flow in connection with cardiovascular disease, and developing energy production via solar-thermal conversion of biomass. These are but a few examples of work that begins in university laboratories and ends by helping society.

Our Technology Transfer Office has become a nationally recognized leader in just a few short years. It continues to show positive growth in patent applications, licensing agreements, start-up companies, and revenue. Over the past five years, CU intellectual property has generated well over $110 million, which is re-invested with inventors, laboratories, and departments. Yet the operation will not rest on its laurels. It remains committed to effective, efficient technology transfer that has a significant economic and societal impact on Colorado and beyond.

Best regards,

Hank Brown

President

On the Cover

John Martin is an illustrator and graphic designer who studied at the University of Colorado at Boulder and the Art Institute of Colorado. His clients have included *Westword, New Times-Phoenix*, *Zymurgy Magazine,* Rock Bottom Brewery, Love and Logic Institute, Wild Oats, Alfalfas, Celestial Seasonings, and CU-Boulder. The points of light in the cover illustration represent the general locations of CU technology licensees.

Inside this report...

University of Colorado Technology Transfer Office Fiscal Year 2006–07 Annual Report

Fiscal Year 2006–07 (July 1, 2006 to June 30, 2007) was another good year for CU Technology Transfer Office's (TTO) engagement with, and delivery of value to, the communities that CU serves. For the past few years, TTO has been a financially self-sufficient enterprise, with the vast majority of revenue earned directed back to inventors and research activities as prescribed by the *University of Colorado Regent Policy on Discoveries and Patents*. This report focuses on the stakeholders and participants in technology transfer, CU inventors, venture advisors, technology entrepreneurs, service providers, legislators, licensee companies, TTO staff and students, and CU administrators involved in the production of technology transfer during the previous fiscal year. Short vignettes, tables, pictures, and lists demonstrate the activities and impact of CU technology transfer.

TTO's FY 2006–07 performance is highlighted by the following key points:

- Exclusive licenses at roughly the same volume (38 versus 36 the previous year)
- Ten new companies created based on CU intellectual property (IP) (10 the previous year) and continued success of companies in the portfolio
- Initiation of a state of Colorado bioscience Proof of Concept grant program with matched CU funding (13 projects funded by $2.1 million) and program expansion to include biofuels.

An important element of technology transfer performance is the generation of revenue. Revenue attributed to technology transfer activities rose from a level of $2.1 million in FY 2002–03 to $24 million in FY 2006–07. During this six-year period, the cumulative revenue—created primarily from royalty based on sales of products protected by CU patents but also including legal settlements—was $113.5 million.

As important as revenue is for a robust technology transfer operation, the ultimate benefit of the activity is creating opportunities for businesses to develop and commercialize products that educate, entertain, and improve the human condition and human health. Throughout this report, you will see examples of how cutting-edge research translates into business opportunity. These translations do not happen as fortuitous occurrences; rather they require meticulous and highly technical engagement by committed professionals. The synergy of the skills, knowledge, and experience of CU inventors with entrepreneurs and workforces throughout Colorado and the nation comes together in the pages of this report.

The mission of the CU Technology Transfer Office (TTO) is to aggressively pursue, protect, package, and license to business the intellectual property generated from the university's research enterprise and to serve faculty, staff, and students seeking to create such intellectual property.

Founded in 1876 with a campus in Boulder, the University of Colorado includes three unique campuses offering more than 300 degree programs. The combined fall 2007 enrollment of the Boulder, Colorado Springs, and Denver campuses was 52,834 (including 39,672 undergraduate and 11,680 graduate); 41,697 (79 percent) were Colorado residents. CU awarded a total of 12,746 degrees in FY 2006–07 (8,549 baccalaureate, 3,158 masters, 414 doctorate, and 583 first professional, 42 specialist). 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.

Summary of Major CU Technology Transfer Stories, July 1, 2006 to June 30, 2007

Myogen Purchased for $2.5 Billion

On November 17, 2006, Gilead Sciences Inc., a biopharmaceutical company that discovers, develops, manufactures, and commercializes therapies for viral diseases, infectious diseases, and cancer, completed its acquisition of Myogen Inc. for approximately $2.5 billion in cash. Myogen was merged into Gilead and some of Myogen's operations were retained at its Westminster, Colorado, site. Myogen was founded by CU research investigators and biotech entrepreneurs in 1999.

RxKinetix, Inc. Acquired

In October 2006, Endo Pharmaceuticals Inc. acquired RxKinetix, Inc., a privately held company headquartered in Superior, Colorado. RxKinetix was a licensee of CU technologies, specifically oral mucositis therapy, a debilitating oral inflammation resulting from high-dose cancer therapy and bone marrow transplantation.

ColorLink, Inc. Acquired

In March 2006, REAL D, a leader in digital 3-D technology, acquired Boulder-based ColorLink, a leading innovator in photonics-based solutions. ColorLink was created in 1995 based on research conducted at CU-Boulder.

Portfolio Companies Receive Venture Capital Financing

Taligen Therapeutics, Inc., an Aurora-based company created from UC Denver IP in August 2006, successfully attained the development milestone required to trigger the funding of the second tranche of its Series A Preferred Stock financing. On May 24, 2007, BaroFold raised $12 million in a series A venture capital round. The proceeds from the financing will go toward funding additional development of the firm's therapeutics pipeline. In June 2007, ARCA Discovery, Inc. completed an $18-million equity financing to advance targeted cardiovascular therapies and submit of its lead product for approval.

Initiation of State of Colorado Bioscience Discovery Grant Program

In fall 2006, TTO received 42 proof-of-concept grant applications for this program; 13 were selected for funding. Winning proposals totaled $2,129,000, with approximately half the funds provided by House Bill 1360 legislation and half from CU TTO. The grants were approved by the state in January 2007 and research was initiated in February.

Companion legislation to House Bill 1360—House Bill 1060—was passed into law in the spring of 2007. HB 1060 provides $500,000 for proof-of-concept research related to advancing Colorado universities' biofuels IP. Like HB 1360, the biofuels research funding requires an equal financial match from the recipient university. HB 1060 also provides $2 million in state funds to be awarded in grants to bioscience (including biofuels) companies that license or option university bioscience IP. To be eligible, the awardee companies must have received a Phase 1 federal agency Small Business Innovative Research (SBIR) program or Small Business Technology Transfer (SBTT) program research award. The state funding for any one bioscience company is not to exceed $100,000.

The Values and Guiding Principles for CU Technology Transfer

- Support entrepreneurial faculty and build confidence among investors by licensing to credible companies that give the technology the best chance for success.
- Protect university interests by affecting quality transactions that minimize risk while being accessible, responsive, and fair to licensee companies.
- Ensure public accountability through transparent decision making processes that are guided by law and ethics while maintaining an entrepreneurial culture.
- Assist the process of technology pulled into the marketplace, ensuring social and innovation impact, and seeking appropriate financial return to CU.
- Leverage the local business community and contribute to the economic development of Colorado.
- Strive to remain financially independent as a self-funded "enterprise" within CU, through the university's revenue distribution policy.

Overview of CU Inventions from Fiscal Year 2007

The disclosure of an invention by a CU research investigator is a fundamental starting point for the technology transfer process. Over the past few years, the invention disclosure rate has continued to increase, with 254 inventions reported to TTO during FY 2006–07.

Investigators associated with each campus delivered more invention disclosures than the previous year. In FY 2006–07, 40 percent of the invention disclosures were inventors from CU-Boulder, 54 percent from UC Denver, 6 percent from CU-Colorado Springs, and 4 percent from joint submissions by inventors from CU-Boulder and UC Denver. Of the over 250 inventions submitted, 59 percent were bioscience-related and 41 percent were physical sciences/engineering-related. The table on this page identifies the sub-areas of invention disclosures within the two major categories.

Types of Inventions by Major Category

Bioscience		*Physical Sciences/Engineering*	
Therapeutics & Drug Targets	42%	Optics & Electronics	33%
Diagnostics	25%	Software	22%
Medical Devices	18%	Chemicals and Materials	21%
Biomaterials	7%	Energy	5%
Research Tools	6%	Micro/Nanotechnology	4%
Drug Delivery	2%	Other	15%

A Sampling of CU Inventions from Fiscal Year 2007

Dr. Wei Tan of the University of Colorado at Boulder has developed a mechanically strong nanocomposite material comprised of carbon nanotube-reinforced collagen fibers. The mechanical properties of this composite allow for the development of implantable tissues capable of withstanding high-stress environments associated with procedures such as vascular grafts. Vascular grafts, used to replace or bypass damaged blood vessels, are often employed where natural blood vessels are narrow or blocked as a result of disease processes. Grafts must function much like natural blood vessels, withstanding blood pressure and flexing as a normal vessel would. A graft's mechanical strength is essential for resisting the pressure of the blood, as well as other forces that could cause the graft to be a failure.

Safe and high-energy-density storage of hydrogen is the main technical problem associated with the use of hydrogen as a fuel. Several strategies have been proposed to meet U.S. Department of Energy (DOE) storage requirements, but currently the hydrogen storage capacities obtained at room temperature and atmospheric pressure are either far from the DOE benchmark or use systems in which hydrogen regeneration after storage is difficult. A CU-Boulder research team led by **Dr. John Falconer** (pictured left) and **Dr. Richard Noble** (pictured top right) has developed a method of storing hydrogen at high pressures in small pellets that are coated with a thin zeolite layer. The pellets can be any inorganic material that adsorbs hydrogen, as long as it is stable under the pH conditions used for zeolite membrane synthesis. Using this method, hydrogen is adsorbed at high pressure in the pellets, which are then sealed by reversible adsorption of a molecule in the thin zeolite layer; the adsorbed molecule can then be removed by a low-temperature thermal treatment to recover the hydrogen.

Dr. Rafael Piestun of CU-Boulder has developed a novel method and system for passive optical imaging and ranging—the process of using visual data to make a 3-D map of an object and its relationship to its surroundings. The challenge of optical imaging and ranging is of major importance in applications such as military ranging systems, immersive "virtual" reality games, law enforcement, and robotics/machine vision. Standard techniques for accomplishing this are both cumbersome and expensive, generally requiring two cameras and heavy computation. In the novel technique developed at CU-Boulder, the distance of objects to an optical system is estimated in conjunction with other parameters such as the object brightness and object transverse position using a single camera; the technique can be implemented with very low cost under mass production.

