

# Bio**science**

Colorado

2013-2014

10  
**YEARS**

of Bioscience  
In Colorado

Colorado by  
the Numbers

Bioscience

Discovery

Evaluation Grant

Program

Science

Industry

Public Policy

Economic Development

The Future



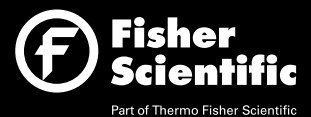
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# BioScience

## Colorado



**W**elcome to the Colorado BioScience Association's tenth anniversary edition of *BioScience Colorado*, the state's only in-depth guide and directory to the bioscience industry. In honor



of our 10 years supporting the bioscience industry in Colorado, we will be celebrating our successful history and looking ahead to the future.

Over the past decade, the Association has grown from a small startup enterprise to a mature and successful organization. This publication is an integral part of the Association's mission to support the Colorado bioscience community through advocacy, resources and advancement of opportunities for collaboration. With a total audience of over 15,000, including on-line impressions, this publication is one of the industry's greatest voices locally, nationally and internationally.

In this issue of *BioScience Colorado* we look at the entire bioscience ecosystem in the state. The articles examine elements that are meant to infuse scientific excitement, highlight the success of policy partnerships—both locally and nationally—as well as milestones, and showcase the evolution of Colorado's industry from one well below the national rankings to a cluster rising to the top 10.

We know that Colorado is on the edge of creating a critical mass. With some of the top research institutions in the U.S., over 600 bioscience companies, and employment growth outpacing the nation we are energized by the momentum. Given the collaborative nature of Colorado, our researchers, leaders, entrepreneurs and companies are committed to our success.

We look forward to serving the industry and working with the bioscience community for the next 10 years.

April Giles  
President and CEO  
Colorado BioScience Association

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# Advancing Biomedicine in Colorado

The Anschutz Medical Campus and Fitzsimons Life Science District in Aurora is the nation's newest health sciences city, integrating education, research (more than 1,100 research faculty and more than 2,500 researchers) and the best in clinical care (with three affiliated hospitals). In Boulder, the new Jennie Smoly Caruthers Biotechnology Building houses more than 600 faculty, staff and students from six CU-Boulder departments, helping create genuinely groundbreaking biotechnology research via the CU BioFrontiers Institute: a collaboration among CU-Boulder, the CU Anschutz Medical Campus and the University of Colorado Colorado Springs. CU is recruiting world-class interdisciplinary faculty for these and other initiatives, like the new Anschutz Center for Health and Wellness and the Department of Bioengineering at the Anschutz Medical Campus, and ongoing bioscience and technology efforts on the Boulder campus. CU has a track record of alliances with companies that enhance healthcare outcomes – CU research has led to four new approved drugs and numerous new diagnostic tests and medical devices, and CU is nationally prominent for new company creation, including biotech firms like Myogen (purchased by Gilead), GlobeImmune, ARCA biopharma, OPX Biotechnologies, SomaLogic, Taligen (purchased by Alexion) and over 70 others since 1994.

## \$500M

Bio-related sponsored research funding received annually by CU's four campuses.

## 4

FDA-approved drugs developed at CU: Kineret, Macugen, Zostavax and Botox (use).

## 800

New drugs being tested in clinical trials by CU faculty

## 200

Drugs, diagnostics and devices in CU's active intellectual property portfolio.

## 80

Biotech companies founded based on CU technologies, since 1994.

CU technologies currently licensed to bio industry partners

## 155



CU Denver | Anschutz Medical Campus

Strategic Research Initiatives  
Laura Simon, 303.724.4636



CU-Boulder BioFrontiers Institute

Jana Watson-Capps, 303.492.3588  
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## Connect with biotech at CU

# A DECADE OF DRAMATIC DEVELOPMENTS: BIOSCIENCE IN COLORADO

BY ANDREA PAWLICZEK

Think back to 2003. You may have just purchased your first cell phone with a camera. If you wanted to get in touch with a college friend or former colleague you had to send an email or pick up the phone as Facebook was not online yet. For many of us, looking back at the use of personal technology may be the easiest way to see major developments over the last 10 years, but the changes that have affected scientific research are just as dramatic—and in some ways similar.

## THE HUMAN GENOME AND PERSONALIZED MEDICINE

The human genome project, which aimed to sequence the entire human genome—our full set of chromosomes—was initiated in 1990. In April 2003, the project announced that sequencing was essentially complete (a first draft was done in 2001), two years ahead of schedule. Understanding the human body at a genetic level has greatly influenced research and treatment of disease over the past decade



as researchers have begun to put this knowledge to use. Stuart Tobet, professor in the Department of Biomedical Sciences at Colorado State University, notes “Personalized medicine is a major trend that began with the sequencing of the genome.” Treatments currently under investigation are developed specifically for groups of patients with particular genotypes or protein markers. This work encompasses several non-trivial milestones from basic scientific research



to identify specific cellular pathways or mutations, create targeted therapies that may inhibit a specific pathway, and develop feasible tests to identify patients with particular markers. The hopes that have begun to be realized are that personalizing treatment will make it both more efficient and effective.

The evolution of personalized medicine is perhaps most evident in the treatment of cancer. Herceptin® (trastuzumab), approved by the FDA in 1998, was one of the first drugs to be recommended for patients based on genetics. Specifically, Herceptin is only effective in patients with over-expression of the HER2 gene, and thus patients are tested to

confirm this over-expression before treatment is initiated. This idea of not just considering cancer by location or organ system, but also by genetic profile has become increasingly important as the number of targeted cancer therapies (treatments that target specific pathways) has exploded over the last 10 years.

Dr. Paul Bunn, James Dudley Chair in Cancer Research at the University of Colorado Denver School of Medicine, notes that “There is definitely an opportunity for diagnostic companies,” who can develop companion diagnostics for specific biomarkers that identify the patients most likely to benefit from a particular therapeutic.



*“Some of the research we want to do on live tissue would generate gigabits of data per second, and that sort of bandwidth is not that far away.”*

As our understanding of how cells and systems work improves, the opportunity for different types of treatments beyond small molecules that act broadly on major systems emerges. Bunn sees both “the use of cell therapy and manipulated cells and immune therapies” as emerging areas that are likely to continue to increase in importance over the next several years. Cell therapies, which actually use living cells as treatment, and immune therapies, which may activate or suppress a patient’s immune system to fight a disease, require a greater understanding of how individual cells work and the means through which these cells communicate and interact with other cells. Understanding these phenomena requires the ability to observe them; no small feat given the scale at and speed with which they occur.

#### **MORE DATA FASTER**

The same types of research that have enabled today’s smartphones to have more memory and processing power than your first computer have also benefitted the medical research community. Along with computing power, improvements in other technologies such as lasers and optics have allowed researchers to acquire and analyze data in ways that were unimaginable a mere 10 years ago. More data can be collected faster, and with greater precision, than ever before. Scientists are now better able to observe live tissue in real time enabling an understanding that is impossible from either the evaluation of dead tissue or static images. Any future advances in computing and related fields that enhance observational and data gathering abilities are likely to quickly be followed by new streams of medical research. As Tobet notes, “some of the research we want to do on live tissue would generate gigabits of data per second, and that sort of bandwidth is not that far away.”

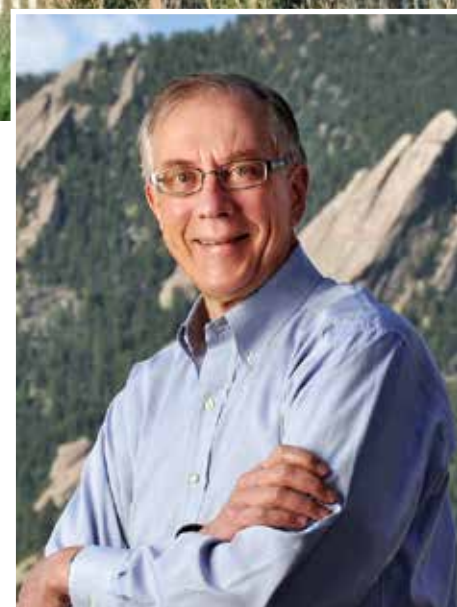


#### **GROWING COLLABORATION ACROSS DISCIPLINES**

With an increased knowledge base has also come increased complexity, making it less likely that any one individual, or even one department, possesses all the information or skills needed for significant advances in research. Consequently, collaborative efforts have grown and continue to grow in value. Tobet comments, “20 years ago I was interested in using mathematical modeling to look at neuronal movement, but the idea was not well received. Now there is a strong belief that modeling can inform design [in biomedical engineering] and in turn real-world data can inform the models.” In fact, many organizations now have structures in place to foster and encourage this cross-discipline collaboration.

Nationally, both the National Institutes of Health (NIH) and the National Science Foundation (NSF) have policies to support funding of collaborative projects. Many universities are also finding ways to encourage this type of cooperation. One example is the University of Colorado’s BioFrontiers Institute. In 2003, the Institute, then called the Colorado Initiative in Molecular Biotechnology, was initiated. About nine years later in April 2012, the Jennie Smoly Caruthers Biotechnology Building on the University’s Boulder campus opened and now houses the Institute.

Headed by Nobel Laureate Tom Cech and Chief Scientific Officer Leslie Leinwand, the Institute aims to “advance human health and welfare by exploring the frontiers of biology and translating new knowledge into practical applications.” These goals are facilitated by



*Nobel Laureate Tom Cech*

hiring faculty committed to collaboration and by the new building, which puts researchers from different disciplines in close physical proximity.

The Institute looks for opportunities to collaborate beyond the science community as well working closely with the Deming Center for Entrepreneurship at the Leeds School of Business (also on the campus of the University of Colorado Boulder) and leaders from the business community. Even with the increasing power and ability of computers, many view this direct human communication as becoming more and not less important in the future. On the opening of the new building Cech commented “People from my group walking down the hall past one of these research neighborhoods, for example, might be brought into a scientific conversation with engineers or computer scientists from another lab, promoting the cross-fertilization of new ideas.”



### *University of Colorado's BioFrontiers Institute*

The BioFrontiers program is far from alone in Colorado in its recognition of the importance of collaboration. Many programs seek to enhance cooperation both on and off campus. Among these is the CSU School of Biomedical Engineering, which is growing collaborations across the CSU campus as well as across northern Colorado. These include reaching out to medical professionals at the Medical Center of the Rockies and in local industry.”

More communication with people in the medical community who are in touch with patients can help inform future research to align it with medical needs,” Tobet notes.

Despite the opportunities ahead, the road is not without challenges. One may be an increased focus on short-term benefits. No longer are people willing to wait until the morning paper to read the news instead demanding real-time updates. With this focus, it may be hard for some to justify funding basic research that may not significantly influence patient care for decades. Bunn comments that “government funding of unbiased free thought research is essential” and the uncertainty about future funding presents a significant concern.

Taking a moment to look back at just how much has changed since 2003 may be one way to encourage that longer-term focus. The discoveries in basic science made 10 years ago are now moving to the clinic and changing the way patients are treated. With this view in mind, it's easier to be optimistic about current research that has the potential to influence treatment in the decades to come.

## MANY KEY MEDICAL DEVELOPMENTS AND PRODUCTS HAVE CONNECTIONS TO COLORADO. DID YOU KNOW...

■ Richard Schmit developed Botox®-based treatments for several urological conditions including overactive bladder at the University of Colorado's Anschutz Medical Campus in the 1990s. This research has netted CU \$30 million in royalty payments.

■ Colorado State Distinguished Professor Dr. Ed Hoover, in collaboration with researchers at Harvard, developed a vaccine made through molecular cloning of a feline leukemia virus. Sold under the trade name Fel-O-Vax®, this vaccine has been given to millions of cats worldwide. Due to vaccination, feline leukemia is now rare in pet cats.

■ Myron Levin, M.D., a professor of pediatrics and medicine at the University of Colorado Anschutz Medical Campus, led the development of the vaccine for shingles. The vaccine, sold by Merck under the name ZOSTAVAX®, was approved by the FDA in 2006.

■ Ambrisentan, sold under the brand name Letairis® in the US, was approved by the FDA in 2007 and by the EMEA in 2008 for the treatment of pulmonary arterial hypertension. Ambrisentan was the lead product candidate for Myogen, a company based in Westminster, Colorado, when it was acquired by Gilead in 2006. Sales of Ambrisentan totaled \$410 million in 2012, an increase of 17% from 2011.

■ PharmaJet Inc., located in Golden, Colorado, recently became the first and only needle-free injection company to receive Performance, Quality and Safety (PQS) pre-qualified certification from the World Health Organization (WHO). This certification of the company's Stratis® jet injectors enables their purchase and use for mass immunization campaigns conducted by WHO and UNICEF around the world.

■ Allosource, a non-profit based in Centennial, Colorado, has facilitated approximately 100,000 live mesenchymal stem cell transplants worldwide. This volume makes the company the world's largest provider of stem cell tissue for surgeries.



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# COLORADO BIOSCIENCE: A MICROCOSM OF BROADER INDUSTRY TRENDS

WHAT'S IN A LIFE SCIENCE CLUSTER?  
EXAMINING THE STATE AS A WHOLE  
STARTS WITH A WIDE LENS.

BY ADAM RUBENSTEIN

With nearly 600 therapeutic, device, diagnostic and ag-bio companies, and a workforce totaling just a hair under 15,000 the Colorado bioscience ecosystem has, over the past 10 years, scratched, clawed, fought and, more importantly, grown. This up-and-to-the-right trend has endured despite diverse hurdles littering its path. But these are not unique challenges faced solely in the Rocky Mountains. Alas, the entire industry has had to learn to adapt to the turbulence that has marked the period of 2003-2012. And, as Tim Rodell, M.D., president and CEO of Louisville-based GlobeImmune so adroitly illuminated, the Colorado Bioscience ecosystem, in its purest form, is a microcosm of broader industry trends.

Longtime Colorado resident and former president and CEO of Amylin Pharmaceuticals and current Harvard Business School Senior Lecturer, Ginger Graham, pointed to a very critical differentiating factor present in Colorado and perhaps its most precious asset—its people, a group that is remarkably



*Ginger Graham, former president and CEO of Amylin Pharmaceuticals and current Harvard Business School Senior Lecturer*

proficient at all of the diverse aspects of life science discovery, development and commercialization. While the Front Range is plagued by a woeful deficiency in traditional

venture-based risk capital, one is hard pressed to identify another community, anywhere in the country, so vibrant and resourceful. Despite the customary funding source shortcomings, those cowboy (and cowgirl)-spirited Colorado entrepreneurs nevertheless account for a remarkably consistent launch of 20 or more start-ups standing up each year. The entrepreneurial gene is ubiquitous among science and management teams from Colorado Springs to Denver to Boulder to Fort Collins. These savvy teams have secured financing from a diverse array of non-traditional capital sources, such as corporate venture, foundation-based patient advocacy and venture philanthropy groups, as well as from an accelerating organizing angel community, and non-dilutive grant-based sources, which works wonders towards reducing eventual institutional capital risk via the demonstration of proof-of-concept.

Academics are at the heart of innovation, and Colorado boasts no less than 10 higher education institutions with bioscience programs. Some of these centers of excellence include the University of Colorado's Cancer Center and Charles C. Gates Center for Regenerative Medicine and Stem Cell Biology, and Colorado State University's integrative program in biomedical engineering and renowned College of Veterinary Medicine and Biomedical Sciences. The entrepreneurial velocity among the faculty at these centers is powerful and easily quantifiable, as determined by grant



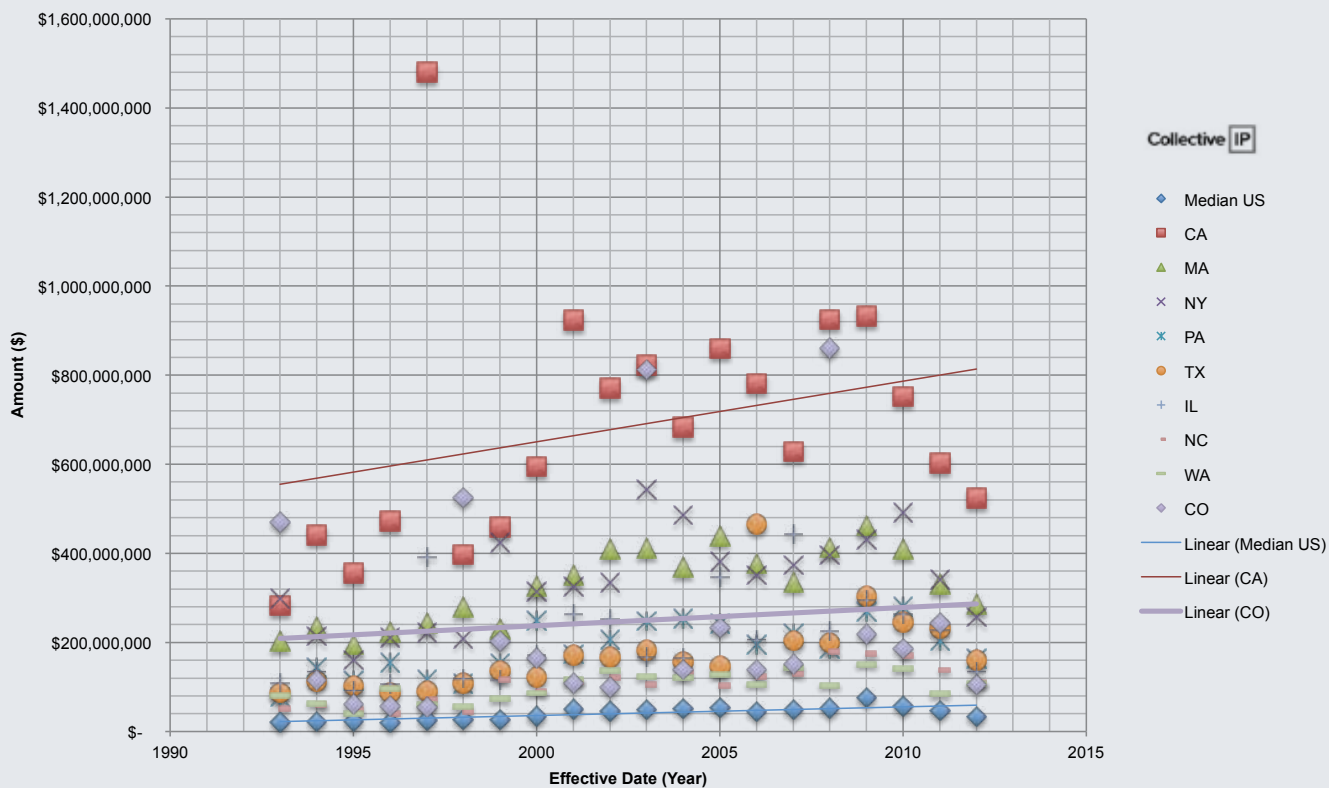


dollars received. The output data from these awards commonly yield intellectual property-based assets that ultimately form the basis for spin-out start-up companies. For example, from 2003 to 2012, there were 86 start-ups that emerged from the University of Colorado alone. Perhaps even more impressive, given

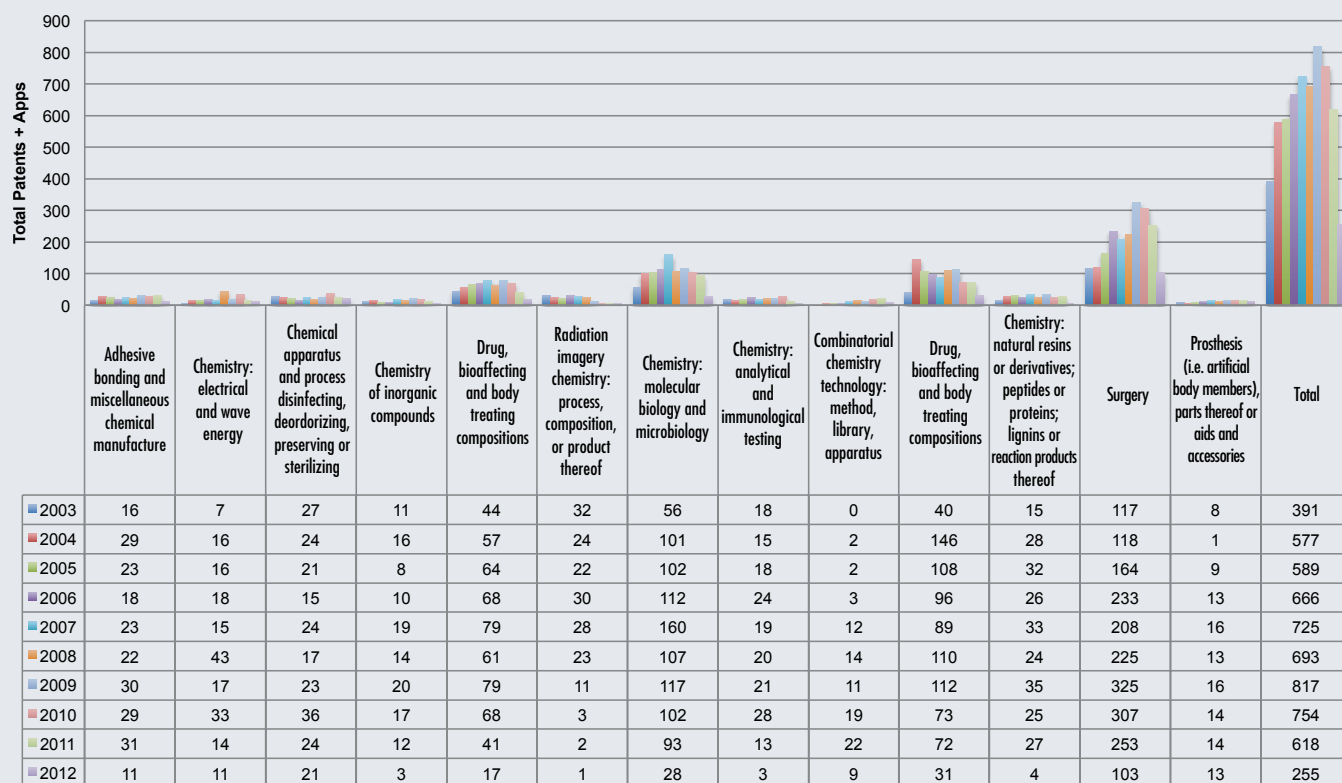
the high failure rates of early-stage life science companies, is that 78 of them are known to be operational today. Boulder-based Collective IP, an information company focused on curating innovation, has amassed data points that illuminate certain trends and leadership positions that Colorado-based

faculty have earned the right to be proud of (Fig. 1). Nationally, Colorado consistently ranks among the top-five recipients over the last ten years for median grant funding dollars from the National Science Foundation (NSF). These grant awardee leadership positions go beyond NSF funding. For example,

## TOP 5 NSF GRANT FUNDING RECIPIENTS BY YEAR (1990-2012)



## COLORADO ASSIGNEE ISSUED PATENTS AND PATENT APPLICATIONS (2003-2012)



in 2012, the National Institutes of Health awarded a whopping 894 grants across seven congressional districts that totaled \$304 million in research funding.

Translating these principal investigator discoveries into commercial enterprises is no easy task. Thankfully, Colorado institutions can leverage a community of savvy and sophisticated technology transfer offices (TTOs) and officers who lend critical domain expertise to this critical period in the early life of an innovative piece of technology. Year after year, the work of these networked TTOs continues to add fuel to the Colorado bioscience ecosystem engine in the form of new company formation. From market and IP analysis, business architecting, management recruitment and more, these offices perform at the highest levels—and their efforts bear the fruit of aiding the translation of intellectual property onto a commercial trajectory.

An interesting trend in the generation of Colorado-based intellectual property, in both applications and issued patents, from 2003-2012 is a distinct shift away from drug-based IP and an increased output of medical device (surgery)-based IP (Fig. 2). Perhaps this trend is not all that surprising given the contraction in access to the therapeutic-based capital for

early-stage drug development and an increase, on a relative basis, in ease of availability to device investors. Some believe this shift in sector allocation investment is due in part to the general relative elements of lower cost of capital for devices to reach commercialization compared to a drug, along with lower regulatory hurdles, and a compressed time to liquidity opportunities (be they M&A, IPO or even flowing positive cash).

Over our ten-year time period in review, Colorado life science companies have also experienced the good fortune of some tremendous billion dollar plus liquidity events, validating both the scientific and management team quality and acumen present in the region. Some of these deals included Ribozyme/Sirna acquired by Merck (NYSE: MRK) for \$1.1 billion, Gilead's (NASDAQ: GILD) acquisition of Myogen for \$2.5 billion, Celgene's (NASDAQ: CELG) acquisition of Pharmion for \$2.9 billion, and most recently Alexion's (NASDAQ: ALXN) acquisition of Taligen Therapeutics for \$111 million up front and upwards of an additional \$500 million in play based upon clinical milestones.

While many companies were challenged to raise traditional venture dollars during the post-2008 turmoil, Boulder-based Clovis

Oncology closed a mammoth Series A financing, totaling \$146 million. This capital was contributed by blue chip funds from both coasts including Domain Associates, New Enterprise Associates, Versant Ventures, Aberdare Ventures, Abingworth, Frazier Healthcare Ventures and ProQuest Investments. In 2012 the company, in a continued inhospitable market environment, continued to buck the trend, floating its initial public offering and pricing 3,750,000 shares at \$20 totaling \$75 million. Given the challenge of broader market climates, this was some truly extraordinary private and public financings for this small molecule and companion diagnostic company focusing on non-small cell lung, ovarian and breast cancers.

Many may perceive the fundraising successes experienced by Clovis to be several standard deviations from the mean, and rightfully so, Colorado has derived alternative mechanisms for the continued funding of medical innovations. One such success story is the Colorado Institute for Drug, Device and Diagnostic Development (CID4). Founded in 2009, CID4 is a 501(c) (3) not-for-profit charitable organization whose mission is to advance the Colorado bioscience ecosystem

through company creation and job growth. With support from the Colorado Office for Economic Development and International Trade and the Fitzsimons Redevelopment Authority, CID4 provides promising post proof-of-concept entities not only with capital, but with active business management assistance—all in an effort to bridge the gap between discovery and product development. CID4 has made a number of investments in companies such as diagnostic-focused KromaTiD, medical IT-focused Flashback Technologies, canine oncology-focused VetDC, influenza vaccine-focused PeptiVir, and a medical hearing device company Sophono. Boulder-based Sophono was the first investment made by the non-profit, and in the summer of 2012 the company closed their first institutional financing, totaling \$7 million, led by Greenwich, CT-based Wexford Capital. By reaching this important milestone, Sophono also earned the unique distinction of becoming CID4's first alum company.