For decades medicine has been looking to health information technology (HIT) to help address many of the gaps in health care quality. With a few exceptions, however, HIT's potential in this area has yet to be fully realized. Some options, such as electronic medical records (EMRs), have been developed, but just one quarter of family physicians in the United States use EMRs. EMRs facilitate collecting and recording information at the point of care, but they generally do not allow patients to actively contribute information, nor do they facilitate patient-oriented management of chronic conditions. The Integrated Health Connect system developed by the **Department of Family Medicine** at the University of Colorado Denver was designed to overcome these issues and allow patients to interact with the system using a phone or web interface to track information related to chronic illnesses, to receive counseling for behavioral change, to track and report acute changes in conditions, or to track responses to therapy. The software system can be managed by the end user with a web interface to prioritize messages from patients and route to physicians via e-mail, phone, pager, or fax.

Through recent discoveries in cancer biology it has become increasingly evident that tumor growth and normal development share many properties. **Dr. Heide Ford** of the University of Colorado Cancer Center has done intensive research on the homeobox superfamily of genes, which encode transcription factors that are essential during normal development and are often dysregulated in cancer. Dr. Ford has demonstrated that the developmental regulator Six1 is overexpressed in a variety of carcinoma cell lines as compared to normal cells and acts to render tumors resistant to TNF-related cell death inducing ligand (TRAIL)-mediated apoptosis. Therefore, Six1 may be an important determinant of TRAIL therapy response that should be considered in patient selection for TRAIL-related clinical trials, of which several are ongoing in the U.S. Dr. Ford's technology would allow for accurate identification of patients who will most likely benefit from TRAIL therapy, and could also become a marker for tailoring patient treatment once these therapies are FDA approved (perhaps in conjunction with the FDA-approved label for TRAIL).

Vaccines containing recombinant proteins require an adjuvant to elicit an immune response. Aluminum–salt adjuvants are currently the most widely used adjuvants for general use in humans; however, when vaccines containing aluminum–salt adjuvants are frozen or lyophilized in an attempt to improve stability, the vaccine preparations frequently demonstrate a significant decrease in potency. A joint CU-Boulder and University of Colorado Denver research team led by **Drs. Ted Randolph** and **John Carpenter** has developed a method to produce stable preparations of immunologically active, freeze-dried vaccines containing aluminum–salt adjuvants. The result is an improved vaccine that is stable without the loss of vaccine immunogenicity; the new formulation, when reconstituted, demonstrated efficacy similar to that of a similarly formulated liquid preparation as measured by the antibody response in mouse sera after inoculation. Since frozen or lyophilized vaccines are stable over a much longer period of time, this technique may enable vaccine supplies to be kept stable in areas where storage and refrigeration of liquid preparations is difficult or unreliable, as well as for stockpiling in case of emergency.

Micro-RNAs, or miRNAs, are of increasing interest to the medical research community because of the role played by miRNAs in gene regulation. **Dr. Linda Van Dyk** of the University of Colorado Denver is developing a kit to assay miRNAs within all steps of their maturation process in order to determine their source of origin and the potential processing enzymes used to create them. This kit is able to provide evidence of how each RNA molecule was transcribed and processed within the cell. Additionally, it can be used to map virtually any type of RNA transcript within the cell. These assays will become very useful in the field of transcriptional regulation and processing of RNAs; it can also potentially be used for diagnostics of miRNA detection or where RNA processing is defective.

Dr. Michael Larson of the University of Colorado at Colorado Springs has developed a medical device that generates heat and pressure for the purpose of fusing tissue membranes together, providing an alternative to the current methods of wound closure, including suturing and stapling. The first prototyped device is optimized for the fusion of septal membranes and overcomes the barriers that have prevented others from creating an economically viable laser fusion solution: the different set of laser parameters required for each type of tissue and the skill required to use laser systems without burning or otherwise damaging the tissue. Dr. Larson's device not only simplifies the surgical process, making it possible for a trained technician to perform it, but it also has the potential to shorten healing time and reduce side effects like swelling, scarring, and infection.

Dr. John Hutton, Research Director for the Barbara Davis Center for Childhood Diabetes, has identified a new autoantigen that is implicated in the development and progression of Type 1 (or juvenile) diabetes in humans. This autoantigen is one of a very small handful of others that have been implicated in this disease. Dr. Hutton has demonstrated that autoantibodies to the autoantigen appear before the development of clinical disease, creating an opportunity to develop a more accurate tool for early diagnosis. Further research has shown this autoantigen to be confined to insulin-producing cells of the islet, which has motivated Dr. Hutton to explore development of a therapeutic approach that more specifically targets the area where the disease initially develops.

Drs. Steven Hunsucker (Pediatrics), **Bryan Haugen** (pictured, top) (Pathology), and **Mark Duncan** (pictured, bottom) (Pediatrics) at the University of Colorado Denver have been working on methods for differentiating follicular thyroid carcinoma (FTC) from follicular thyroid adenoma (FTA). Thyroid cancer is the most common endocrine malignancy in the United States, but a major limitation of the current diagnostics leads to a high number (25 percent) of indeterminate biopsy results. When doctors cannot distinguish between FTC and FTA, they recommend removal of the thyroid, but it is estimated that up to 18 percent of all thyroidectomies are not necessary and could have been avoided with better diagnostic techniques. A previous discovery study in the inventors' labs compared the relative abundances of individual proteins isolated from FTC and FTA nodules. The study identified a panel of about 40 protein biomarkers that could act to differentially diagnose FTC and FTA based on differential abundance in the two tissue types, and the inventors have been able to narrow this panel down to a limited subset of proteins that are highly correlative of nodule phenotype. The inventors are now developing a clinical assay that will provide sufficient diagnostic power to correctly distinguish FTC and FTA when the FNAB results are indeterminate, which can also be performed on a blood sample from the patient. Such an assay could prevent tens of thousands of unnecessary thyroidectomies and save the health care system on the order of $250 million per year.

The TTO Proof of Concept Grant (POCg) Program

In fall 2005, TTO began a competitive funding program called the Proof of Concept Grant Program (POCg). POCg provides awards to enable the development and validation of promising CU inventions that are, or will become, suitable for commercialization. For example, three categories of disclosures for which a relatively small amount of research funding may yield a dramatic increase in value for the invention are:

- Advancement of hypothesis testing—testing an idea or in silico prediction with in vitro experiments, extending in vitro results with in vivo experiments, or building a bench prototype
- Target validation—screening small molecule libraries, producing antibodies, or selecting target-binding peptides or aptamers
- Precommercial research—validating academic software code for commercial application, drug formulation, or alternative applications for technology

In its second year, the fall 2006 solicitation for POCg yielded 19 funded projects across all three campuses. Proposals ranged across scientific disciplines and included therapeutics (10 projects), medical devices (two projects), medical diagnostics (one project), mechanical devices (five projects), and software (one project).

The spring 2007 POCg solicitation funded yielded proposals and five were funded, representing several physical science disciplines.

Fall 2006 Bioscience POCg Awards

Stephen Hunsucker, School of Medicine, Department of Pediatrics, UC Denver. "Protein Biomarkers to Differentially Diagnose Follicular Thyroid Carcinoma and Follicular Thyroid Adenoma."

Leland Shapiro, School of Medicine, Division of Infectious Diseases, UC Denver. "Infusion of Alpha-1-Antitrypsin (AAT) to Suppress Human Immunodeficiency Virus Type 1 (HIV) Replication in Patients."

Steven Anderson, School of Medicine, Department of Pathology, UC Denver. "Suppression of Irradiation-Induced Salivary Gland Dysfunction by IGF-1."

Jeffrey Holt, School of Medicine, Department of Pathology, UC Denver. "Biomarker Enabled Development of PARP Inhibitors for Cancer Therapy."

Gary Brodsky, School of Medicine, Division of Medical Oncology, UC Denver. "In-vivo Analysis of a Cardiac and Skeletal Muscle Stem Cell Activator."

Edward Dempsey, School of Medicine, Cardiovascular Pulmonary Research Laboratory, UC Denver. "Moving Bryostatin-1 from the Lab to the Clinic for the Treatment of Pulmonary Hypertension."

Robert Hodges, School of Medicine, Department of Biochemistry and Molecular Genetics, UC Denver. "Applicability of SARS Coronavirus Antibody Technology to Influenza Virus."

Karen Stevens, School of Medicine, Department of Psychiatry, UC Denver. "A New Treatment for Ineffectively Treated Schizophrenia Patients: Pre-clinical Validation for Centrally Administered Clozapine."

Douglas Graham, School of Medicine, Department of Pediatrics, Center for Cancer and Blood Disorders, UC Denver. "A Novel Biologically Targeted Agent for the Treatment of Non-Small Cell Lung Cancer."

David Ross, School of Pharmacy, Department of Pharmaceutical Sciences, UC Denver. "Hydroquinone Ansamycin Pro-drugs as Novel Anticancer Hsp90 Inhibitors."

Tad Koch, Department of Chemistry and Biochemistry, CU-Boulder. "New Targeted Drug for the Treatment of Lung Cancer."

Christopher Bowman, Department of Chemical and Biochemical Engineering, CU-Boulder. "Redox-Initiated Radical Chain Polymerization for the Detection and Amplification of Biological Recognition Events."

Michael Larson, Department of Mechanical Engineering, CU-Colorado Springs. "A Device for Laser Fusion of Septal Tissue."

Fall 2006 Non-bioscience POCg Awards

Hans-Dieter Seelig, Department of Aerospace Engineering, CU-Boulder. "Sensor systems and methods for the evaluation of water deficit stress in plants."

Josef Michl, Department of Chemistry and Biochemistry, CU-Boulder. "Catalyzed Radical Polymerization."