Over the past 10 years, if one were traveling from Denver International Airport west along I-70 headed towards downtown Denver, it would be near impossible to miss the flurry of construction cranes scrapping

the sky. The phenomenal progress of glistening new research towers, hospitals and academic buildings now occupies what was once a clean view towards the heartland. With groundbreaking in 2004, the 587-acre Fitzsimons Life Science District and the adjacent Anschutz Medical Campus in Aurora is one of the largest bioscience real estate developments in the country. The former military base site is now home to the University of Colorado and University of Colorado Hospital and the Children's Hospital and Research Center. Development at the square-mile-of-life-science city is ongoing. The campus will soon welcome the completion of the Veterans Administration Hospital, the Colorado State Veterans Home, and continued build-out of the Fitzsimons Redevelopment Authority Bioscience Park Center, not to mention the ongoing addition of conference facilities, restaurants, apartments, parks and hotels. Upon completion, investment in the Anschutz Medical Campus and Fitzsimons Life Sciences District will be in excess of \$5 billion dollars, will contain in excess of 18.5 million square feet of new construction, and employ over 45,000 people (not including surrounding office, retail, hospitality and

residential development). Simply amazing.

Throughout the past ten years Colorado legislation has also had a dramatic impact upon the growth trajectory of the life science ecosystem. Back in 2006, House Bill 1001 led to the creation of the Bioscience Discovery Evaluation Grant Program (BDEGP), designed specifically to expand bioscience research and accelerate the development of new products and services disbursed through Proof-of-Concept grants, Early-Stage Bioscience Company grants and research institution grants for infrastructure development. Since the program's inception, 130 grants totaling \$22.1 million were distributed to research institutions and early-stage bioscience companies to advance research and development in a variety of disease areas. Today, House Bill 13-1001 or the Advanced Industries Accelerator Act has been introduced to the Colorado General Assembly; the proposed Bill models itself after the BDEGP. While the past ten years have yielded uncanny progress towards a maturing bioscience ecosystem, many resources that had not previously existed that are now in place are certain to accelerate development of the unique bioscience cluster along the Front Range of the Rocky Mountains.



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# PARTNERS FOR PROGRESS:

## THREE COLORADO GOVERNORS & THEIR COMMITMENT TO BIOSCIENCE

BY SEAN DUFFY

**N**ame an American industry that unites political parties, diverse ideologies and competing regions of the state behind the idea that, with the right policies, it can be a pillar of economic progress. The list is a short one, and, for the past ten years, it has been Colorado's bioscience industry that has been the leader.

One of the pioneers who recognized the significant economic promise of the bioscience industry was Governor Bill Owens.

During his eight years as Colorado's chief executive, Owens made bioscience a central priority of his economic development strategy and was instrumental in helping companies take root here. In fact, he took the lead in

dedicating a high-level director for the bioscience industry in the state's Office of Economic Development and International Trade—a move that sent a signal around the country that Colorado was serious about being a bioscience hub.

"It was clear to me early in my time as Governor that bioscience had the potential to be a strong, lasting economic driver for Colorado," Owens says today. "We created a pro-growth tax climate which helped us in our goal of making Colorado a hub for innovation, cutting-edge technology and risk-taking entrepreneurs. That two-pronged strategy created a fertile environment for Colorado's bioscience industry."

Owens not only wanted Colorado to be a home for the industry, he also helped establish a first home for the Colorado BioScience Association by ensuring that CBSA had office space free of charge at the Advance Colorado Center in Denver.

A crossroads decision for Gov. Owens was whether—and how—to accelerate the build-out of the new health sciences campus at the former Fitzsimons Army Medical Center. At that point, the master plan would have taken literally decades to complete, despite the fact that the bioscience industry evolves at lightning speed, and economic opportunities can evaporate as quickly as they materialize.

"We simply had to seize the opportunity to speed up the construction schedule by decades, and, working with the Legislature and CBSA, we did so," Owens recalls. "Had it proceeded at an incremental, piecemeal pace, we would have lost the opportunity to make what is now the Anschutz Medical Campus a magnet for innovation that is drawing economic activity from around the world."

For his leadership, vision and proactive record of success in establishing a firm foundation for the industry in Colorado, CBSA awarded Governor Owens the 2006 Lifetime Achievement Award.

Thanks to broad and growing support among policymakers in both political parties and from

every corner of Colorado, the industry's momentum was strong as Gov. Bill Ritter, Jr. took office in 2007. From day one of his administration he was a public champion of bioscience, and appointed Cabinet and senior staff members who embraced the industry's economic benefits.

Ritter cemented his commitment to bioscience by naming the industry one of the four sectors he believed would be economic drivers for the state, and included bioscience in his annual economic development agenda.

A hallmark of Ritter's term as Governor was his support for landmark legislation that created the Bioscience Discovery Evaluation Grant Program, which is still going strong today. The results are robust, with 34 new companies created, generating over 1,000 direct and indirect jobs. Equally important, the program helped drive more than \$100 million in outside investment to Colorado companies.

"My belief was—and is—that our commitment to bioscience can set Colorado apart as a vibrant center for high-tech, high-quality 21st century jobs, and we were right," Ritter says. "By promoting legislation that helped jump-start fledgling bioscience companies, we saw a huge return on

investment in terms of new, high-quality jobs, and solid investment in our state."

Ritter proudly notes that this commitment was instrumental in drawing a Nobel laureate back to the University of Colorado to open a new "BioFrontiers" institute.

Over his four years in office, Ritter helped lay important groundwork for future strategic growth in bioscience companies and jobs, most notably through the production of the "Colorado Bioscience Roadmap." This detailed document not only helped guide the successes of the Ritter Administration, but also helped provide valuable continuity when Gov. John Hickenlooper took office in 2011.

Following in the footsteps of his two predecessors, Hickenlooper has been strongly supportive of the bioscience industry, including support of legislation in 2010 that helped extend the hugely successful Bioscience Discovery Evaluation Grant Program (BDEGP) through 2018. This model is so successful that this year Hickenlooper and his economic development team are working to advance a new Advanced Industries Accelerator Act, which models the BDEGP for seven key industries in the state, including bioscience.

"When we talk about a bottom-up economic development philosophy, we see it at work in bioscience, as this sector shows the benefit of strong local collaborations among the private sector, government and higher education—collaborations that have produced huge dividends for Colorado and for the country," the Governor said. "Across the political spectrum, there's strong consensus about not only promoting bioscience, but also finding elegant, cost-effective methods to help existing companies expand, bring new jobs to Colorado and help new companies bring good ideas to the marketplace."

The successful path the industry has walked over a decade—with three governors and both parties in control of the House and Senate at various points—is the exception rather than the rule in economic policy. Colorado's bioscience industry has grown by uniting policymakers behind innovative initiatives that have brought out the best among entrepreneurs and company leaders. As a result, Colorado's economy—and international reputation as a home for great companies—has expanded, and will continue to grow as CBSA enters its second decade.



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*adjective*; present everywhere at the same time:  
"The company used **video** to become **omnipresent**."



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# LOOKING BACK AT 10 YEARS OF POLICY MILESTONES

Looking back over the last decade of federal policy, you can't help but notice the overwhelming attention focused on health care policy. Our world today has a completely new vocabulary due to the ever evolving federal health care landscape, from Accountable Care Collaborative and IPAB, to Dual Eligibles, Essential Health Benefits and so on. The majority of these health policy changes will have both direct and indirect impacts on the future of the bioscience industry.

During the health care policy debate, the Colorado BioScience Association has worked hand in hand with our national counterparts at AdvaMed, the Biotechnology Industry Organization (BIO), Medical Device Manufacturers of America (MDMA), and PhRMA to align our community in order to protect the best interests for companies here in Colorado. We asked our national allies to look back over the last 10 years with us and highlight some of the key issues that have made a significant impact on our industry today and will affect the future of our industry tomorrow.

## MEDICAL DEVICE/ DIAGNOSTIC POLICY

### THE MEDICAL DEVICE USER FEE AND MODERNIZATION ACT (MDUFMA) (2002)

Gave the FDA the authority to collect user fees from product sponsors for review activities, among other provisions. The law established a system for the FDA to collect user fees from product sponsors, a mechanism for determining fees for different product applications and an adjustable formula for determining increases in fees for the first five years of the program; required Congress to provide increased appropriations for the FDA's device center; required reprocessors of some single-use medical devices to submit additional premarket validation data to the FDA and to adhere to new labeling and branding provisions; established a third-party inspection program for eligible medical device facilities; and created an Office of Combination Products within the FDA to oversee regulation of drug/device/biologics combinations.

### THE MEDICAL DEVICES TECHNICAL CORRECTIONS ACT (2004)

Amended certain provisions of MDUFMA to clarify requirements that prevented manufacturers from participating in the third-party inspection program and create a moratorium on branding requirements originally intended to apply only to reprocessors of single-use devices.

### THE MEDICAL DEVICE USER FEE STABILIZATION ACT (MDUFSA) (2005)

Amended certain provisions of MDUFMA that would have forced the premature sunset of the medical device user fee program, among other provisions. The law eliminated the automatic user fee sunset that would have been triggered because Congress did not meet its MDUFMA appropriations commitment; set application fee rates for the final two years of the program, eliminating the formula previously used for setting the rates; and clarified that MDUFMA branding provisions apply only to reprocessors of single-use devices.

### THE FDA AMENDMENTS ACT (FDAA) (2007)

Reauthorized the medical device user fee program through the end of fiscal year 2012, among other provisions, including reauthorizing the third-party 510(k) review and facility inspection programs and calling for the FDA to develop regulations to establish a unique device identification system.

### THE FDA SAFETY AND INNOVATION ACT (FDASIA) (2012)

Reauthorized the medical device user fee program through the end of fiscal year 2017 and included robust, new FDA performance goals requiring the agency to reduce total review times—measured for the first time from the time of submission to the time the FDA makes a final decision on a PMA or a 510(k)—and significantly improve review performance relative to current performance. These included:

- “Leave no submission behind” by requiring the FDA to meet with companies if a performance goal on a PMA or 510(k) is missed and work out a plan for completing the review
- Provision of a substantive interaction with applicants halfway through the targeted time for completion of a review
- Implementation of an analysis of the FDA's



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management of the review process by an independent consulting organization, coupled with an FDA corrective action plan to address opportunities for improvement.

#### BIOTECH/ PHARMA POLICY

##### **MEDICARE PRESCRIPTION DRUG AND MODERNIZATION ACT (2003)**

The Medicare Part D benefit has helped to increase patient access to critical therapies as well as ensure that patients will be able to receive and afford the treatments that best meet their needs. Many of the therapies developed by biotechnology companies target conditions that primarily affect seniors. This landmark legislation ensures that the patients who need medicines the most have access to them.

##### **FARM SECURITY AND RURAL INVESTMENT ACT (2002) AND FOOD, CONSERVATION AND ENERGY ACT (2008)**

The 2002 Farm Bill established federal programs to create new markets for biobased products and support research in bioenergy, expanding the tax credit for cellulosic biofuels.

The 2008 Farm Bill created additional programs to support capital formation and feedstock supply chains for large-scale biorefineries.

These programs successfully addressed industrial biotechnology's greatest challenge—developing a “biobased economy” where renewable agricultural feedstocks are converted to higher value products including biofuels and renewable chemicals.

##### **ENERGY POLICY ACT (2005) AND ENERGY INDEPENDENCE AND SECURITY ACT (2007)**

The Energy Policy Act established the first-ever federal Renewable Fuel Standard, and the Energy Independence and Security Act greatly expanded it in order to improve domestic energy security and reduce greenhouse gas emissions from transportation by setting goals for production of renewable fuels made from U.S. biomass resources. In addition, the act authorized \$3.6 billion in funding for bioenergy and biobased products and established a tax credit for cellulosic biofuels.

These pieces of legislation represented a big step toward enhancing our national security by providing incentives for energy produced from renewable agricultural feedstock.

##### **PUBLIC READINESS AND EMERGENCY PREPAREDNESS ACT (2005)**

This legislation provided immunity for liability claims arising from the administration and use of covered countermeasures to manufacturers, distributors, program planners and qualified persons involved in the administration and use of a covered countermeasure.

Because of this legislation, many biotechnology companies are now able to aggressively focus their next-generation technology and cutting edge R&D on preparing for, and responding to, very serious threats to America's public health security. As a result, our nation is, and will continue to be, safer and healthier.

##### **PANDEMIC AND ALL HAZARDS PREPAREDNESS ACT (2006)**

This legislation represented a major step in developing the role of America's public health and medical systems in preparing for and responding to major emergencies. Reauthorized in 2013, the program continues to improve our nation's public health and medical preparedness and response

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capabilities for emergencies, whether deliberate, accidental, or natural.

#### **QUALIFYING THERAPEUTIC DISCOVERY PROJECT PROGRAM (2010)**

This program was enacted as part of the Patient Protection and Affordable Care Act of 2010 and is available only to companies with 250 or fewer employees. Grants and tax credits were awarded to small biotech companies working on projects that showed a reasonable potential to: treat areas of

unmet medical need or prevent, detect or treat chronic or acute diseases or conditions; reduce the long-term growth of healthcare costs in the United States; or significantly advance the goal of curing cancer within 30 years.

This program proved to be a lifeline for innovative biotechnology companies. BIO hopes Congress will consider extending and expanding this program to support American innovation and speed the development of lifesaving cures.

#### **BIOSIMILARS LEGISLATION (2010)**

The Patient Protection and Affordable Care Act was the largest overhaul of the U.S. healthcare system in over four decades. Among the many provisions within this bill was an approval pathway for biological products that are demonstrated to be “biosimilar” with an FDA-licensed biological product. This provision protects patient safety and promotes investment through providing innovators with 12 years of data exclusivity.

#### **SMALL BUSINESS INNOVATION RESEARCH PROGRAM (2011)**

This reauthorization reinstated eligibility for a vast majority of small biotechnology companies that had been shut out of the program for the past decade, due to a regulatory ruling that made small companies who have majority venture capital funding ineligible. SBIR provides a critical source of funding for emerging biotechnology companies in the early development stages of medical research; the changes included in the reauthorization enable a larger number of small companies to compete for funding, thus ensuring that the program will be able to fund small biotech companies’ projects that have the greatest potential to bring innovative medical treatments to the patients who need them.

#### **AMERICA INVENTS ACT (2011)**

This legislation, the first comprehensive re-write of America’s patent laws in nearly 60 years, moved America from a “first to invent” to a “first to file” patent system. Additionally, the legislation created new, fair post-grant administration opposition proceedings for those seeking to challenge patents shortly after issuance. The patent system, so incredibly important to life sciences innovation, was made more predictable and transparent due to these reforms.

Furthermore, this legislation helped end the diversion of fees collected by the U.S. Patent and Trademark Office, increased the objectivity of our patent system, and increased patent quality. This improved system is good for inventors and investors, hence good for business and jobs in America.

#### **FOOD AND DRUG ADMINISTRATION SAFETY AND INNOVATION ACT (FDASIA)/PRESCRIPTION DRUG USER FEE ACT REAUTHORIZATION (2012)**

FDASIA, which included a reauthorization of the Prescription Drug User Fee Act (PDUFA), enhanced the development and

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review of innovative new therapies through increased transparency and early scientific dialogue, advancements in regulatory science and reforms to the “accelerated approval” review system at the FDA. The PDUFA reauthorization itself will ensure the continuation, for five years, of a very successful user fee program, which has resulted in expediting drug review times at the FDA.

Over the past 20 years, PDUFA has ensured a more predictable, consistent, and streamlined premarket program for industry and helped speed access to new, safe and effective prescription drugs for patients.

**JUMPSTART OUR BUSINESS STARTUPS (JOBS) ACT (2012)**

This new law included several important policies designed to stimulate capital formation for growing businesses—including those in the biotech industry. This legislation makes capital formation easier for small biotechnology companies, enabling them to focus more on curing and treating disease.

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# BUILDING THE COLORADO BIOSCIENCE INDUSTRY CLUSTER: A REMARKABLE SUCCESS STORY

BY JEANNE MCADARA-BERKOWITZ, PHD

Newcomers to the state of Colorado are likely to look at our diverse economy, high-wage job base, and highly educated workforce and assume our state represents another spontaneous, homegrown ecosystem like the bioscience centers in Boston and San Diego, or the high-tech industry hub in Silicon Valley. But to those who had a hand in the last decade's flurry of economic development activity, the real story is much more interesting.

In fact, Colorado's bioscience industry—which employs 27,000 people, translating to more than 122,000 direct and indirect jobs and \$10 billion in payroll for the state—is an amazing success story that has proven the effectiveness of purposeful economic development.

“When the team started this push to develop a bioscience industry cluster 10 years ago, it was really kind of a giant social experiment,” recalls Tom Clark, chief executive officer of the Metro Denver Economic Development Corporation (MDEDC) and executive vice president of the Denver Metro Chamber of Commerce. “We were wondering whether we could really do it. Well, last May the Biotechnology Industry Organization issued new state-by-state bioscience industry rankings, and in that report Colorado had moved from near the bottom of the overall rankings up to the bottom of the top-tier states.”

“It's been a huge accomplishment and

*“We're improving people's health and their lives.”*



*Tom Clark, chief executive officer of the Metro Denver Economic Development Corporation (MDEDC) and executive vice president of the Denver Metro Chamber of Commerce.*

frankly, I think we're all pretty amazed that it worked,” Clark laughs.

Metro Denver is a textbook example for how to do purposeful economic development correctly. The term refers to a coordinated, sustained effort by stakeholders and policymakers to promote local economic health, social well-being, and regional competitiveness through job creation and

retention, workforce development, critical infrastructure, environmental sustainability, social inclusion, neighborhood development, health, safety, literacy, and other initiatives. A key driver of success in economic development has been industry clusters—geographically concentrated areas where related government agencies, institutions of higher learning, and commercial enterprises share common needs for talent, technology, and infrastructure.

## HOW WE BECAME A BIOSCIENCE STATE

The inspiration for the Metro Denver EDC and the expansion of the nascent Colorado BioScience Association (CBSA) came from a 2002 initiative by the Governor's Office of Innovation and Technology. Clark says that research from Michael Porter at the Harvard Business School had shown that achievement of regional competitiveness comes not from trying to recruit a few “hot” companies to an area, but by creating a self-sustaining economic ecosystem that is not primarily dependent on outside infusions of money and investment.

“By this time we had the Denver International Airport, we had cleaned up our air quality, and we had a bustling downtown with public transportation, arts, culture and the high-rise feel attractive to metropolitan dwellers. Now we needed industry clusters,” says Clark. “We decided that our initial clusters would be bioscience and aerospace, and the next question was ‘how do we become a bioscience state?’”

To answer that question, the Governor's Office partnered with a management team that included industry, university and government representatives—along with the Battelle Memorial Institute's Technology Partnership Practice—to assess the status of the Colorado bioscience sector and develop a plan outlining the action agenda needed to make the biosciences a key driver of Colorado's economy. That report, “Colorado's Place in the Sun: A Bioscience Future, An Action Plan to Grow Colorado's Bioscience Cluster,” was published in March 2003 and outlined several key findings that kicked off the state's focus on developing Colorado as the next bioscience business cluster.

“Number one, it showed that we definitely weren't a bioscience state,” Clark laughs. “But it also told us that we had to accomplish three things in order to become one. We needed to establish a locus of economic activity, we



PHOTO © TIMOTHY HARRIS, O'HARA PHOTOGRAPHY

*The Rocky Mountain Innosphere, Fort Collins, Colorado*

needed an industry or academic ‘superstar’ to help attract other talented people here, and we needed a mechanism for funding the proof-of-concept studies that move technology out of the basic research lab and into commercial development.”

The team set out to make these recommendations a reality. The CU Denver Anschutz Medical Campus was already in the process of being built out, and low interest rates made it possible to accelerate that development plan. In 2006 the legislative advocacy efforts of CBSA paid off with the passage of HB 1360. Sponsored by Representative Jim Reisberg (D-Greeley) and Senator Ron Tupa (D-Boulder), this bill appropriated \$2 million to fund grants for bioscience proof-of-concept work and opened the doors to additional legislation that resulted in the establishment of the Colorado Office of Economic Development and International Trade’s Bioscience Discovery Evaluation Grants. And homegrown Nobel Laureate Tom Cech—who briefly left Colorado to become president of the Howard Hughes Medical Institute in Maryland—was persuaded to return to CU Boulder, bringing with him four rising stars and leading to the advent of the BioFrontiers Institute.

“Those accomplishments, along with the expansion and support of the CBSA as a critically important advocacy organization, have set us on the right course,” says Clark. “The world started to look at us and pay attention.”

Steve Vannurden is the president and CEO of the Fitzsimons Redevelopment Authority,

*Fitzsimons Redevelopment Authority, Bioscience Park Center, Aurora, Colorado*

(FRA), one of the entities involved in the development of the Fitzsimons Life Science District that neighbors the Anschutz Campus. As a newcomer to Denver—Vannurden just joined the FRA in August 2012—he agrees that the early development efforts are paying off for long-term success.

“As I was looking at coming here, I saw major healthcare players with Children’s Hospital, the University of Colorado Hospital, the CU medical, nursing, dental, and pharmacy schools all together in one place,” says Vannurden. “It was a critical set of stakeholders right there on campus, around which we can build a sustainable life science community.”

What the FRA aims to do is not only provide infrastructure to attract life science companies to settle in close proximity to academic sources of technology, but to facilitate collaborations and streamline commercialization.

“What’s interesting to me, personally,” says Vannurden, “is that we have such a unique opportunity to create the future of medicine right here on campus. This is an environment where we can take scientific talent, intellectual property, and entrepreneurial activity, and put them together to advance the practice of medicine and benefit patients across the US and around the world while creating good, high-paying jobs for Colorado. It’s good for all of us.”

The economic development efforts close

in to Denver have inspired companion efforts in Northern Colorado, especially around the Colorado State University (CSU) campus in Fort Collins.

The Rocky Mountain Innosphere, a technology accelerator in Fort Collins, has been a leader in the recent push to develop the bioscience presence there. Mike Freeman, CEO at the Innosphere, says that they made the conscious decision to broaden their focus from technology, hardware, and software in 2004, when they noted the beginnings of increased bioscience activity.

“We realized that in northern Colorado there was not a huge concentration of bioscience companies and, out of CSU, we were most likely to see technologies coming from the veterinary school or infectious disease department,” says Freeman. “So with that focus we have built up enough of an ecosystem to legitimately support eight biotech companies [at the Innosphere] in addition to our other companies.” By recent estimates, Fort Collins is home to well over 50 young and growing bioscience companies.

In Freeman’s view, collaboration with CBSA has been critical to the region’s success. “In the early years we didn’t have a formal entity like the CBSA, so working with them and the City of Fort Collins gave us the ability to promote the industry here, help build a brand around Northern Colorado Bioscience, and collaborate on co-branded events and panels. Expanding on this, I see 2013 as a critical year for us to tighten our integration with CSU ventures and technology transfer, and find new ways to work together with CBSA and with CU health sciences.”

Bioscience economic development efforts at CSU dovetail nicely with the Innosphere’s plans, says Rick Lyons, director of the Infectious Disease Research Complex and Supercluster, and the Research Innovation Center (RIC) at CSU Fort Collins. “The RIC and the Innosphere



companies housed there are homegrown, and most of the rest had close CSU connections.

“We offer a turnkey facility for infectious disease companies,” he says. “We provide built-out, biosafety-level-2 laboratories with all of the approved HVAC and other utilities they need to get going right away. We think that will help to drive entrepreneurship and build momentum for a novel paradigm of industry-academic collaboration here at CSU.”

Looking southward from Denver, the past 10 years have seen dramatic growth in bioscience in Colorado Springs as well. David White, chief business development officer at Colorado Springs Regional Business Alliance, says that the medical device industry has proven a particular bright spot there.

“We’ve seen a sizable increase in all forms of bioscience activity here, but medical devices seem to be a particular strength for Colorado Springs,” says White. “Our region features an interesting intersection of sports and human-performance technology, military and defense applications, information technology and software, manufacturing, medical device companies, and universities, and we are seeing these sectors working

have a very tight relationship. We kind of view our two sites as the infrastructure for the city of Fort Collins. When companies come here our collaboration puts us in a better marketing position to make sure they are aware of opportunities, and then we can work together to place them where they’ll be most successful depending on their needs.”

According to Lyons, the goals of the CSU infectious disease supercluster are to encourage entrepreneurship among faculty

*Research Innovation Center (RIC) at CSU Fort Collins, Colorado*

members, and assist in translating innovative discoveries into products. In support of that goal, the RIC building was opened in 2011. This facility houses CSU faculty on the first floor and a research incubator on the second floor, bringing academics and entrepreneurs into close proximity for cross-talk and collaboration. Lyons estimates that 40% of the



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together to form new opportunities.”

White notes that a number of companies have either grown up in Colorado Springs or migrated here from California and elsewhere in the past few years, drawn by the high standard of living and a cost of doing business that is attractive to manufacturing companies. Combined, these companies employ thousands of people and provide a nucleus for the industry.

Scott Hawranek, a Colorado Springs intellectual property attorney adds, “We also have a good number of startups working to bring their devices and combination products to the next level. At their stage, they are aided by the ready availability of prototyping facilities and regulatory and intellectual property services here.”

No matter what part of the state, an inclination toward collaboration and excitement for the future seems to be shared throughout Colorado. Says Vannurden, “We’re all working together pretty closely because acting separately doesn’t give us the strength we need. Rather than having to fight over the size of our individual slices, the focus is on making the whole pie bigger for all of us.”

#### CHALLENGES DOWN THE ROAD

All of this is not to say that Colorado’s industry cluster’s challenges are safely in the rear view mirror. The consensus among those interviewed was that the biggest challenges, for now, are related to lack of locally sourced funding and investment.

“There is a real ‘can-do’ attitude in these companies, but that only carries them so far,” says Lyons. “Ultimately, they need access to venture capital.”

Freeman agrees. “There are few active funds in Colorado that will entertain proposals from biotech. So the issue looms: can we be successful without a strong local investor base, or will startups move to Boston or San Francisco once they need significant funding?”


White also worries about the potentially chilling effect of new tax legislation, such as the Medical Device Excise Tax. “It’s going to be very challenging for companies to expand if their profits have to go toward this tax,” he says.

Finally, White asserts that workforce development will be another area for focused improvement over the next decade.

“One thing we consistently hear from the companies we talk to is that they are finding it necessary to import talent,” says White. “We as a community and a region need to work on continually improving our educational system so that companies here can rely on local, homegrown talent to fuel growth and innovation.”

Whatever the future holds, the architects of Colorado’s economic development successes can look back over the last decade with pride. Says Clark, “There are so many heroes in this story, and what they’ve proven is that we truly can change the shape of our economy. In 1983, Colorado’s economy relied pretty heavily on fossil fuels. We weren’t in the top 25 states in terms of diversity of economy, and now we’re ranked third behind California and New York. Bioscience has been an important part of that diversification strategy.”