Rishi Raj, Department of Mechanical Engineering, CU-Boulder. "Ultra-efficient Catalyst for Hydrogen Generation."

Rafael Piestun, Department of Electrical and Computer Engineering, CU-Boulder. "Super-resolution, Compact, Passive Three-Dimensional Imaging System."

Ronggui Yang, Department of Mechanical Engineering, CU-Boulder. "Photonic Crystal Fiber Based Micro Capillary Pumped Loops for Site-Specific Cooling of Electronics."

Terrance E. Boult, Department of Computer Science, CU-Colorado Springs. "Privacy Enhanced Surveillance Camera."

Spring 2007 POCg Awards

Josef Michl, Department of Chemistry and Biochemistry, CU-Boulder. "Synthesis of Bulk Left-Handed Materials with Response in the Visible," with applications in optical imaging.

Robert R. McLeod, Department of Electrical and Computer Engineering, CU-Boulder. "Tape Casting of High Performance Polymer Optical Imaging Arrays."

Charles R. Nuttelman, Department of Chemical and Biological Engineering, CU-Boulder. "Poly(Ethylene Glycol)-Based Custom Zymographic Assays," with applications for the study of enzymes and enzymatic activity.

Wayne Ward, Center for Spoken Language Research, CU-Boulder. "An Industrial Strength Natural Language Processing Toolkit."

Karen M. Newell Rogers, Department of Biology, CU-Colorado Springs. "Selective Modulation of Gamma Delta T Cells to Treat Autoimmune Diseases, HIV, and Cancer."

Colorado Bioscience Discovery Grant Program

In addition to the TTO POCg awards, TTO participated in a larger POC grant program called the State of Colorado Bioscience Discovery Grant Program. This grant program, created by HB 1360, provides matching funds for proof-of-concept projects related to bio-science. The TTO selected 13 projects using a competitive internal application process combined with presentation to a panel of venture capitalists. Winning proposals totaled $2,129,000.

Three CU Start-up Companies Receive $100,000 Proof-of-Concept

Three start-up companies that emerged from CU research were awarded $100,000 proof-of-concept investments after competitive fall 2006 and spring 2007 rounds. The Proof of Concept investment (POCi) program provides early-stage "seed" investments (in the form of convertible debt) to enable the further development and validation of promising CU technologies that are the platform for a start-up company. POCi recipients were selected by a panel of venture capitalists after oral presentations by the finalists. The three POCi company recipients were:

Mentor InterActive, Inc. of Boulder is developing an educational and entertaining software program for teaching children to read. This interactive "edutainment" program is based on the highly acclaimed Foundations to Literacy™ (FtL) learning tools developed at CU-Boulder's Center for Spoken Language Research. These tools combine scientifically proven literacy teaching methods, leading speech recognition technology, and a lifelike 3-D animated tutor that provides individualized instruction according to the abilities of each learner. The efficacy of the FtL approach has been shown in pilot testing in the classroom, but those tools have not been available in a product designed for the home market. Mentor InterActive used the POCi funds to implement the FtL tools in a prototype product that will engage young and struggling readers by using a video game platform.

ColdQuanta, Inc. is commercializing more than two decades of extraordinary scientific and technological achievements in Atomic, Molecular, and Optical (AMO) physics, including those that led to the 1997 Nobel Prize in Physics for laser cooling and the 2001 Nobel Prize for the achievement of Bose-Einstein Condensation (BEC) in an atomic vapor. Recognized to be the atom equivalent of a laser, BEC is essentially a new form of matter formed just above absolute zero degrees. More generally, BEC and other ultracold states of matter have a richness of potential applications on par or perhaps exceeding those of the laser. Boulder-based ColdQuanta is using POCi funds to advance the development of its first product, the Atom Chip Portable Vacuum—a miniature vacuum cell that can produce cold and ultracold atoms on an "atom chip" convenient for lab work.

EndoShape, Inc. is an early-stage company founded to advance the development of shape memory materials and devices for a range of endolumenal applications. Utilizing proprietary shape memory polymer (SMP) technology developed at the University of Colorado, the company's initial product focus is on devices for minimally invasive transcervical sterilization and non-permanent birth control that can be effective immediately. The company was established in November 2006 and is headquartered in Boulder, Colorado. EndoShape's Chief Technical Officer and an inventor of the EndoShape technology is **Dr. Robin Shandas**, Professor of Mechanical Engineering at CU-Boulder and Professor of Pediatrics (Division of Cardiology) at UC Denver (Anschutz Medical Campus).

University License Equity Holdings, Inc. Role in Managing the CU License Private Equity Portfolio

TTO's licenses with start-up companies typically include an ownership (equity) component as partial consideration for the grant of the university IP to the company, in addition to royalty payment terms. The private equity is transferred under a separate stock subscription agreement and issued to and managed by University License Equity Holdings, Inc. (ULEHI). ULEHI is a 501(c)(3) corporation, authorized under Colorado statute, that exists solely for the benefit of the University of Colorado. ULEHI will liquidate an equity position when the shares become marketable and unrestricted. ULEHI also makes investments in CU start-up companies under the Proof of Concept investment (POCi) program. These are made in the form of an unsecured convertible promissory note, wherein the principal and interest is converted to stock upon the achievement of a specified level of private investment in the company. ULEHI is audited annually by outside auditors and is managed by a board of directors composed of university appointees and non-CU employees with significant executive management and private investment experience. The current board members are Merc Mercure, Chairman, President of CDM Optics; Jerry Donahue, Vice Chairman, former President of the Boulder Incubator and UTC, currently venture advisor; David Allen, Secretary, CU Associate Vice President for Technology Transfer; Michael Poliakoff; CU Vice President for Academic Affairs and Research; Kyle Lefkoff, General Partner, Boulder Ventures; Marsha Piccone, Partner, Wheeler Trigg Kennedy; and John P. Raeder, Jr., President and CEO, IQNavigator, Inc.

New Business Development Based on CU Intellectual Property

University inventions are often both cutting-edge technologies and at the earliest stage of technological development. Investigators are motivated to address fundamental questions relevant to their discipline, essentially "pushing the envelope" of science. Inventions that emerge from basic scientific inquiry are seldom directly related to a well-defined commercial problem. Typically there are many yet-to-be-answered questions about the commercial and technical feasibility of the inventions. In pursing the commercialization of such nascent technologies, TTO works with inventors and a variety of advisory experts to define and address these feasibility issues. The three most common approaches TTO uses to investigate the product applications and market opportunities are to engage students enrolled in feasibility and business plan courses, hire CU students as TTO interns, and connect to seasoned technology and entrepreneurial volunteer professionals typically from the Colorado Front Range. As a means to identify and aggregate domain experts, TTO works with and is a significant financial supporter of the Boulder Innovation Center (BIC) and the Fitzsimons BioBusiness partners (FBBp). Essentially, these two nonprofit business development organizations obtain critical feedback on the commercial prospects and development direction for CU inventions from volunteer business advisors with expertise in the relevant technology area.

Successful commercialization of emergent university technologies requires finding the right "home" for the technology. This home can be a new company formed specifically for the purpose of developing and validating the technology, with the goal of eventually selling products that incorporate the CU-licensed intellectual property, or in some cases, selling the company to a larger company that seeks to establish a competitive position based on products created from the CU invention. It is important that start-ups begin on a firm foundation, and for TTO this means an involved inventor, a capable entrepreneur to lead the company, and a credible business and funding plan for developing the technology. Depending on the needs of the new company, TTO will help to connect the company with legal resources, potential management and advisors, and potential early-stage investors, including the BIC and FBBp. In addition, TTO will manage the patenting process and assist in the development of IP and technology development strategies. Finally, as discussed elsewhere, TTO will provide proof-of-concept funding directly to eligible CU start-up companies through its Proof of Concept investment (POCi) program. In FY 2006–07, TTO awarded three POCi investments of $100,000 each to companies that were selected through a competitive external review process.

In FY 2006–07, the CU TTO concluded exclusive IP agreements with 10 start-up companies. This was the same number as FY 2005–06, and one more than the nine new companies created from CU IP in each of the two preceding years. Over just the past five years, 44 new companies have been formed based on CU technologies, a total that places CU in the top 10 universities nationwide in new company creation. All but four of these companies were still operational at the end of FY 2006–07, and of those all but four are either based in Colorado or have significant Colorado operations.

A New TTO Venture Partner: Allied Minds, Inc.

In FY 2006–07, TTO partnered with Allied Minds, Inc. in the creation of Illumasonix, a new company formed to commercialize a non-invasive method for providing quantitative information on complex blood flow in the treatment of vascular disease. This method was invented by **Dr. Robin Shandas**, Professor of Mechanical Engineering at the University of Colorado at Boulder and of Pediatrics (Division of Cardiology) at the University of Colorado Denver, Anschutz Medical Campus, and uses ultrasound and FDA-approved microbubbles as an imaging agent to provide a real-time assessment of blood flow and detection of blockages. In addition to the technology licensing agreement, the arrangement with Allied Minds also calls for significant sponsored research funding to support further development and clinical validation of the technology, an important pre-market milestone that will significantly enhance the value of Illumasonix.

Allied Minds, Inc. is a U.S. private equity corporation capitalized and owned by international investors and has offices in London and Boston. Its mission is to convert academic discoveries into commercial activity and wealth by partnering with select U.S. universities and investing in early-stage spin-out and licensing deals. The Illumasonix imaging method was selected by Allied Minds for its initial investment in a CU technology after a day and a half of inventor presentations of high potential.

Fiscal Year 2006–07 Companies Created Based on CU Intellectual Property	
ColdQuanta, Inc.	Portable vacuum cell for producing Bose-Einstein Condensates and other ultracold forms of matter
EndoShape, Inc.	Shape memory polymer stents for vascular and non-vascular applications
OpX Biotechnologies, Inc.	Genetic engineering technology to improve organism strains used in biorefining
Hiberna, Inc.	Identification of novel therapeutic targets for preventing or reversing metabolic disorders
Copernican Energy, Inc.	Energy production via solar-thermal conversion of biomass
CycleGen, Inc.	Methods for the selective treatment of tumors by calcium-mediated induction of apoptosis
Tissue Genetics, Inc.	Tissue-based protein truncation test for cancer diagnosis
Changchun ProteLight Pharma & Biotech Ltd.	Novel antimicrobial compounds for the treatment of infectious diseases
Illumasonix LLC	Non-invasive diagnostic tool for analyzing blood flow in connection with cardiovascular diseases
BioRelix, Inc.	Use of novel bacterial RNA targets called RiboSwitches™ for targeted antibiotics

Business Development Organizations Work with TTO to Assist in Creating New Companies from CU IP

Over the past two years TTO has evolved productive relationships with two community-based business development organizations: the Fitzsimons BioBusiness partners (FBBp) and the Boulder Innovation Center (BIC). These nonprofit organizations connect TTO to a network of business advisors and entrepreneurs with extensive new venture creation, product development, and fundraising experience in their relevant technology areas.

At the helm of the Boulder Innovation Center (BIC) is Tim Bour, a serial technology entrepreneur who is developing expert assistance groups in vertical markets of particular interest to TTO. At any one time, the BIC has between five to 10 business feasibility and planning projects underway related to CU IP. These projects link the rich technology and entrepreneurial talent in Boulder with the technology opportunity created by CU faculty to understand applications, resource needs, and other elements necessary for launching a start-up company. **www.boulderinnovationcenter.com**

The Fitzsimons BioBusiness partners (FBBp) are solely directed to biomedical companies in the therapeutics, diagnostics, and device space. Rick Silva is the interim director of FBBp, while also assuming the responsibility of Director of the UC Denver TTO office. The core asset of FBBp is a cadre of expert bioscience business advisors who meet monthly and help select and advise FBBp clients. Additional advisors augment this core group by providing personal voluntary start-up assistance. Approximately one third of the clients in the FBBp portfolio are companies emanating from IP assets created at the University of Colorado. **www.fitzbiobusinesspartners.com**

Recognizing the Research and Technology Transfer Excellence of CU Inventors

The University of Colorado Technology Transfer Office held its fifth annual awards event on January 24. The event, which took place at the historic Tivoli Turnhalle and was sponsored by Faegre & Benson, was attended by over 200 local business leaders and faculty inventors. After a presentation from Myogen founders Dr. Michael Bristow and Dr. J. William Freytag, awards were presented to inventors, companies, and others who demonstrate best practices in technology transfer.

New Inventors of the Year

Dr. Anatoliy Glushchenko, Assistant Professor of Physics, University of Colorado at Colorado Springs

Dr. Jeffrey Holt, Vice Chair for Research and Todd Professor of Experimental Pathology, University of Colorado Denver

Dr. James Goodrich, Associate Professor of Chemistry and Biochemistry, University of Colorado at Boulder

Inventors of the Year

Dr. Zbigniew Celinski, Professor of Physics, University of Colorado at Colorado Springs

Dr. Robin Shandas, Professor of Mechanical Engineering, University of Colorado at Boulder and Professor of Pediatrics, University of Colorado Denver

Dr. Robert Kuchta, Associate Professor of Chemistry and Biochemistry, University of Colorado at Boulder

Dr. Kathy Rowlen, Professor of Chemistry and Biochemistry, University of Colorado at Boulder

Physical Sciences/IT/Engineering Company of the Year

ALD NanoSolutions (Broomfield, Colorado)

Biosciences Company of the Year

ARCA Discovery (Denver, Colorado)

Business Advisor of the Year

Dr. Richard Duke, founder of ApopLogic Pharmaceuticals and GlobeImmune, Inc.

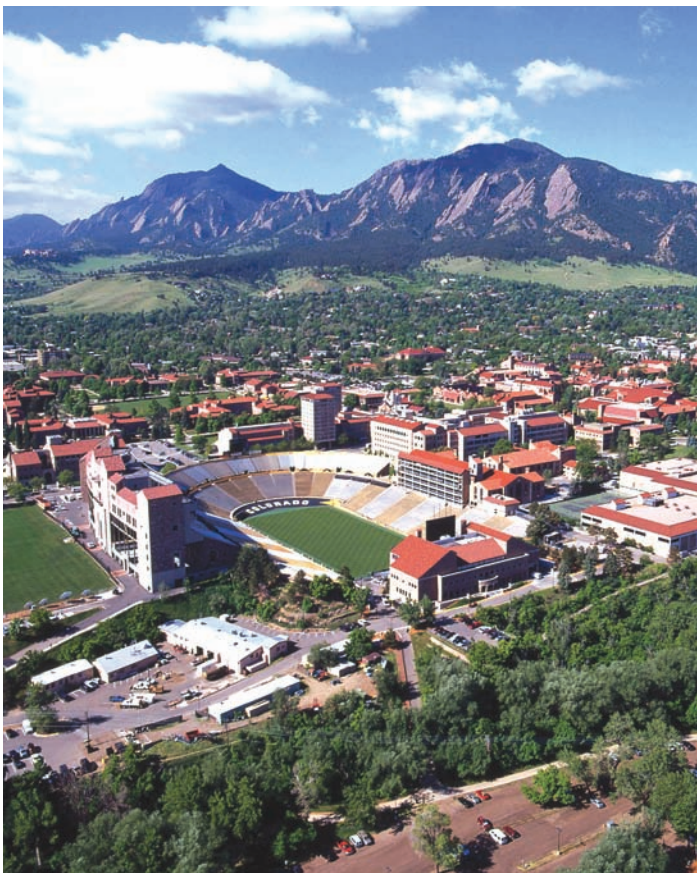
Pinnacles Lifetime Achievement Award

Kyle Lefkoff, Boulder Ventures

CU TTO Changes Location

In August 2006, the TTO group that was previously located at 4001 Discovery Drive in Boulder relocated to the CU Foundation Building at 4740 Walnut Street. The Boulder location houses the six professionals of the Boulder licensing group, as well as 10 members of the system administrative staff and a full complement of students and interns. The CU Foundation building offers flexible space and several conference rooms and is more conveniently located near the main CU-Boulder campus, making TTO staff accessible to inventors and administration.

The new address is:
Technology Transfer Office
CU-Boulder
4740 Walnut Street
Suite 100
588 UCB (for system office) or 589 UCB (for Boulder licensing group)
Boulder, CO 80309



Updates on Companies Created from University of Colorado Technology

In the past year, Broomfield, Colorado-based **ALD NanoSolutions** received three new Phase I Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) grants and a new Phase II STTR grant, bringing the total amount of funding from federal agencies to $3.9 million for 13 programs since June 2003. Two of these new grants will advance the use of the Atomic Layer Deposition (ALD) coatings onto polymer surfaces to create highly advanced chemical barriers for flexible electronics and other specialty applications. ALD NanoSolutions, Inc. was founded in 2001 by P. Michael Masterson, Karen Buechler, and CU-Boulder Professors **Steven George** and **Alan Weimer**. The company's proprietary technology is based on ALD coating chemistry methods developed by Drs. George and Weimer for depositing ultra-thin films on particulate and polymeric surfaces. ALD NanoSolutions was recognized by TTO as Physical Sciences Company of the Year in 2006. **www.aldnanosolutions.com**

Allos Therapeutics, Inc., located in Westminster, Colorado, is a biopharmaceutical company focused on the development and commercialization of small molecule therapeutics for the treatment of cancer. The company's lead product candidate, PDX (pralatrexate), is a novel antifolate currently under evaluation in a pivotal Phase 2 trial in patients with relapsed or refractory peripheral T-cell lymphoma. The company is also investigating PDX in patients with non-small cell lung cancer and a range of other lymphoma subtypes. Allos's other product candidate is RH1, a novel small molecule chemotherapeutic agent that is bioactivated by the enzyme DT-diaphorase, or DTD, which is over-expressed in many tumors, including lung, colon, breast, and liver tumors. The company expects to initiate a Phase 1 study of RH1, which is under license from the University of Colorado, in patients with advanced solid tumors in the fourth quarter of 2007. **www.allos.com**

AKTIV-DRY, LLC, located in Boulder, Colorado's Gunbarrel Industrial Park, continues work on a $19.5 million grant from the Foundation for the National Institutes of Health (FNIH) to develop an aerosol live measles virus vaccine that can be inhaled rather than injected with needles. Such a development would save countless lives in developing countries. The company is also developing inhalable powder formulations of siRNA for use in treating respiratory syncytial virus (RSV). Aktiv-Dry LLC was founded in 2002 by University of Colorado Professors **Robert Sievers** (pictured) and **John Carpenter**, and entrepreneur Brian Quinn, PhD, to develop life-saving stable vaccines and pharmaceuticals for needle-free delivery. The company is moving forward with the development of active dry powder inhalers for infants and toddlers and on the thermal stabilization of vaccines, especially measles. In another application of its carbon dioxide-based technology, Aktiv-Dry is developing nano suspensions of phytosterols to mitigate the body's absorption of ingested cholesterol. **www.activ-dry.com**

ApopLogic Pharmaceuticals is a start-up-phase biopharmaceutical company focused on the discovery, development, and commercialization of products to treat cancer. The company was formed in 2006 to capitalize on the intellectual property of its founding scientists, University of Colorado Cancer Center members **Richard C. Duke**, **Donald Bellgrau**, **Paul A. Bunn**, **Daniel Chan**, **Lajos Gera**, **Jaime Modiano**, and **John Stewart**. ApopLogic takes advantage of its scientists' understanding of receptors and ligands that control natural cell death (apoptosis). The company's products include Breceptin, a novel neuropeptide growth factor receptor antagonist that targets a broad range of cancers, and Fasaret, a proprietary cancer therapy based on Fas ligand, an apoptotic cell death-inducing molecule with unique pro-inflammatory properties. In 2006, ApopLogic received proof-of-concept funding from the TTO and a Phase I SBIR grant to move forward with testing of Fasaret. **www.apoplogic.com**

APRO Bio Pharmaceutical Corporation is an Englewood, Colorado-based start-up biotechnology company developing novel drugs and therapies that may be effective against bacterial infections and diseases, some of which could be used in bio-weapon attacks. The research initiated in **Dr. Leland Shapiro's** CU laboratory has provided in vitro and in vivo efficacy results that provide the basis for development of therapies that use existing and new compounds to fight bacterial infections. If ongoing results continue to prove efficacy, CU and Shapiro's science will provide the basis for APRO's drug treatments to become an essential component of a first line of treatment for a bioterrorism event or a naturally occurring unexpected outbreak.