Why does this matter? Because bioscience, as an industry, creates primary jobs and high wages to satisfy Colorado’s highly educated workforce.

“And also, it’s cool,” says Clark. “We’re improving people’s health and their lives.” 



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**Ralph E. "Chris" Christoffersen** PhD is a partner at Morgenthaler Private Equity. He currently serves on the corporate boards for seven life science

companies and has achieved successful exits with numerous others. Previously, he was the president and CEO of Ribozyme Pharmaceuticals Inc., and has served as senior vice president of research at SmithKline Beecham, vice president of discovery research at The Upjohn Company, and president of Colorado State University.



**Larry Gold** PhD is the founder, chairman of the board, and CEO of SomaLogic. He founded NeXagen, which became NeXstar Pharmaceuticals

and later merged with Gilead Sciences Inc.; and was a co-founder of Synergen, which was acquired by Amgen. He is also a professor at the University of Colorado at Boulder and served as the chairman of the Molecular, Cellular and Developmental Biology Department there. Gold serves on the boards of numerous bioscience companies and is a member of the American Academy of Arts and Sciences and the National Academy of Sciences.



**Kyle Lefkoff** is a founder and general partner of Boulder Ventures Ltd. In the course of his 26-year career as a venture capitalist, Lefkoff has

invested in 60 Colorado companies, resulting in twelve IPOs and fifteen trade sales.



**Patrick Mahaffy** is the president and chief executive officer and a co-founder of Clovis Oncology. He previously founded Pharmion Corporation,

which was acquired by Celgene Corporation, and also served as president and CEO of NeXagen and its successor, NeXstar Pharmaceuticals. Mahaffy was formerly a vice president at the private equity firm E.M. Warburg Pincus and Co. He serves on the boards of several bioscience companies and is a trustee of Lewis and Clark College.

# THE NEXT 10 YEARS: PEERING INTO BIOSCIENCE'S CRYSTAL BALL

BY JEANNE MCADARA-BERKOWITZ, PHD



**W**ith 10 years under the Colorado Bioscience Association's belt, it's a natural time to look back at our accomplishments and forward into the future. We asked four Colorado bioscience industry veterans—Ralph "Chris" Christoffersen of Morgenthaler Private Equity, Larry Gold of SomaLogic, Kyle Lefkoff of Boulder Ventures, and Patrick Mahaffy of Clovis Oncology—for their perspectives on what we should watch for in the decade to come.

**CAN YOU OFFER ANY PREDICTIONS ABOUT THE SCIENTIFIC PROBLEMS COLORADO'S BIOSCIENCE COMMUNITY IS POISED TO OVERCOME IN THE NEXT 10 YEARS?**

With a reluctance likely born from experience, Gold and Mahaffy both demurred. Perhaps they have seen too many predictions that missed the most significant breakthroughs or, conversely, overstated the promise of a product that ultimately never made it

*“We’re also going to see more and more integration between basic research and commercial companies. Academics are reaching toward health applications in ways that represent big changes from when I started in science.”*

to market. “There are many exciting developments happening in Colorado, but it’s impossible to predict what might come out of our universities or companies, and which ones will be successful,” says Mahaffy. Adds Gold, “No one knows what’s really coming...there’s just no way to know.”

Lefkoff and Christoffersen were more willing to speculate.

“With the caveat that I am focused pretty exclusively on bioscience here in the Boulder area,” says Lefkoff, “I think we have three areas of excellence that distinguish us from biotechnology clusters in the rest of the US.”

“Number one,” he says, “has been the opening of the Jennie Smoly Caruthers Biotechnology Building at CU, which houses the BioFrontiers Institute. Now we have an integrated center for biotechnology that brings together disparate parts of the campus all in one place. CU has always been a rich mine of technology and I think this will help the University in its long-term efforts to translate that resource into commercial ventures.”

“Number two is the chemistry expertise concentrated here,” Lefkoff continued. “Chemistry-focused bioscience companies are going to be increasingly important in the future because people have worked out much of the biology behind cancer and cardiovascular disease. If we have a target, the next step is to work out the chemistry. Pharmaceutical companies want a Lipitor®, not a Baycol, and to get there takes world-

class expertise in chemistry, which we have.”

“Third, CU is dominant in RNA biology and chemistry. In the next decade, we’re going to see a new class of drugs based on miRNA and siRNA, much like the rise of recombinant protein therapeutics in the 1970s and 80s, or monoclonal antibodies in the 90s.”

Christoffersen sees regenerative medicine as another area with high potential for advancements in the coming decade. “Whether we’re talking about stem-cell therapy or other approaches, this is an area of rapidly growing scientific knowledge in our state. These technologies aren’t quite ready for therapeutic prime time right now, but I think we’re going to see a substantial growth in this space in the near future.”

“More generally,” continued Christoffersen, “We are seeing a lot of work in our universities that is helping us understand more about how biological mechanisms of action affect disease. I think this is going to open up significant opportunities for new therapeutic interventions at accelerated rates we’re not used to seeing.”

#### **WILL EMERGING TECHNOLOGY CHANGE OUR APPROACH TO ASKING QUESTIONS AND SOLVING TECHNICAL CHALLENGES?**

**LG:** The way scientific questions get asked and answered has evolved dramatically and will continue to do so. When I started in science as an undergraduate, you could define and run a single-day experiment and every result would be important because no one had ever measured that before. You didn’t have to think so far into the future. Now we have to aim higher. It’s easier to do experiments now, but the thinking part is more difficult, the stakes are higher, and we’re spending a lot of public or investor money to get the answers. But on the other hand, we’ve reached an interesting point where we understand enough to formulate the hard questions, have real goals, and solve what used to be difficult problems but are now just technical challenges. For example, at the UC Denver medical school there’s a big push for personalized medicine spearheaded by David Schwartz. Information-driven medicine is happening here in Colorado.

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**PM:** Speaking for ourselves at Clovis Oncology, we're definitely looking at questions in new ways. I do think what we're doing is truly next-generation oncology development, looking at more subset populations with companion diagnostics. It's very much a 21st-century oncology drug development paradigm.

### WHAT WILL THE COLORADO BIOSCIENCE CLUSTER LOOK LIKE IN 10 YEARS?

**PM:** We'll continue to have a strong bioscience community here, although it may never be what Boston, San Francisco, or San Diego have. But we have a good base of technologies and university resources, a group of committed scientists, and well-developed, entrepreneurial managers, and that will continue to give rise to new companies. I think the big news to watch will be what impact CU Boulder's BioFrontiers Institute will have on the local industry cluster. They will provide compounds and technologies to foster new startups. We've seen a successful startup community in biotech over the past decade, but we haven't yet created a sustainable

enterprise that can act as a true anchor to keep startups here once they're on their feet. BioFrontiers may represent the beginning of that anchor.

**RCC:** Growth will continue here both in medical devices and in biotech/pharmaceuticals. I see a big potential confluence developing between Fitzsimmons, the Anschutz Medical Campus, and the BioFrontiers Institute. Collaboration between these three entities has tremendous opportunity to create a biotech cluster that will be best in nation.

**LG:** Reflecting on the early years of bioscience here, I look back at NeXstar, which was sold to Gilead for its one drug...and at the many other companies started here that were acquired for their single drugs, and it's clear that it's hard to build a sustainable, single-product pharmaceutical company because the cost of taking a drug all the way through development is so high, and so is the failure rate.

Now I see lots of companies with what look like sustainable platforms growing here. Of course I believe Somalogic has the chance

to be that kind of company, with technology that supports medical decision-making. But there are companies like DaVita, which is a phenomenally interesting company with plans to take what they're learning about managing patients on chronic dialysis and translate it to other disease management areas. We're going to see more of that kind of initiative from small and large companies here.

### WHAT DO YOU SEE STANDING IN THE WAY OF FUTURE SCIENTIFIC INNOVATION, HERE IN COLORADO AND MORE BROADLY?

**PM:** We continue to lack a big, anchoring presence here—a big biotech or big pharma company like Genentech in San Francisco—that attracts and trains talent who goes on to found small companies that stay in the area. The University system remains an asset here that serves as the basis for new companies, but the challenge for us so far is that companies that have done well here get acquired and move away. If we were lucky enough to grow such an anchor organically or recruit one in, it would be a real boost to the industry here.

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I also worry about funding. Current cutbacks in government grant funds are chilling academic research, which of course is so important to the biotech industry. The simultaneous contraction of venture capital, particularly with respect to bioscience, makes it very hard to finance innovation today. It's particularly hard for individuals who are otherwise terrifically capable but lack a track record to access venture capital or grant money. This is true in Colorado and elsewhere in US, and what is interesting about it is that funds are drying up right as we are entering this golden age of biology. We know so much more about the mechanisms behind disease than ever before. It's my hope that enough companies will succeed here to re-attract investors to our state and reinvigorate funding.

**KL:** Threats to innovation? I don't foresee any (laughs). The thing is, Boulder has grown into a self-sustaining entrepreneurial ecosystem that attracts talent and capital. There are a lot of resources and technology, it's a beautiful place to live, and people want to be here. And it's not just biotech—the ecosystem is economically diverse. So at least in Boulder, I don't see any threats to biotechnology innovation as a whole.

**RCC:** We have a continuing need to increase infrastructure to help encourage companies to start here or move here. Developing space for clinical trials organizations, manufacturing facilities, and other resources will help build a critical mass of infrastructure, dollars spent, and money invested. That will be useful not just for startups and established local companies, but will also attract others to come and settle here.

**LG:** The thing I've just finally learned in the last five years is that the problems you think are going to be solved technically will be solved technically. The NIH budget shrinks and grows, funding comes and goes, but through the efforts of academics, industry, government, investors, and even small amateur inventors, the knowledge base will grow. So I don't see the daily worries about funding, tax breaks, etc. as true threats.

To me, the real threats are societal. As a species, we are capable of enormous denial, especially for technologies that are disruptive or that have to unsettle existing businesses or social paradigms. Doing science with optimism and hope is easy; getting it scaled up so that it helps people is the hard problem. 

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# BOETTCHER INVESTIGATORS

## *Class of 2012*



**Harald Junge, Ph.D.**, Assistant Professor of Molecular, Cellular, and Developmental Biology  
University of Colorado at Boulder  
Investigating Retinal Vascular Development and Disease

**Matthew Kennedy, Ph.D.**, Assistant Professor of Pharmacology  
University of Colorado – Anschutz Medical Campus  
Investigating Molecular Mechanisms of Alzheimer's Pathology

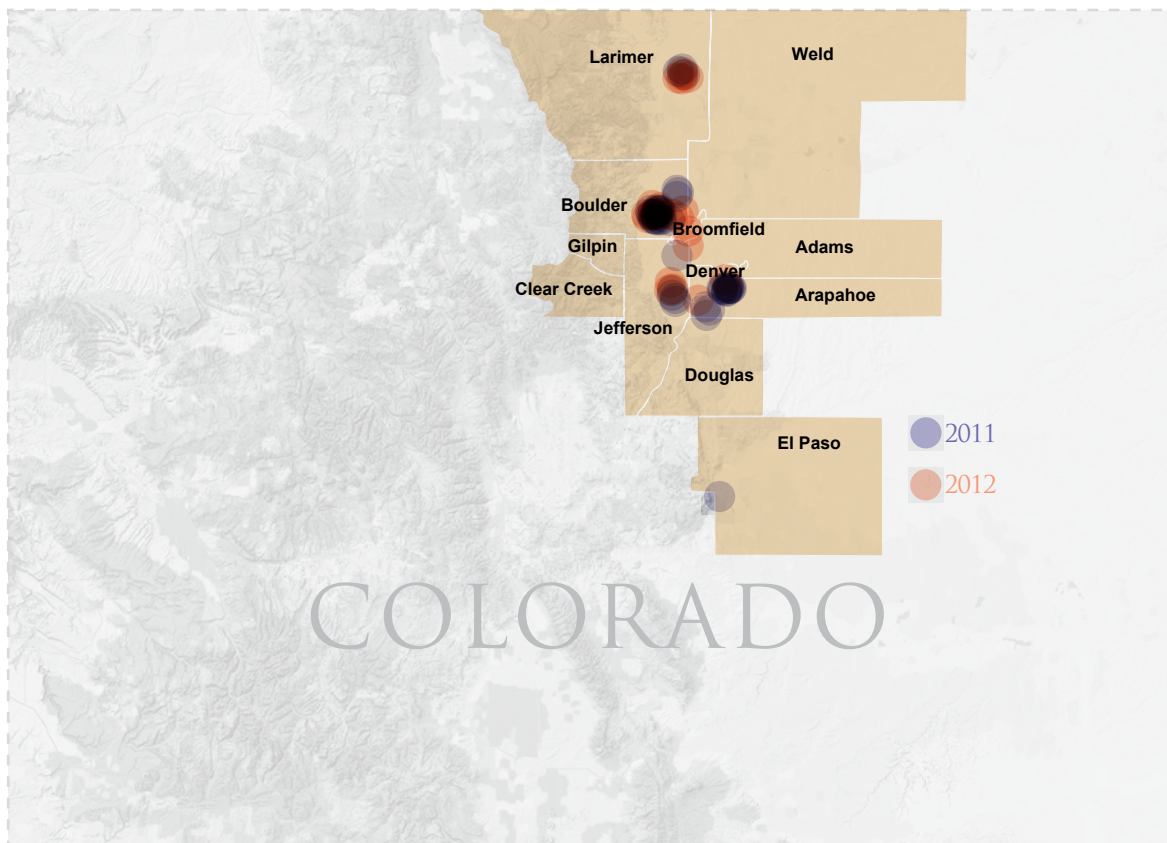
**Chad G. Pearson, Ph.D.**, Assistant Professor of Cell and Developmental Biology  
University of Colorado – Anschutz Medical Campus  
Investigating Organization of the Microtubule Cytoskeleton for Cell Division and Signaling