ARCA Discovery, Inc., a company founded by **Michael Bristow**, Professor of Cardiology at UC Denver, is focused on developing and commercializing genetically targeted therapies for heart failure and other cardiovascular diseases. The company's first product is Bucindolol, a small-molecule therapeutic for advanced heart failure and other indications, which promises to be the first genetically targeted cardiovascular drug. In June 2007, ARCA closed an $18 million Series B preferred stock financing led by Skyline Ventures together with InterWest Partners as new investors, with participation from existing investors Atlas Ventures, Boulder Ventures, and the Peierls Foundation; ARCA's total private financing exceeds $34 million. The proceeds from the Series B financing will be used in part to file for U.S. approval and launch Bucindolol. The company's corporate headquarters are in Denver, Colorado, and its laboratory facilities are at the Colorado Science + Technology Park at the Anschutz Medical Campus. **www.arcadiscovery.com**

Archemix Corp. is a privately held biopharmaceutical company founded in 2001 based on CU's SELEX technology and incorporating a dominant patent portfolio. The company's mission is to develop aptamers (single-stranded nucleic acids that form well-defined three-dimensional shapes) as a class of directed therapeutics for the prevention and treatment of human disease. Because of their unique properties and proven efficacy, aptamers offer an alternative to biologics and small molecules in numerous applications and provide the potential to be a major class of drugs for the treatment of unmet medical needs. Located in Cambridge, Massachusetts, the company has formed strategic alliances with many other companies based on CU technology. In January 2007, the company announced collaborations with Merck and Pfizer to discover new aptamer therapeutics, and in June 2007 the company announced the successful completion of a Phase 1 study of its novel aptamer therapeutic, ARC1779. Archemix plans to commence a Phase 2 study of ARC1779 during the fourth quarter of 2007. **www.archemix.com**

BaroFold, Inc. is a privately held Colorado-based biopharmaceutical company focused on the development of commercially attractive protein therapeutics for immunological and autoimmune diseases. The company's goal is to discover, develop, and commercialize protein biologics incorporating its proprietary PreEMT™ high-pressure folding technology (a patented technology invented by founders **Ted Randolph** and **John Carpenter** at CU-Boulder and UC Denver) along with other state-of-the-art technologies. This pipeline contains therapeutics with an immunology focus for diseases including multiple sclerosis, rheumatoid arthritis, and asthma. The company is well funded and, since its inception in 2003, has leveraged its unique technology to generate licensing agreements with several biopharmaceutical companies, including Genentech, Pfizer, and Eli Lilly. The company recently closed a Series A institutional financing round raising $12 million from seasoned health care investors, including Boulder Ventures and HBM BioVentures. **www.barofold.com**

Caveo Therapeutics, Inc. is an early-stage biotechnology company creating innovative therapies for cancers and hematologic conditions based on receptor tyrosine kinase (RTK) technologies developing by UC Denver's **Doug Graham**. The Aurora, Colorado-based company identifies biological inhibitors that protect or guard receptors on various cell types against excessive or inappropriate activation, which can lead to malignancy or other disease pathologies. The lead drug candidate, CVO-102, is an inhibitor of Mer, Caveo's proprietary RTK target, and represents a novel approach to the treatment of blood cancers as well as significantly improved prevention of blood clotting (with no or minimal bleeding risk), a serious condition for which hundreds of thousands of hospitalized patients are at risk. Caveo was recently selected to be a featured presenting company at BIO and the CHI Molecular Medicine conference, and is currently raising capital to complete key studies, which will support the filing of an Investigational New Drug application with the FDA in the fourth quarter of 2008. **www.caveotherapeutics.com**

In April 2007, **CDM Optics, Inc.**, located in Boulder, Colorado, marked its second anniversary as a subsidiary of OmniVision Technologies, Inc., a world-leading supplier of complementary metal oxide semiconductor (CMOS) image sensors. In February 2007, at the 3GSM World Congress in Barcelona, Spain, OmniVision introduced its first cell phone camera incorporating CDM's patented WaveFront Coding™ technology. This camera is now being evaluated by major cell phone companies. CDM's has completed its facility expansion and now occupies approximately 35,000 square feet of offices and laboratories in Boulder. CDM's employment has risen to over 50 people. **www.cdm-optics.com**

In March 2007, Boulder-based **ColorLink Corporation** was acquired by REAL D, a world leader in digital 3-D technology. ColorLink, formed to develop and commercialize research conducted at CU-Boulder, is one of the world's leading inventors and suppliers of photonics-based solutions. Under the acquisition agreement, ColorLink became a subsidiary of REAL D. The acquisition included ColorLink's research and development campus in Boulder as well as its manufacturing facilities in Tokyo and Shanghai. **www.colorlink.com**

eCortex, formed in 2006 by **Dr. Randall O'Reilly** and David Jilk and based in Boulder, Colorado, is commercializing neural network technology originally developed in Dr. O'Reilly's laboratory in CU-Boulder's psychology department. eCortex's first product will be a machine vision software component that is capable of classifying and recognizing objects, people, and context directly from digital images. This software is built using a biologically realistic model of the human visual system that is based on decades of neuroscience research. The eCortex product is expected to be significantly more flexible and accurate than other methods available and will open up new applications for machine vision system providers. **www.e-cortex.com**

Boulder, Colorado's **Jovion Corporation** is an early-stage company developing fundamentally new power generation sources. The company is based on research by **Garret Moddel**, a professor of electrical engineering at CU-Boulder, related to the controversial but scientifically intriguing concept of zero-point energy. Jovion is working to develop a system that will make use of zero-point energy to provide usable power. In 2006 Jovion received a Defense Advanced Research Projects Agency (DARPA) grant to demonstrate that the device has net energy output. With that support and a recent investment, the work is ongoing.

GlobeImmune, Inc. is a private Colorado-based company developing active immunotherapies called Tarmogens® for the treatment of cancer and infectious diseases. The Tarmogen technology is a proprietary platform for generating therapeutic vaccines that overcome the shortcomings of previous immunotherapeutic approaches. Tarmogens are recombinant yeast engineered to express disease-specific antigens. Tarmogens naturally couple a patient's innate immune response against the yeast with an antigen-specific T cell response against disease-specific targets, resulting in the targeted elimination of diseased cells throughout the body. Tarmogens can be given repeatedly, boosting the immune response with each subsequent dose. As a fermentation process, Tarmogen manufacturing is simple and scaleable, potentially allowing for small molecule-like economics. GlobeImmune has two products in Phase 2 clinical trials. GI-5005 is being evaluated in patients with chronic hepatitis C infection as both a frontline therapy in combination with standard of care and as a monotherapy for second-line salvage or interferon-intolerant patients. GI-4000 is being evaluated in patients with pancreas, lung, colorectal, and ovarian cancers caused by mutations in the Ras oncogene product. To date, Tarmogens have been generally well tolerated, generating antigen-specific immune responses and improved clinical outcomes in patients. **www.globeimmune.com**

In 2007, New Hampshire-based startup **ImmuRx** executed an exclusive license for a portfolio of intellectual property related to a second-generation immunotherapy adjuvant developed by **Dr. Ross Kedl** of UC Denver. The company, led by CEO Dave DeLucia, will pursue development of anti-cancer therapeutics that elevate the body's level of defense against tumor-specific antigens. Although similar approaches have been brought to the market, they have encountered difficulty due to the toxicity of the significant adjuvant concentrations required. Dr. Kedl's unique combination of adjuvants is expected to create a similar immune response without the toxic side effects. **www.immurx.com**

KMLabs Inc. is a leading manufacturer of ultra-short pulse lasers for the research market. Their 20-person team includes several of the world's most renowned experts in laser technology. KMLabs is a spin-off of the optics research group of Professors **Margaret Murnane** (pictured) and **Henry Kapteyn** at JILA, which is a world leader in the technology and scientific applications of lasers that can generate light pulses less than 10–14 seconds (0.00000000000001 seconds) in duration. KMLabs maintains an active research program, developing new products and technologies, including their new Wyvern™ laser, which uses CU-licensed technology to produce light pulses with an unprecedented combination of high pulse repetition frequency and high average power. KMLabs has taken no outside capital for growth and has been consistently profitable since its inception in 1994, quadrupling in size in the past three years. The company's research has also been recognized through a MacArthur fellowship in 2000, Professor Murnane's election to the National Academy of Sciences in 2004 (one of only five woman physicists in the United States so honored), and her selection as a Fellow in the Association of Women in Science in 2007. **www.kmlabs.com**

MedShape Solutions, Inc. is an early-stage company developing medical devices based on emerging shape memory alloy and polymer materials for use in orthopedics and minimally invasive surgery. MedShape's unique and patent-protected product line includes DynaNail™, a shape memory alloy-based intramedullary nail for treatment of conditions requiring ankle fusion, and ShapeLoc™, a shape memory polymer device for soft tissue fixation. The shape memory polymer materials were developed by a team of CU investigators. The company moved its primary operations to Atlanta, Georgia, when Ken Gall left CU for Georgia Tech and Kurt Jacobus, an Atlanta resident, became CEO. **www.medshapesolutions.com**

Mentor InterActive, Inc. of Boulder, Colorado, is commercializing CU's Foundations to Literacy®, a comprehensive and individualized computer-based literacy program. The program teaches children to read through face-to-face interaction with a virtual tutor—a lifelike computer character that speaks, emotes, gestures, and interacts with students to teach them to read and learn from text. It integrates human language and communication technologies with a reading program based on cognitive theory, linguistics, and scientifically based reading research. Foundations to Literacy® has its roots in the Colorado Literacy Tutor project, with participatory design from teachers and students in federally funded studies. With its My Mentor line of fun-to-play computer/video games that teach children to read, Mentor InterActive is targeting the fast-growing young children's software market, already a multi-billion-dollar market. In September 2006, the company was awarded a proof-of-concept investment from the TTO. **www.mentorinteractive.com**