# COLORADO BY THE NUMBERS:

## 2011-2012 REVIEW

### 2011 FINANCINGS

Name	Close Date	City	Amount \$M	Round Class	Lead Investor	Industry Type
2C Tech Corp	3/1/11	Longmont	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Able Planet Inc.	12/30/11	Wheat Ridge	\$1.00	Later Stage		Medical Device/Diagnostic
Accera	1/3/11	Broomfield	\$11.00	Series D		Biotech/Pharma
Accera Inc.	10/10/11	Broomfield	\$8.78	Debt/Non-Equity		Biotech/Pharma
ADA Technologies, Inc.	7/12/11	Littleton	\$70.00	Contract	U.S. Army	Biotech/Pharma
AktiVax Inc.	8/17/11	Aurora	undisclosed	Seed Round	High Country Venture	Medical Device/Diagnostic
AmideBio	5/10/11	Aurora	\$0.58			Biotech/Pharma
Ampio Pharmaceuticals, Inc	12/21/11	Greenwood Village	\$9.50	Secondary		Biotech/Pharma
Ampio Pharmaceuticals, Inc	4/19/11	Greenwood Village	\$12.70	Private Placement	common stock	Biotech/Pharma
ARCA biopharma	4/18/11	Aurora	\$3.00	Debt/Non-Equity		Biotech/Pharma
Ariel Pharmaceuticals Inc.	9/29/11	Broomfield	\$6.00	First Round	Undisclosed Venture Investor(s)	Biotech/Pharma
BioAMPS International	3/1/11	Aurora	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
BioAMPS International	2/27/11	Aurora	\$1.48	Phase 2	U.S. Office of Naval Research	Biotech/Pharma
Biodesix Inc.	7/18/11	Boulder	\$20.00	Series D		Medical Device/Diagnostic
Biodesix Inc.	6/21/11	Boulder	\$10.25	Later Stage		Medical Device/Diagnostic
BiOptix Diagnostics Inc.	3/18/11	Boulder	\$9.00	Series B	Nanotechnologies ("RUSNANO")	Medical Device/Diagnostic
Cell Point LLC	3/30/11	Centennial	\$2.20	Later Stage		Biotechnology Therapeutics
Clarimedx Inc.	3/1/11	Aurora	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Clarimedx Inc.	6/23/11	Aurora	undisclosed	First Round	High Country Venture	Biotech/Pharma
Clarimedx Inc.	12/31/11	Aurora	undisclosed	Corporate	Johnson & Johnson Development Corp.	Biotech/Pharma
Clinipace Worldwide Inc.	10/5/11	Boulder	\$15.00	Series C	Morgan Stanley Expansion Capital	Biotech/Pharma
Clovis Oncology Inc.	5/25/11	Boulder	\$20.00	Debt/Non-Equity	Domain Associates LLC	Biotech/Pharma
Clovis Oncology Inc.	11/16/11	Boulder	\$130.00	Public Investment		Biotech/Pharma
Cytologic Inc.	3/1/11	Boulder	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
EndoShape Inc.	4/22/11	Boulder	\$3.50	Series B		Medical Device/Diagnostic
Flashback	8/1/11	Longmont	undisclosed	Seed	CID4	Medical Device/Diagnostic
FONEMED	3/17/11	Colorado Springs	\$2.40		Government of Canada/ Atlantic Innovation Fund (AIF)	Medical Device/Diagnostic
Gevo	3/16/11	Englewood	\$123.30	IPO		BioFuels
Inviragen, Inc.	8/15/11	Fort Collins	\$3.00	Grant	National Institute of Allergy and Infectious Diseases	Biotech/Pharma
Mbio Diagnostics, Inc	7/20/11	Boulder	\$5.20	Award	NIH	Medical Device/Diagnostic
MicroPhage Inc.	3/4/11	Longmont	\$6.45	Debt/Non-Equity		Medical Device/Diagnostic
MicroPhage Inc.	10/7/11	Longmont	\$6.00	Corporate	Cardinal Health	Medical Device/Diagnostic
Miragen Therapeutics Inc.	10/18/11	Boulder	\$45.00	License Agreement		Biotech/Pharma
miRagen Therapeutics, Inc	8/25/11	Boulder	\$0.72	Small Business Innovation Reaseach Grant	The National Heart Lung and Blood Institute (NHLBI)/division of NIH	Biotech/Pharma
Mosaic Biosciences Inc.	3/1/11	Aurora	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Mosaic Biosciences Inc.	7/7/11	Aurora	\$1.03	Seed Round		Biotech/Pharma
OPX Biotechnologies	7/7/11	Boulder	\$36.50	Series C		Biotech/Pharma
Otologics LLC	8/9/11	Boulder	\$0.50	Debt/Non-Equity		Medical Device/Diagnostic
PanTheryx	3/28/11	Boulder	\$1.00	Series A		Biotech/Pharma
Peptivir Inc.	3/1/11	Aurora	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Pharmaca Integrative Pharmacy Inc.	3/1/11	Boulder		Later Stage		Biotech/Pharma
PharmaJet Inc.	3/31/11	Golden	\$5.00	Later Stage		Medical Device/Diagnostic
PharmaJet Inc.	11/17/11	Golden	\$4.00	Private Equity		Medical Device/Diagnostic
PharmaJet Inc.	11/11/11	Golden	\$0.10	Grant	Bill & Melinda Gates Foundation	Medical Device/Diagnostic
Precision Biopsy	3/1/11	Aurora	undisclosed	Seed	BDEGP Grant	Medical Device/Diagnostic
Precision Biopsy	11/8/11	Aurora	\$2.50	Series A	Allied Minds	Medical Device/Diagnostic
Sharklet Technologies Inc.	6/21/11	Aurora	\$1.20	Grant	National Institutes of Health	Medical Device/Diagnostic
Sinopsys Surgical Inc.	3/9/11	Boulder	\$0.41	Seed Round		Medical Device/Diagnostic
St. Renatus LLC	12/31/11	Fort Collins	\$3.50	Series A		Biotech/Pharma
Surefire Medical Inc.	7/6/11	Westminster	\$6.10	Series A	Partisan Management Group	Medical Device/Diagnostic
Suvica Inc	03/01/12	Boulder	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
ValveXchange	7/7/11	Greenwood Village	\$3.50	Equity Investment	CryoLife	Medical Device/Diagnostic
VetDC Inc.	6/22/11	Fort Collins	undisclosed	Seed	CID4	Biotech/Pharma
ZeaChem Inc.	10/25/11	Lakewood	\$19.00	Series C	Birchmere Ventures	BioFuels



## 2012 FINANCINGS

Name	Close Date	City	Amount \$M	Round Class	Lead Investor	Industry Type
Accelr8	04/23/12	Denver	\$35.00	Debt/Non-Equity		Medical Device/Diagnostic
Accelr8 /Denver Health	05/15/12	Denver	\$2.00	Grant	Defense Medical Research and Development Program (DMRDP)	Medical Device/Diagnostic
Accera Inc.	07/18/12	Broomfield	undisclosed	Later Stage	Nestle S.A.	Biotech/Pharma
AktiVax Inc.	03/21/12	Aurora	\$0.10	Debt/Non-Equity		Medical Device/Diagnostic
AmideBio	03/01/12	Louisville	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Biodesix Inc.	08/29/12	Boulder	\$12.00	Later Stage		Medical Device/Diagnostic
Breakthrough Products Inc./ UrgentRX	05/21/12	Denver	\$3.00	First Round	JUMP Investors	Biotech/Pharma
Cell Point LLC	05/24/12	Centennial	\$2.80	Later Stage		Biotech/Pharma
Cerapedics Inc.	07/12/12	Westminster	\$19.00	Later Stage	MedImmune Ventures	Biotech/Pharma
Carbo Analytics LLC	03/01/12	Fort Collins	undisclosed	Seed	BDEGP Grant	Medical Device/Diagnostic
Crestone Inc	03/01/12	Boulder	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Evolutionary Genomics Inc.	06/25/12	Lafayette	\$0.44	Later Stage		Biotech/Pharma
Flashback	03/01/12	Boulder	undisclosed	Seed	BDEGP Grant	Medical Device/Diagnostic
InDevR LLC	02/23/12	Boulder	\$5.80	Grant	Defense Advanced Research Projects Agency (DARPA)	Medical Device/Diagnostic
Inviragen Inc.	01/23/12	Fort Collins	\$0.31	Second Round		Biotech/Pharma
Lanx Inc.	09/10/12	Broomfield	\$8.69	Later Stage		Medical Device/Diagnostic
Mbio Diagnostics Inc.,	10/31/12	Boulder	\$3.80			Medical Device/Diagnostic
Miragen Therapeutics Inc.	04/10/12	Boulder	\$20.00	Second Round	Remeditex Ventures LLC	Biotech/Pharma
Onkure Inc	03/01/12	Longmont	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
PharmaJet Inc.	10/12/12	Golden	\$2.00	Debt/Non-Equity		Medical Device/Diagnostic
Shape Ophthalmics LLC	03/01/12	Aurora	undisclosed	Seed	BDEGP Grant	Medical Device/Diagnostic
Sharklet Technologies Inc.	12/07/12	Aurora	\$2.00	Second Round	Altria Group Inc.	Medical Device/Diagnostic
Siva Therapeutics	12/03/12	Boulder	\$0.35		Angel	Biotech/Pharma
Sophono Inc.	08/14/12	Boulder	undisclosed	Seed	BDEGP Grant	Medical Device/Diagnostic
Sophono Inc.	08/14/12	Boulder	\$7.00	First Round	Wexford Capital	Medical Device/Diagnostic
St. Renatus, LLC	01/09/12	Fort Collins	\$3.50		Angel	Biotech/Pharma
Suvica Inc	03/01/12	Boulder	undisclosed	Seed	BDEGP Grant	Biotech/Pharma
Ventria Bioscience/ InVitria Division	06/04/12	Fort Collins	\$1.50	Grant	Small Business Innovation Research Program (SBIR)	Biotech/Pharma
VetDC, Inc.	11/29/12	Fort Collins	\$1.50		Private financing	Biotech/Pharma
ZeaChem Inc.	10/29/12	Lakewood	\$25.00	Series C	ITOCHU Corporation	BioFuels
ZeaChem Inc.	02/23/12	Lakewood	\$40.00	Grant	USDA's National Institute of Food and Agriculture (NIFA)	BioFuels



# 2011-2012 ACQUISITIONS

2011

Company	City	Acquired by	City	Amount
CaridianBCT	Lakewood	TerumoBCT	Tokyo, Japan	2600 M
Baxa	Englewood	Baxter	Deerfield, IL	380 M
Medivance	Louisville	C. R. Bard, Inc.	Murray Hill, NJ	250 M

2012

Allos Therapeutics	Westminster	Spectrum Pharmaceuticals	Henderson, NV	Stock
Macleod Pharmaceuticals	Fort Collins	Neogen Corporation	Lansing, MI	Stock
Aegis Analytical Corp.	Lafayette	Accelrys, Inc.	San Diego, CA	30 M
MedEfficiency	Wheat Ridge	Derma Sciences	Princeton, NJ	14.5 M
Synthes, Inc.	Monument	Johnson & Johnson	New Brunswick, NJ	19.7 B



# 2011-2012 NEW COMPANIES

2011

Company	City	Industry Type
Acertara Acoustic Laboratories	Longmont	Medical Device/Diagnostic
Flashback	Boulder	Medical Device/Diagnostic
Great Lakes Pharmaceuticals*	Denver	Biotech/Pharma
InDevR	Boulder	Biotech/Pharma
Mosaic Biosciences	Aurora	Biotech/Pharma
Oberon FMR	Aurora	Biotech/Pharma
PharmaJet	Golden	Medical Device/Diagnostic
PolyNew	Golden/ Aurora	BioFuels
Sharklet Technologies*	Aurora	Medical Device/Diagnostic
Surefire Medical*	Westminster	Medical Device/Diagnostic
SuviCa	Boulder	Biotech/Pharma
VetDC	Fort Collins	Biotech/Pharma

2012

Aurora Oncology, Inc.	Aurora	Biotech/Pharma
Cetya Therapeutics, Inc.	Fort Collins	Biotech/Pharma
Colorado Micro Tech	Fort Collins	Biotech/Pharma
Double Helix, LLC	Boulder	Biotech/Pharma
Hyperion Labs, LLC	Fort Collins	Medical Device/Diagnostic
MonImmune Therapeutics	Fort Collins	Biotech/Pharma
OpTmune	Boulder	Biotech/Pharma

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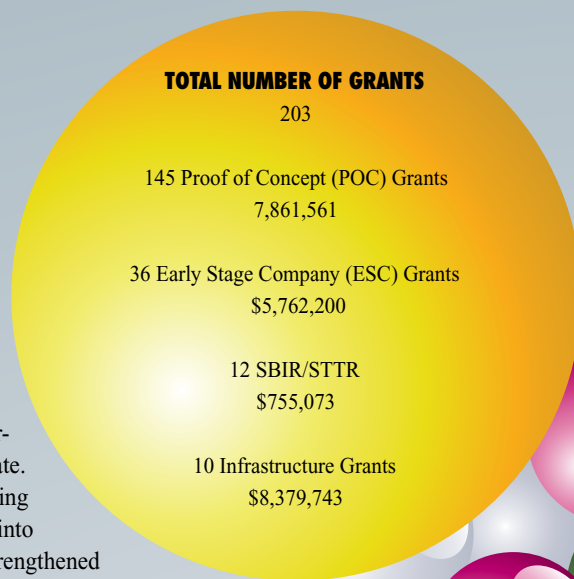
# BIOSCIENCE DISCOVERY EVALUATION GRANT PROGRAM RETURN ON INVESTMENT FISCAL YEAR 2006-07 TO 2011-12

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The Bioscience Discovery Evaluation Grant Program (BDEGP) was created in 2006 by the Colorado General Assembly to grow the bioscience industry in the state. The BDEGP provides gap funding to advance promising research from Colorado's outstanding research institutions into the market place. The bioscience industry in Colorado is strengthened by such efforts, resulting in long-term job creation and company formation. Approximately \$22 million from the BDEGP Cash Fund has been granted and will garner at least an equal amount in matching funds (excluding Commercialization Infrastructure grants).