PhosphoSolutions LLC, located at the Colorado Science + Technology Park at Fitzsimons, was created to manufacture and distribute proprietary research tools, known as phospho-specific antibodies, which are at the cutting edge of proteomics. Founded by three of the world's leading scientists in protein phosphorylation, the company's expertise makes PhosphoSolutions a highly qualified developer of custom-made phospho-specific antibodies. These antibodies, made in-house or licensed from universities, are a key enabling technology used by biotechnology companies to greatly accelerate drug discovery and research in many diseases. Current initiatives include the development of phospho-antibody BioChips for high-throughput multiplex assays. The company has been profitable since it opened its doors in 2001 and revenue has grown more than 40 percent in each of the past three years. **www.phosphosolutions.com**

Proteome Resources, LLC manufactures ultra-high-purity reagents and provides services to the biotechnology industry. Reagents (proteins, enzymes, and antibodies) primarily focus on enabling research and drug development around the Ubiquitin Proteasome pathway and apoptosis. Services chiefly comprise custom producing

recombinant proteins in research (ug) and development (mg) quantities using various optimal expression systems. To meet the demands of strategic customer partners and maintain its protein leadership, the company recently launched a High-Throughput Screening & Expression service for producing large numbers of proteins (25+) efficiently and quickly. Through these services, the company is also building a large library of proteins—and corresponding antibodies—serving a variety of research areas. **www.proteomeresources.com**

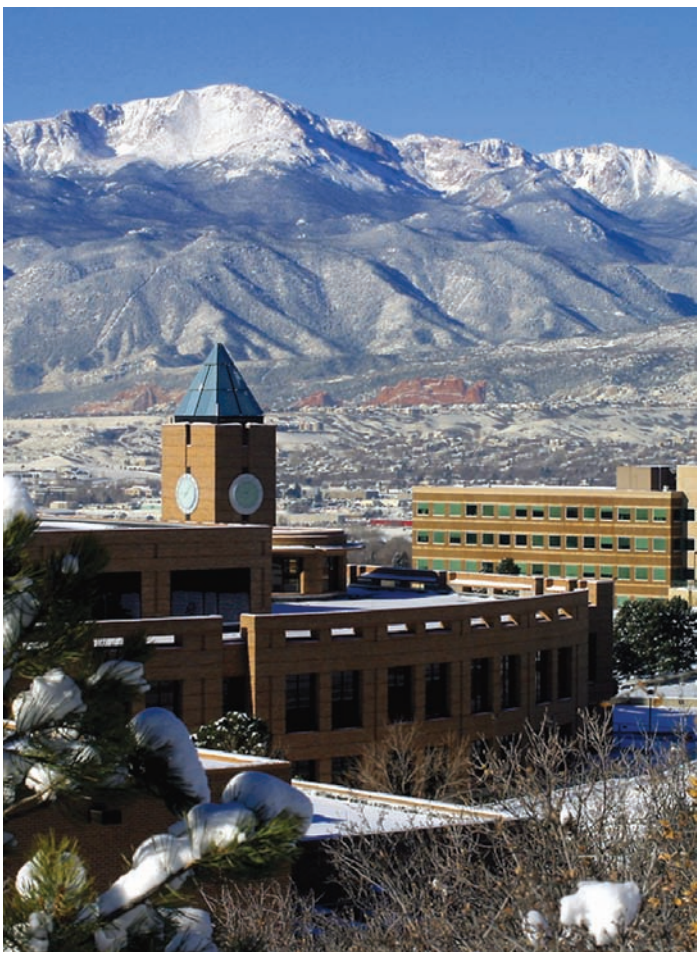
Louisville, Colorado-based **Replidyne, Inc.** is a public biopharmaceutical company focused on discovering, developing, in-licensing, and commercializing innovative anti-infective products. Replidyne's lead product, faropenem medoxomil, is a novel oral, community antibiotic; in March 2007 Replidyne announced positive Phase II results for faropenem, clearing the way for Phase III trials in pediatric patients with acute otitis media (AOM), a common infection of the middle ear. Replidyne's second drug candidate, REP8839, is a topical anti-infective in development for the treatment of skin and wound infections; in June 2007 the company announced positive Phase I results for REP8839, which will go into Phase II trials in children with impetigo, the most common bacterial skin infection, by the end of the year. Replidyne is also pursuing the development of other novel anti-infective products based on its in-house discovery research. Replidyne completed its initial public offering in July 2006. **www.replidyne.com**

In October 2006, **RxKinetix Inc.** was acquired by Endo Pharmaceuticals, a specialty pharmaceutical company based in Chadds Ford, Pennsylvania, for a $20 million up-front payment and other payments based on performance. As part of that transaction, Endo acquired RxKinetix's lead candidate RK-0202, now in Phase II clinical trials in cancer patients for oral mucositis, a debilitating disease that occurs as a side effect of radio- and chemotherapies.

Securics Inc. is a Colorado Springs, Colorado-based company providing technology-based security solutions. Founded in 2004, the company is developing products building on patents and software created by CU-Colorado Springs' **Terry Boult** to improve the accuracy of biometric software, as well as the groundbreaking Biotope™ technology, which simultaneously improves security and privacy. Biotope™ technology transforms biometric data into a secure token, which can then be revoked and reissued in case of biometric identity theft. Biotope™ transforms have been developed for both fingerprint and face biometrics and have been shown to improve their accuracy while enhancing the privacy of the users. Securics has partnered with CU-Colorado Springs on multiple SBIR and STTR grants from the National Science Foundation and the Department of Defense. **www.securics.com**

SomaLogic, Inc., located in Boulder, Colorado, is leveraging its unique aptamer array technology and bioinformatics capabilities to discover disease-specific biomarkers and protein signatures. By combining biomarkers into patterns or disease signatures, the company is bringing new levels of accuracy to virtually every aspect of patient care—disease screening, diagnosis, therapy selection, and patient monitoring. In March 2007, the company's collaborator, Archemix Therapeutics, announced issuance of two key European patents providing broad coverage for the identification and use of aptamers for therapeutic and diagnostic applications. **www.somalogic.com**

Taligen Therapeutics, Inc. is a biotechnology company founded in March 2004 to develop and commercialize technology from the University of Colorado for the treatment of serious inflammatory disease. The company employs innovative technologies to manipulate complement proteins of the immune system to inhibit inflammation and to target inhibitors of inflammation to specific sites of tissue injury. In August 2006, Taligen announced that it had successfully attained the development milestone required to trigger the funding of the second tranche of its Series A Preferred financing. The $3.75 million Series A financing is led by Sanderling Ventures, Tango, and High Country Venture. The milestone achieved was demonstrated in vivo efficacy of its lead compound, TA106. **www.taligentherapeutics.com**



Staff Changes at TTO

Over the past year, TTO lost several permanent staff to other employment opportunities. Two of the positions were filled after national searches:

Tara Dressler became TTO's patent administrator. Tara had worked as an IP paralegal and patent secretary since 1995 in Washington, D.C. She came to Boulder two years ago, and had been working for Holland & Hart LLP. She has bachelor of arts degrees in speech communications and paralegal studies.

Joseph Carroll became a biotech licensing associate on the Boulder/Colorado Springs team. After working at several biotech companies in the Boston area, Joseph co-founded two successful biotech companies and was most recently a director of research at Sirna Therapeutics. He has a PhD in biochemistry.

Additionally, there were several promotions within TTO:

- Rick Silva became Director of Technology Transfer for the Downtown Denver and Anschutz Medical Campuses.
- Tom Smerdon became Director of Licensing and New Business Development.
- Kate Tallman became Director of Technology Transfer for the Boulder and Colorado Springs campuses.
- Kathe Zaslow became Director of Intellectual Property Operations.

TTO Student Employment and Class Projects

A guiding principle of TTO is to bring students into the technology transfer process and support the instructional mission of the university. This objective is accomplished primarily through student employment and class engagement. The value proposition is tangible; TTO receives the benefit of highly trained individuals, and students receive an opportunity to apply aspects of their education to actual technology transfer cases and work situations. Student employment is greatest during the summer months. Class work occurs in practicum-type instructional contexts such as graduate and undergraduate business feasibility and business plan cases, the Colorado Law School Entrepreneurial Law Clinic, and engineering senior design "capstone" courses. Additionally, the UC Denver Bard Center's new Colorado Bioentrepreneurship Program provides a pipeline of talent for new and existing Colorado biotech companies; five fellows from the program began work at TTO in summer 2007. TTO staff members are also frequent guest lecturers in law, business, engineering, science, public policy, and other courses throughout the academic year.