The BDEGP Cash Fund was appropriated \$5,499,321 in fiscal year 2010-11 and \$4,320,967 in fiscal year 2011-12. The program's statute requires an allocation of at least 30% of the funds to Proof of Concept grants, 30% of the funds to Early-Stage Company grants, and up to 40% of the funds to Commercialization Infrastructure.





## RESEARCH INSTITUTIONS

### Proof of Concept (POC) Grants Awarded:

- 1 Bonfils Blood Center Foundation
- 9 Colorado School of Mines
- 42 Colorado State University
- 23 National Jewish Health
- 62 University of Colorado
- 5 University of Denver
- 3 University of Northern Colorado

## COMPLETE ECONOMIC IMPACT

- 34 new companies, 302 direct jobs
- 1,063 indirect jobs (302 x 3.52\*)
- Average bioscience sector salary: \$82,000\*
- Total payroll for all jobs (direct and indirect):  
\$87.1 million ( $\$82,000 \times 1,063$ )
- Additional investment: \$112 million  
(matching \$17.3 million & follow-on  
capital \$95 million)
- Leverage of 5 x state investment:  
(\$22 million to \$112 million)

## INFRASTRUCTURE GRANTS

- BioFrontiers Institute at the University of  
Colorado-Boulder (formerly Colorado Initiative  
in Molecular Biotechnology)
- Colorado Center for Drug Discovery (C2D2) at  
Colorado State University
- Colorado Institute for Drug, Device, and  
Diagnostic Development (CID4)
- University of Colorado-Drug Development  
Center High Throughput Screening Core

\*BATTELLE/BIO STATE INITIATIVES REPORT

# PROOF-OF-CONCEPT GRANTS 2012 -2013



## COLORADO SCHOOL OF MINES

**INVESTIGATOR:** Melissa Krebs, Ph.D.

**TITLE:** Biopolymer Hydrogels for the Controlled, Localized Delivery of Therapeutic Antibodies

**RESEARCH:** Glioblastoma is an extremely aggressive brain cancer with poor patient prognosis because current methods include radiation which has effects surrounding tissue and some anti-cancer drugs which cannot make it through the blood/brain barrier. This research focuses on using a promising alternative approach to treating this disease with the injection of an antibody-laden biodegradable hydrogel, which would release antibody to the tumor site in a localized, controlled manner over a sustained period of time.

**IMPACT:** The current cost of treatment for a single glioblastoma patient is at least \$50k per year with a very high mortality rate. The goal of these studies is to develop a new class of biodegradable delivery devices for bioactive antibodies, with the primary focus on treating glioblastomas. In the future, one could also envision encapsulating both antibody and a chemotherapeutic or radioactive drug within the hydrogel for dual drug delivery at the tumor site. Further, the engineered hydrogels will serve as a platform technology for use in other clinical applications where the controlled delivery of antibody would be beneficial—including other types of cancer as well as in regenerative medicine applications. Initially the market could be targeted to glioblastoma patients (~4100 new patients each year in the U.S.), but ultimately could be much larger and directed at many other problems, as this is a platform technology.

**INVESTIGATOR:** Stephen Boyes, Ph.D.

**TITLE:** Polymer Modified Nanoparticles as Contrast Agents for the Non-invasive Measurement of pH in vivo

**RESEARCH:** For many years researchers have known the importance of the extracellular pH (pHe) in solid tumors in relation to cancer morbidity and mortality. A low pHe has been identified as an important factor in producing more aggressive cancer phenotypes and causing metastasis of the primary carcinoma, both of which are leading causes of cancer morbidity and mortality. As such, the ability to measure the pHe of solid tumors using non-invasive and accurate techniques that also provide high spatiotemporal resolution has become increasingly important and is of great interest to clinicians. Despite this interest, there is currently no clinical method available for the in vivo determination of pHe in tumors and, despite the existing research in this area, in vivo applications have been limited. This research seeks to prepare polymer modified hybrid Gadolinium-Iodine nanoparticles which will allow for the development of a novel class of targeted, pH responsive contrast agents for magnetic resonance imaging, providing high sensitivity and specificity in the non-invasive in vivo imaging of pHe.

**IMPACT:** Contrast agents based on nano-particles offer many advantages over traditional small molecule contrast agents, such as improved specificity if modified with molecular targets, enhanced sensitivity, and improved retention times. In addition, the ability to surface modify the nano-particle contrast agents with multi-functional, biocompatible polymers introduces the capacity to control surface functionality and biodistribution. As such, the development of a pH responsive magnetic resonance imaging contrast agent, based upon polymer modified nano-particles, that provides the ability to accurately and non-invasively determine tumor pHe in vivo has the potential to dramatically improve the detection and diagnosis of cancer and significantly improve the therapeutic outcome and quality of life for patients.



**INVESTIGATOR:** Steven Dow, Ph.D.

**TITLE:** Novel Non-Adjuvant Drugs for Enhancing Vaccine Efficacy

**RESEARCH:** The goal of this project is to evaluate previously approved drugs for their monocyte migration inhibitor (MMI) potential and use as novel vaccine enhancing agents. Inflammatory monocytes potently suppress vaccine responses; using MMI drugs to block this activity can markedly improve vaccine responses. This project aims to identify drugs that can function as effective MMIs and assess their impact on boosting immune responses to vaccination and the effectiveness of MMI delivery on vaccine responses.

**IMPACT:** The availability of already approved drugs that could broadly enhance the efficacy of existing vaccines would have a rapid impact on the vaccine field, including both prophylactic and therapeutic vaccines. These could be used to enhance not only commonly used vaccines that elicit suboptimal immunity (e.g., influenza, shingles, pneumococcus vaccines) but also to increase the efficacy of vaccines that, to date, have failed to produce sufficient efficacy for approval and widespread use (e.g., HSV2, cancer vaccines). Recent Colorado State University startup, MonImmune Therapeutics, is further developing the technology and anticipates launching clinical trials within a few years.

**INVESTIGATOR** Greg Miknis, Ph.D.

**TITLE:** New Methods to Prepare Peracids

**RESEARCH:** This project aims to improve the chemical synthesis and quantitation of the active component in a recently developed anti-microbial disinfectant solution through novel approaches in synthetic chemistry. Project work should result in new methods to prepare, characterize and evaluate the biological properties of new alpha-keto peracids

**IMPACT:** Composition of matter and novel method of preparation patents developed at CSU will support commercialization of alpha-keto peracids, and allow for production of commercial quantities. This alpha-keto peracid solution has demonstrated improved anti-microbial activity and has applications in surface disinfection in healthcare settings, disinfection/sterilization of re-usable medical device products, implantable medical devices, and wound care.

**INVESTIGATOR:** Christopher Orton, DVM, Ph.D.

**TITLE:** Phase I Clinical Trial for MitralSeal® Transcatheter Mitral Valve Implantation in Dogs

**RESEARCH:** This project aims to address an unmet need: catheter-delivered mitral valve replacement devices for animal and human heart surgery. Through a phase I veterinary clinical trial, these studies will provide a novel step toward FDA approval by extending traditional pre-clinical studies in normal animals to animals with heart conditions needing mitral valve repair. These studies will demonstrate the feasibility and performance of the device, and evaluate the physiological and biological response.

**IMPACT:** Heart valve surgery is the second most commonly performed heart surgery in Western countries and artificial heart valves are a \$1.2 billion market worldwide. Surgery on the mitral valve represents about one-third of all heart valve surgeries. Catheter-delivered (transcatheter) valve devices are projected to offer the largest growth opportunity in the U.S. and European heart valve device market in the next five years. This project will work with a small startup medical device company, Avalon Medical, to further develop this technology.

**INVESTIGATOR:** Robert M. Williams, Ph.D.

**TITLE:** Class 1 Isoform Selective HDACi's: Scale-up and Efficacy Studies in Autoimmunity and Cancer

**RESEARCH:** The goal of this project is to establish the foundational areas of an early stage drug development program based on a naturally occurring molecule known as Largazole. This project will focus on analytical studies to demonstrate efficacy in cell-based and rodent models, and interrogate the pharmacokinetic properties of largazole analogs. Largazole is a histone deacetylase inhibitor and demonstrates isoform selectivity and high potency with potential drug applications in cancer, autoimmune, blood, neurodegenerative, and cardiac diseases. This study will provide the information necessary to initiate human phase I clinical trials and leverage the broad-based clinical utility of largazole analogs in commercial drug development.

**IMPACT:** These studies in both cancer and autoimmunity position the technology to begin drug development that will target very large markets segments. CSU startup CETYA Therapeutics, Inc. was founded to begin the commercialization process of the largazole analog technology. The largazole analog technology holds potential in treating and relieving multiple sclerosis symptoms as well as numerous other autoimmune diseases.





## NATIONAL JEWISH HEALTH

**INVESTIGATOR:** Erwin Gelfand, M.D.

**TITLE:** Targeting PIM1 Kinase in the Treatment of Allergic Diseases

**RESEARCH:** Unlike many other diseases, the treatment of allergic disease has had limited success beyond the use of corticosteroids. It is therefore critical to develop novel sources of therapy. This research group has shown that the enzyme PIM kinase plays an important role in allergic diseases. With chemistry expertise provided by collaborators at the Colorado State University and the University of Colorado, the initial key objectives of this project are to generate and evaluate a series of novel PIM kinase inhibitors in experimental models of allergic disease. These objectives include inhibitors with a product profile of safety, oral or inhalational delivery, and efficacy as primary or adjunctive therapy.

**IMPACT:** This work represents a 2-part approach to develop novel PIM1 kinase inhibitors as potential therapeutics for the treatment of allergic diseases.

**INVESTIGATOR:** Joseph Lucas, Ph.D.

**TITLE:** Cdk6 as a Breast Cancer Biomarker – Preclinical Exploratory and Validation Phase

**RESEARCH:** This research team reported that many breast tumors have reduced amounts of the cdk6 kinase and proposed that its loss promoted tumor growth. Cdk6 modulates the expression of genes encoding steroid metabolic enzymes (SMEs) responsible for estrogen synthesis in breast cells. They propose to develop a breast tumor diagnostic assay based on the level of cdk6 and SMEs.

**IMPACT:** The proposed work could lead to diagnostic tools for identification and classification of breast tumors. The commercial potential of the technology is broad and could extend to other cancers whose growth is affected by steroids, such as prostate, ovarian, and some lung cancers.

**INVESTIGATOR:** Hong Wei Chu, M.D. and Gongyi Zhang, Ph.D.

**TITLE:** SPLUNC1: a novel therapy of infection and inflammation

**RESEARCH:** Respiratory bacterial and viral infections continue to pose a significant challenge in healthcare, cost billions of dollars, and are the major causes of acute exacerbations of lung diseases including asthma, chronic obstructive pulmonary disease and cystic fibrosis that affect more than 30 million Americans. There is an increasing trend of antibiotic resistance, and no effective antiviral therapies are available. Thus, it is imperative to develop more effective therapies to treat infections and disease exacerbations. This project intends to develop a novel treatment for infection and exaggerated inflammation in lung diseases using a secretory protein called SPLUNC1 and bioengineering approaches.

**IMPACT:** This work could lead to the development of a novel therapy for lung bacterial or viral infection.

**INVESTIGATOR:** Karin Pacheco, M.D. and Vijaya Nagabhushanam, M.D., Ph.D.

**TITLE:** Development and validation of diagnostic assays for metal and bone cement allergy in joint implant failure.

**RESEARCH:** Joint replacements are a common procedure in the US: at present, about one million hip and knee replacements are performed annually. Of these, it is estimated that 10% will fail and ultimately require revision. Allergic reactions to implant materials (metals and bone cement components) are being increasingly recognized as contributors to failure as well. Building on National Jewish expertise in allergies and working with several Denver-based orthopedic groups, this project aims to create a blood-based tests to diagnose various metal allergies in patients with orthopedic joint failures.

**IMPACT:** This work would lead to the development of a diagnostic assay for metal and bone cement allergy in joint implant failure.



**INVESTIGATOR:** Michael Strong, Ph.D. and Charles Daley, M.D.

**TITLE:** Development of a Novel Molecular Diagnostic for Nontuberculous Mycobacterial Infections

**RESEARCH:** Nontuberculous mycobacteria (NTM) are an increasingly recognized bacterial pathogen in the United States. The dominant form of NTM infections occur in the lung, causing a variety of respiratory problems. NTM infections are believed to be acquired in the environment, instead of being transmitted person to person like *Mycobacterium tuberculosis*. This project builds on computational, genomic, and molecular expertise to optimize sets of distinguishing genomic biomarkers for the rapid and accurate diagnosis of NTM infections.