TTO Interns, 2006

Anitha Balanchandran, MBA 2006, UC Denver
Whitney Brown, BA Marketing 2009, CU-Boulder
Tim Casias, MD 2009, UC Denver
Devon Cox, MBA 2007, CU-Boulder
Craig Fulghum, MBA Finance 2007, CU-Boulder
Eduardo Melendez, MBA Entrepreneurship 2007, CU-Boulder
Sudhindra Rao, MBA 2007, UC Denver
Cecil Manoaj Sunder, MBA 2007, CU-Boulder
Carin Twining, JD 2008, CU-Boulder
Charlie Kelly, MBA 2008, CU-Boulder

TTO Interns, 2007

Anitha Balanchandran, MBA 2006, UC Denver
Nate Brown, BA Integrative Physiology 2007, MBA 2010, CU-Boulder
Marshall Custer, JD/MBA 2010, CU-Boulder
Ramnik Dhaliwal, JD 2008, CU-Boulder
Stephen Gruber, MA Electrical Engineering 2007, CU-Boulder
Will Shrode, MBA 2008, CU-Boulder
Carin Twining, JD 2008, CU-Boulder
Hiwot Molla, JD 2009, CU-Boulder

Bard Fellows, 2007

Sibyl Munson, Ph.D., previously Post-doctoral Research Fellow, Stanford University
Fred W. Peyerl, Ph.D., UC Denver MBA program
Magdalena Popesco, Ph.D., UC Denver Post-doctoral Research Fellow
Susan C. Trapp, Ph.D., UC Denver Center for Computational Biology
Darius Walker, Ph.D. candidate, UC Denver Molecular Biology Program

Legal Interns, 2006

Elizabeth Lewis, JD 2006, UC Denver

Legal Interns, 2007

Joe Chen, JD 2008, CU-Boulder

TTO Administrative Interns

Branwynne Bennion, BA English 2007, CU-Boulder
Megan Bohannon, BA History 2008, CU-Boulder
Ashley Fandel, BA Accounting 2008, CU-Boulder
Kathleen Monteferrante, BA Management 2008, CU-Boulder
Jennifer Ownby, BA French 2008, CU-Boulder
Monika Parulekar, MS Telecommunications 2007, CU-Boulder
Rachel Plavidal, BA Classics and Political Science 2010, CU-Boulder
Patrick Walker, BA Finance 2007, CU-Boulder
Nick Rising, BA Physical Geography 2007, CU-Boulder

Evolution of University Technology Transfer and Implications for the Future

Scope and Purpose

Slightly over five years ago the University of Colorado began a new approach to technology transfer. The new approach is characterized as "Campus Service Centric, System Managed." TTO is recognizing this five-year milestone with this segment of the 2006–07 annual report by focusing on the evolution of university technology transfer.

This analysis is organized according to the different domains of university technology transfer activity. Within each category of activity examples of the traditional role and evolving role are described. The "traditional" role primarily refers to the last two decades. The defining element of the traditional role is the 1980 Bayh–Dole Act (PL 96-517). Per Bayh–Dole, the federal government grants ownership rights to universities for intellectual property (IP) created from federally sponsored research. In return for this grant of IP rights, universities have certain legal obligations to ensure that the IP rights are commercialized in a manner that advances innovation and technological progress within the United States.

Evolution of technology transfer does not mean that the traditional role that emerged from Bayh-Dole is abandoned. On the contrary, the traditional role is firmly engrained within university technology transfer practice and is a foundation from which new practices evolve. However, over the past five years changes in technology transfer have occurred at an increasing pace. The enabling forces of technology transfer change are: disruptive scientific and technological innovation, improved technology transfer and business development expertise, relative certainty of patent law, and available financial capital.

Domain 1. Industry/University Research and Commercialization Collaborations

Applied science and engineering research is the traditional focus for industry/university research centers. Research projects are typically determined collaboratively between university investigators and industry representatives. Research plans typically address important characteristics or properties of specific systems, tools or materials with little attention given to creation of a specific commercial product. The evolutionary form of research collaborations addresses creation of intellectual assets that move through a continuum of technology development with a product or process outcome intended.

An excellent example of the evolutionary approach is the Colorado Center for Biorefining and Biofuels (C2B2). This research consortium comprises the University of Colorado at Boulder, Colorado State University (CSU), Colorado School of Mines, and the National Renewal Energy Laboratory. C2B2 provides facilities and interdisciplinary research capabilities that can address the full continuum of technology development, from fundamental research and engineering, to prototyping, to system testing. Each participant institution in the C2B2 consortium offers unique research strengths and facilities deployed in the technology development continuum. A company can sponsor research directed to a specific commercial goal and obtain an exclusive license to project IP.

Another example of technology transfer evolution is the new model of the National Science Foundation (NSF) Engineering Research Center (ERC). Traditional NSF-funded collaborative research centers pursued commercialization through offering a nonexclusive license to all members, which has resulted in little product commercialization. Nonexclusive licensing precludes establishing proprietary positions that are necessary for technology product investment. The ERC program has evolved to emphasize involvement of small businesses and creation of new (start-up) companies. An example is the CU-Boulder and CSU Extreme Ultraviolet ERC, which includes small companies as members. Small businesses continue to develop the technology into a commercial product at the early stages of market adoption. Furthermore, the newest ERC program guidelines specify the need for mechanisms to create start-up companies, which will necessitate exclusive license agreements.

Domain 2. Realization of Commercial and Clinical Value from Non-patent IP Assets

A biological material (e.g., cell line, plasmid, or vector) is an example of a traditional intellectual property asset that is seldom patented. Most often these types of asset are commercialized through a nonexclusive licenses. During FY 2006–07, CU entered into 18 biomaterial nonexclusive licenses.

The evolution of assets that are either not typically patented or patentable is evident in the use of tissue samples and clinical data. These assets are critically important for development of patentable biomarkers that can be used to assess responsiveness of patients to a specific drug. The labeling of drugs has begun to incorporate results of biomarkers, thereby making the biomarker diagnostic test in some scenarios nearly as valuable as the drug. In the past year, CU optioned biomarkers for cancer drugs created by investigators at the Colorado Cancer Center to a biopharmaceutical company and a molecular diagnostics company.

Traditionally software could only be commercialized when the university owned 100 percent of the copyrights associated with the creation, which was only possible when a small, closed group of university employees were responsible for all of the development. Two examples of this are SONIC (speech recognition software) and RiverWare (watershed modeling software), both developed at CU-Boulder. An example of the evolution in this area is TTO's facilitation of rights management to allow university developers to incorporate third-party source code released under certain open source licenses and to share source code with and accept contributions from other institutions—all while the university retains ownership and commercial rights to the copyright. An example of this is the Foundations to Literacy software developed at CU-Boulder. TTO executed many academic-use licenses with research groups to enable testing and validation, but always controlled the copyright to university-created code.

Domain 3. Ensuring Open Research Environments and Expanding Social Responsibilities

As the university technology transfer profession evolved during the 1980s and 1990s, in a few cases technology transfer activities had unintended harmful impact on the research environment. Three examples of such a situation are conveyance of broad IP rights in the licensed field that could limit the research of academic investigators, obligation of future inventions outside the IP dominated by the licensed technology, and limitation of access to research tools.

Today there is a wider perspective on technology transfer that ensures freedom to conduct research and recognizes the broader role of technology transfer in society. In response to the problems mentioned above, the university licensing community and CU have evolved licensing practices that place fewer restrictions on the academic use of licensed technology. For example, in a few cases TTO has negotiated revisions to pre-2002 license agreements in order to either release investigators from overly restrictive or overly broad future IP rights obligations. Similarly, TTO's licenses today allow other investigators freedom to utilize the licensed IP for academic research purposes. The new understanding of professional practice is also evident in protecting against improper transfers of technology to entities that could possibly work against U.S. security interests, and conversely, in ensuring diminished or zero royalty on IP commercialization for medical advances deployed in developing countries.

The evolution of expanding social responsibilities of technology transfer is also visible in state governments increasingly seeking to use university technology transfer as a way to enhance economic development. One example of this is the State of Colorado Bioscience Discovery Evaluation Grant program (HB 1360) for proof-of-concept research which provided matched funding to CU for 13 proof-of-concept research projects totaling over $2 million. Given the state role in funding development of university technology, there can be tension in the choice between best licensee versus local licensee. Luckily, CU TTO seldom has to make that tradeoff because we operate in Colorado's technology-centric entrepreneurial community—in the last 14 years 74 companies have been created from CU IP, and only seven have discontinued operations. Of the remaining 67 companies, 61 have operations in Colorado.

Domain 4. The Emphasis on Licensing to Start-up Companies

During the early decades of Bayh–Dole, licensing to existing companies was generally preferred to licensing to start-ups—given new company complications of under capitalization, potential investigator conflicts of interest, possible disruptions due to faculty leaving, and other reasons. But this left out many opportunities in industries that at that time did not typically in-license IP, such as electronics, optics, and pharmaceuticals. Today involvement with start-up companies is an essential part of technology transfer and now all universities license to start-up companies.

In the early days of university technology transfer, faculty inventors had to shoulder the burden of start-up activity. This was such a prevalent approach the phrase "faculty start-up" became the parlance assumed by the media in discussing this process. Today, in most start-ups, the faculty inventor role is mainly scientific or technical, and the business role is assumed by a partner who is an experienced, often serial, entrepreneur. Investors are much more likely to fund a company when a seasoned entrepreneur is the business driver. At CU the TTO and two business development organizations facilitate the connection between the inventor and domain experts who help to define the technology's potential application and frame a market strategy. The Boulder Innovation Center and the Fitzsimons BioBusiness partners play this critical role of assessment and networking to the business community. CU TTO is a significant financial contributor to these two entrepreneurial support organizations.

In the early days of university technology transfer, institutional venture capital, in the form of professionally managed seed funds, played a fundamental role in financing university start-up companies. Over time, many of the successful seed capital funds secured much greater capital and migrated to later-stage deals. The movement of venture capitalists "up the food chain" and the increased volume of start-up deals has led to a funding gap. Diversified sources of capital, such as business angels, private equity, federal contracts, federal STTR and SBIR programs, and corporate partnerships have moved to help fill this gap. For example, CDM Optics and Pearson Knowledge Technologies, two companies that are significant players in their marketplace, grew from federal contracts, SBIRs, and corporate partnerships; both were acquired by public companies.

As university technology transfer offices became more involved with start-ups, it is only logical that performance was assessed by this indicator—simply the number for start-ups. Today technology transfer offices are focusing on the sustainability of companies created from university IP assets. Sustainable companies are based on well-conceived plans executed by experienced entrepreneurs that have access to sufficient capital. The metric of success is what happens to the companies, their survivability, and their growth. CU is one of the top-performing universities in the number of start-ups receiving a license and the sustainability of those companies.

Domain 5. The Increasing Role of University Foundations

Until fairly recently, university foundations perceived little common interest with technology transfer except in episodic events such as IP donations from alumni and friends. Over the past decade, this changed with the advent of occasional large gifts to establish commercialization related programs, such as the Deshpande Center at MIT and Stevens Center at USC.

In recent years, technology transfer offices and university foundations have developed affinity relationships around the commercialization process. One notable example at CU is the CU Foundation's support for TTO's by initiating the Colorado Biomedical Roundtable capital campaign to build a network of donors and advisors and secure $700,000, which is directed to bioscience proof-of-concept research. Other examples include support to start-up companies in the form of venture capital relationships, such as a minority limited partner invest-

ment in a venture capital firm willing to work with the technology transfer office; as a founding and/or majority limited partner in the establishment of seed venture funds that invest in university start-ups; and as a solo investor or with an experienced investor in a direct early-stage investment. The next evolutionary step will be assigning the university's follow-on financing right (conferred in a stock subscription agreement) to the university foundation, thus allowing the foundation to maintain and manage the original ownership percentage in the emerging company.

The Implications for Technology Transfer

To be successful in the evolving world of technology transfer, a high degree of competency is necessary. Essentially, competence engenders trust and confidence from partners and stakeholders, which motivates engagement by these groups. For example, how does a technology transfer office increase invention disclosures? The office can offer IP seminars, meet with faculty at departmental meetings, and send informational bulletins and newsletters, but the key is having investigators talk among themselves (social networking) about their positive experiences with the technology transfer office. Such competency messages address knowledge of protecting IP, mutually beneficial licensing agreements, and deployment of resources to mature early-stage technology.

Competency is conveyed daily in each interaction and in each deal. Technology transfer officers must have broad scientific knowledge, be able to understand and value a commercial asset at the research stage, help set a patent protection and commercialization strategy for that asset, negotiate a license contract to convey that asset in a situation where the other side typically has deeper domain experience, and keep everyone sufficiently pleased to do it again for another deal.

Another aspect of the evolutionary role is administrative support. University administrators have to embrace the role of their institution as an "entrepreneurial university"—a university that supports the entrepreneurial ecosystem. This is done by supportive policies, a sustainable financial model for the office, and a partner mentality that allows acceptance of reasonable risk.

Last, in this evolving world, technology transfer offices have to be clear about their values and operating principles, which are of course, variable. If you don't know your values you might as well follow the Yogi Berra suggestion: "If you come to a fork in the road, take it."

Conclusion

The prospects for the future of technology transfer at CU are indeed bright. The pipeline of CU technologies is expanding, and the overall operation is maturing to a level increasingly recognized as nationally relevant. However, two major events that occurred in 2007 will have a significant effect on CU technology transfer aggregate revenues in the near future. First, in July 2007, CU's homocysteine assay patent expired. Second, the third of three payouts occurred from a royalty monetization transaction (exchanging the majority of a prospective royalty stream for three payments). As a result of these two changes, CU technology transfer's revenue forecasts will diverge from recent history, and it is expected that revenue will not recover to recent levels for four years. Although the reduced revenue represents a different environment for CU technology transfer, TTO has the financial resources to weather this temporary revenue shortfall based upon the TTO Long-Term Investment Account managed by the CU Treasury. A combination of maturing technology in the pipelines producing increasingly greater royalty revenue, good prospects for liquidating ownership interest in licensee companies, unspent TTO revenue carried forward from previous years, and drawing down of the Long-Term Investment Account will maintain TTO's financial solvency until revenue ascends back to the $20-plus million annual levels, expected in FY 2011–12.

TTO's plan for sustaining operations through the revenue downturn ensures that CU and its constituents will continue to see an undiminished level of TTO service and contribution. New challenges, such as TTO's integration into the CU-Boulder Molecular Biotechnology Initiative, the UC Denver Biomedical Initiative, the CU-Colorado Springs research and innovation expansion, and the CU-Boulder Sustainable Energy Initiative, provide impetus for continued adaptation and innovation. The broad-based desire for technology transfer to be woven into the research fabric of the university will help ensure that during FY 2007–08 and beyond, CU investigators, licensee companies, and TTO will continue to produce appreciable benefits for the university, the state of Colorado, the nation, and society.

Core Values and Principles of CU TTO in the Evolving World of University Technology Transfer

Trust—Support entrepreneurial faculty and build confidence among investors by licensing to credible companies that give the technology the best chance for success.

Stewardship—Protect university interests by affecting quality transactions that minimize risk while being accessible, responsive, and fair to licensee companies.

Integrity—Ensure public accountability through transparent decision making processes that are guided by law and ethics while maintaining an entrepreneurial culture.

Impact—Assist the process of technology pulled into the marketplace, ensuring social and innovation impact, and seeking appropriate financial return to CU.

Connect—Leverage the local business community and contribute to the economic development of Colorado.

Sustainability—Strive to remain financially independent as a self-funded "enterprise" within CU, through the university's revenue distribution policy.

CU Technology Transfer Staff and Students: Outstanding in Their Field

Back row, from left: Kathe Zaslow, Director of Intellectual Property and Operations; Hiwot Molla, Intern; Ashley Fandel, Student Finance Assistant; Lindsay Polak, Marketing Associate; Tom Smerdon, Director of Licensing and New Business Development; Karen Gifford, Patent Assistant; David Allen, Associate Vice President; Nate Brown, Temporary Licensing Associate; Nathan Chen, Database Administrator; Ted Weverka, Licensing Associate; Rick Silva, Director.

Front row: David Poticha, Licensing Associate; Carin Twining, Intern; Susan Trapp, Bard Fellow; Mary Tapolsky, Licensing Associate; Susana Read, Licensing Associate; Donna Sichko, Finance Manager; Lynn Pae, Special Assistant; Rachel Plavidal, Student Patent Assistant; Kate Tallman, Director; Andrew Gano, Licensing Associate (left TTO 11/07).

Not pictured: Debra Caamano, Administrative Assistant; Joseph Carroll, Licensing Associate; Tara Dressler, Patent Administrator; Beverly Gandy, Administrative Assistant.

Committee on University Discoveries

The Committee on University Discoveries is composed of nine members chosen from university governance and administration according to Section Six of the "Administrative Policy Statement on Intellectual Property Policy on Discoveries and Patents for Their Protection and Commercialization." The committee's primary responsibilities are to review IP policies and procedures, to implement them, and to serve as a board to hear appeals brought by university inventors concerning TTO actions. To date, no appeals have been brought to the committee.

Donald Bellgrau, Professor, Immunology, UC Denver, Anschutz Medical Campus

Carl Edwards, Associate Professor, Dermatology, UC Denver, Anschutz Medical Campus

Robert Erickson, Professor, Electrical and Computer Engineering, CU-Boulder

Douglas Gin, Professor of Chemical and Biological Engineering and Professor of Chemistry and Biochemistry, CU-Boulder

James Hageman, Associate Vice Chancellor, Research/Graduate Studies, Sponsored Programs/Research Administration, UC Denver, Downtown Campus

Michael Holers, Professor/Division Head, Rheumatology, UC Denver, Anschutz Medical Campus

Michael Larson, Professor, Mechanical and Aerospace Engineering, CU-Colorado Springs

Paul Ohm, Associate Professor of Law, University of Colorado Law School

Gregory Plett, Associate Professor, Electrical and Computer Engineering, CU-Colorado Springs

CU Technology Transfer Business Advisory Board

A guiding principle of TTO is to execute technology licenses and other agreements that protect university interests while being fair and industry approachable. One way this principle is maintained is through active engagement of a high-level business advisory board. This group meets three times per year and provides TTO insight on strategic issues and new initiatives. To ensure that research investigator perspectives are represented in the discussions, representatives of the university are included on the advisory board.

Business Community Representatives

Chris Bittman, Chief Investment Officer, CU Foundation

Larry Blankenship, Serial Medical Device Entrepreneur

Denise Brown, Executive Director, Colorado BioScience Association

Greg Carlisle, Senior Managing Director, Limestone Ventures

George Deriso, Serial Software Entrepreneur

Jerry Donahue, Board Member, University License and Equity Holdings, Inc.

Rick Duke, Serial Biotech Entrepreneur

Bob Goodman, President and CEO, Phiar Corporation

Chris Hazlitt, Managing Partner, Faegre & Benson

David Jilk, CEO, e-Cortex, Inc.

Jim Linfield, Managing Partner, Cooley Godward Kronish

Mark Lupa, Partner, Tango, Inc.

Tim Mills, Partner, Sanderling Ventures

Catharine Merigold, Managing Partner, Vista Ventures

John Metzger, CEO, Metzger and Associates

Joey Money, Venture Consultant

Chris Ozeroff, Executive Vice President for Business Development and General Counsel, ARCA Discovery, Inc.

Rick Silva, Interim Director, Fitzsimons Bioscience Business Partners

Chris Scoggins, Principal, Sequel Partners

Steve Volk, Chairman and CEO, Vmedia Research, Inc.

CU Faculty and Administration Representatives

David Allen, Associate Vice President for Technology Transfer, CU System

Robert Garcea, Professor, Pediatrics, UC Denver, Anschutz Medical Campus

Paul Jerde, Executive Director, Deming Center for Entrepreneurship, Leeds School of Business, CU-Boulder

Michael Poliakoff, VP of Academic Affairs and Research, CU System

Tom Smerdon, Technology Transfer Office Director of Licensing and New Business Development, CU System

Stein Sture, Vice Chancellor for Research, Professor, Civil Engineering, CU-Boulder

Contact Us

For UC Denver inventors:
Rick Silva, rick.silva@cu.edu
phone: 303-724-0222
fax: 303-724-0816

For CU-Boulder and CU-Colorado Springs inventors:
Kate Tallman, kate.tallman@cu.edu
phone: 303-492-5732
fax: 303-492-2128

For information about licensing to start-up companies:
Tom Smerdon, tom.smerdon@cu.edu
phone: 303-735-0621
fax: 303-735-3831

For general information:

Lynn Pae, lynn.pae@cu.edu
phone: 303-735-3711

Kathe Zaslow, kathe.zaslow@cu.edu
phone: 303-735-4525

David Allen, david.allen@cu.edu
phone: 303-735-1688

fax for all three: 303-735-3831

General address for correspondence:
CU Technology Transfer Office
4740 Walnut Street
Suite 100
588 SYS
Boulder, CO 80309-0588

Website: **www.cu.edu/techtransfer**

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TECHNOLOGY TRANSFER
UNIVERSITY OF COLORADO

4740 Walnut Street
Suite 100
588 SYS
Boulder, CO 80309-0588