**IMPACT:** This work will lead to the development of a diagnostic test for Nontuberculous Mycobacterial Infections. This product will enable physicians to accurately diagnose if a patient's symptoms are due to infecting NTM, and if so, inform the physician of diagnostic classifiers including species, strain, and other clinically important signatures, so that the most effective drug regimen can be prescribed.



## UNIVERSITY OF COLORADO BOULDER BIOFRONTIERS INSTITUTE

**INVESTIGATOR:** Hubert Yin, Ph.D.

**TITLE:** Strengthening CU IP around therapeutics for treating chronic pain and improving the clinical utility of opioids

**RESEARCH:** Generation and evaluation of novel therapeutics derived from intermediates of existing compounds.

**IMPACT:** Identification of non-opioid, non-addictive therapeutics to treat chronic pain and enhance the clinical efficacy of existing opioids.

**INVESTIGATOR:** Leslie Leinwand, Ph.D. and Brooke Harrison, Ph.D.

**TITLE:** Fatty acid induced cardioprotection and treatment of pathological cardiac hypertrophy

**RESEARCH:** Evaluate a novel combination of fatty acids in protecting the heart from subsequent cardiac insult and as a treatment administered after cardiac insult.

**IMPACT:** Preclinical validation of a prescription therapeutic or a dietary supplement capable of promoting beneficial heart growth.

**INVESTIGATOR:** Zhongping Tan, Ph.D. and Charles Dinarello, M.D.

**TITLE:** Chemical Glycoengineering of Insulin for Type 2 Diabetes Treatment

**RESEARCH:** Prepare and evaluate stable, long-acting insulin analogs for the treatment of type 2 diabetes.

**IMPACT:** Validation of chemical glycoengineering technology and development of next-generation antidiabetic medications.



## UNIVERSITY OF COLORADO DENVER

**INVESTIGATOR:** James Chen, S.Y. Ph.D. and John Carroll, M.D.

**TITLE:** Three-Dimensional PCI Planner System

**RESEARCH:** Build a mobile, cloud based interface for 2D to 3D transformation of vascular images for planning percutaneous procedures.

**IMPACT:** Reduce time and complications associated with stent installation in cardiac arteries, and improve outcomes through enablement of a cloud-based registry of surgical cases and images from those cases.



**INVESTIGATOR:** Robert C. Doebele, M.D. and Marileila Garcia, Ph.D.

**TITLE:** Methods for Diagnosis and Treatment of Cancer

**RESEARCH:** Determine the feasibility of an existing experimental drug in treating a new molecular subtype of cancer, detected with a novel test invented at Anschutz Medical Campus.

**IMPACT:** Clinical validation of a new genetic defect found in cancer that will guide the use of personalized therapy.

**INVESTIGATOR:** Brian Reid, Ph.D. and Timothy McKinsey, Ph.D.

**TITLE:** Small Molecule Therapies for Prevention of Cardiomyocyte Hypertrophy

**RESEARCH:** Evaluate potential drugs for a type of heart-failure, in a highly robust drug screen.

**IMPACT:** Rapidly enable clinical prioritization of experimental heart failure drugs.

**INVESTIGATOR:** Douglas Graham, Ph.D., M.D.

**TITLE:** Development of Axl-Fc for Oncology Applications

**RESEARCH:** A novel biologic agent will be evaluated for its ability to augment standard cancer chemotherapies and reduce tumor burdens in animals.

**IMPACT:** Improve survival and quality of life in various cancer patients.

**INVESTIGATOR:** Robin Shandas, Ph.D. and Michael Zimkowski

**TITLE:** Shape memory polymer integrated surgical mesh for hernia repair application.

**RESEARCH:** Evaluate surgical use and durability of an improved hernia patch.

**IMPACT:** Reduce complications and failures of existing hernia patches enabling more effective and faster surgeries.





## EARLY STAGE COMPANY AWARDS 2012-2013

### AURORA ONCOLOGY, INC.

This grant expands research for a recently funded SBIR project entitled DT-EGF Toxic Fusion Protein for Treatment of Bladder Cancer. The funds will assist the company in expanding the number of patient samples that can be put into immunocompromised mice, and will improve the dose response and timing studies in the cell line. Grant funds support the development of a comprehensive business plan that can be used to apply for SBIR phase II funding, and FDA consultations on human phase I and II trials in preparation for an IND application.

### BAROFOLD, INC.

This grant funds the evaluation of PreEMTTM high pressure disaggregation technology for the refolding of insulin glargine. BaroFold developed its first biosimilar, IFN-beta-1b (now in Phase III clinical trials with Nuron Biotech as NU100), taking advantage of PreEMT to improve protein refolding and product safety. The technology is licensed from the University of Colorado. BaroFold will conduct refold optimization experiments at high protein concentrations (>5 g/L) and perform process modeling. Based on success with IFN-beta-1b, pressure refolding is expected to provide economic value in terms of reduced manufacturing cost-of-goods and will provide intellectual freedom-to-operate in comparison to traditional chemical-based approaches for this valuable biosimilar target. BaroFold plans on licensing its PreEMT refolding technology to an insulin glargine biosimilar manufacturer.  
[www.barofold.com](http://www.barofold.com)

### DOUBLE HELIX, LLC

The grantee is developing Widefield 3D Super resolution Microscopy Instrumentation for Biomedical Sciences, a 3D optical microscopy technology suitable for living cell studies. Double Helix is a start-up company that will commercialize the technology invented by Dr. Rafael Piestun at the University of Colorado and his collaborators. The technology allows for visualizing sub-cellular events without destroying cells, a capability that is essential to understanding the mechanisms and treatment of many diseases. Double Helix has recently received federal funding to support the development of a product module with 3D super-resolution capabilities that can be used with existing microscopes. The BDEG matching grant funding supports development of a business plan to bring that product to market.

### KROMATID, INC.

This grant is dedicated to the product launch of novel research tools for cancers, developmental disorders and other genetic diseases. KromaTiD's unique assays provide disease researchers with the tools they need to understand the root causes of genetic disease and to develop new companion diagnostic tests. BDGEP will support sales and marketing of KromaTiD's chromosome imaging assays, including newly hired sales and applications development professionals.  
[www.kromatid.com](http://www.kromatid.com)

### SIVA THERAPEUTICS INC

This grant funds a project entitled 'Smart Polymers for Improved Photothermal Cancer Therapy: Optimized Surface Chemistry for Increasing Retention of Precision Gold Nanorods in Solid Tumors.' Siva has entered into an exclusive license to patented polymer technology developed in the laboratory of Professor Stephen Boyes in the Department of Chemistry and Geochemistry at the Colorado School of Mines. As part of the project, Siva will support a PhD student working in Dr. Boyes' lab, and the grant will also support a newly hired scientist at Siva. The long term vision of the project is to develop functional, environmentally-responsive polymers attached to the surface of gold nanorods. The polymers will be able to present different functionalities, such as tumor targeting or a chemotherapeutic, which can be used in conjunction with the photothermal properties of the gold nanorods.  
[www.sivatherapeutics.com](http://www.sivatherapeutics.com)



# PhRMA

Pharmaceutical Research & Manufacturers of America  
Disease is our enemy. Working to save lives is our job.

## COMMERCIALIZATION INFRASTRUCTURE AWARDS 2012-2013

### BIOFRONTIERS INSTITUTE AT UNIVERSITY OF COLORADO BOULDER

This grant supports the BioFrontiers Institute, formerly the Colorado Initiative in Molecular Biotechnology, in developing a state-of-the-art research and education facility that links the basic sciences, engineering, clinical practice, and industry at the University of Colorado's Boulder campus to support breakthrough developments in areas such as engineering human tissues, RNA enzyme and aptamer based pharmaceuticals, biorefining, and genetics. Grant funds support equipment, resources and personnel costs to develop the core facilities of the institute.

### COLORADO INSTITUTE FOR DRUG, DEVICE, AND DIAGNOSTIC DEVELOPMENT (CID4)

Formed in 2009 through the BDEGP, CID4 accelerates life science discoveries and bridges the gap between research and successful product developments. The Institute serves universities, bioscience companies, academic groups, and professional associations by providing seed funding, active management, investor connections and strategic consulting. CID4 received \$4.75 million in total funding for grants from the state of Colorado and the Fitzsimons Redevelopment Authority. As of 2012, CID4 has five companies in its Project Portfolio who have raised an additional \$21 million in operating funds leading to 195 direct and indirect jobs.

### COLORADO STATE UNIVERSITY-COLORADO CENTER FOR DRUG DISCOVERY

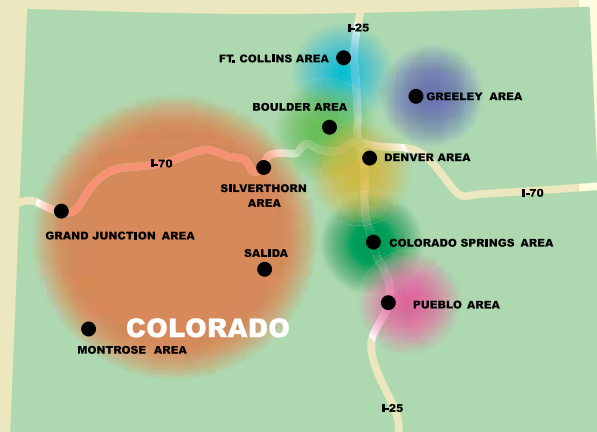
This grant supports the Colorado Center for Drug Discovery (C2D2) as a drug discovery resource that is available to Colorado researchers. The C2D2 applies industry-based medicinal chemistry knowledge, synthetic expertise, and drug discovery technologies (e.g. chemical libraries, cheminformatics, and computer aided drug design) to drug discovery projects emerging from Colorado's research institutions in order to promote technical innovations that advance the understanding, diagnosis, and treatment of human and animal disease. Working collaboratively with biology researchers from public and private institutions, C2D2 generates novel compounds that enable investigators to conduct cutting edge research, develop intellectual property, acquire follow on funding, and form new startup companies. Since its inception in 2010, C2D2 has provided funding/resources to 22 programs (including 7 programs in FY2012) from across all of Colorado's major research institutions. In FY2013 C2D2 has identified seven programs to provide with funding and/or medicinal chemistry support.



# DIRECTORY

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### ACCU-TUBE CORPORATION

Englewood

[www.accutube.com](http://www.accutube.com)

Manufactures standard and custom size stainless steel hypodermic medical tubing.

### ACERTARA ACOUSTIC LABORATORIES, LLC

Longmont

[www.acertaralabs.com](http://www.acertaralabs.com)

Independent ISO/IEC accredited medical ultrasound acoustic measurement and testing laboratory.

### ACTALL SECURITY PRODUCTS

Denver

[www.actallsp.com](http://www.actallsp.com)

Engineers, manufactures and markets wireless systems for hospital and pharmaceutical company facilities.

### ACTIUM BIOSYSTEMS

Boulder

[www.actiumbio.com](http://www.actiumbio.com)

Developing new technology to treat cancer through the use nanoparticles to weaken and destroy cancer cells.

### ADVANCED MICROLABS, LLC

Fort Collins

[www.advancedmicrolabs.com](http://www.advancedmicrolabs.com)

Researches and develops chemical analytical instruments in 'Lab-on-a-chip' format.

### ADVANCED RESEARCH INSTRUMENTS CORPORATION

Golden

[www.aricorp.com](http://www.aricorp.com)

Produces preamplifiers for PMT's and electron multipliers, high voltage power supplies, counters and timers, precision rate meters, and image analyzers for scanning electron microscopes.

## MEDICAL DEVICE AND RELATED COMPANIES

### 2C TECHNOLOGIES

Denver

[www.2ctechcorp.com](http://www.2ctechcorp.com)

Development, validation, and commercialization of "SeeQ" intraocular implant as a next generation in vivo system for stimulating degenerated retinal cells and restoring vision.

### ABILITIES UNLIMITED

Colorado Springs, Denver

[www.aviop.com](http://www.aviop.com)

Provides artificial limbs and custom orthopedic appliances.

### ABLE PLANET

Wheat Ridge

[www.ableplanet.com](http://www.ableplanet.com)

Developing an extensive line of audio and communications products that are usable by people with all levels of hearing, and provide a means whereby users can listen at lower volumes without compromising full rich sound.

### ACCEL8 TECHNOLOGY CORPORATION

Denver

[www.accelr8.com](http://www.accelr8.com)

Develops medical diagnostic technologies for research and clinical applications. The primary focus is rapid, integrated bacterial analysis system designed to identify, count, and provide complete antibiotic susceptibility data by bacterial species within a few hours of sample injection without prior culturing.



**AEROPHASE, INC.**

Longmont

[www.aerophase.com](http://www.aerophase.com)

Research and Development of technologies that reduce environmental impact, help economically disadvantaged people, and improve healthcare.

Including low cost, environmentally friendly Meter Dose Inhaler and improved Aerosol Therapy for Lung Cancer

**AESTHETIC TECHNOLOGIES**

Golden

[www.parisianpeel.com](http://www.parisianpeel.com)

Manufactures and sells Parisian Peel® brand microdermabrasion systems and accessories along with skin care products to medical, and spa professionals.

**AESTIS, INC.**

Boulder

[www.altitudetraining.com/aux/about/aestis](http://www.altitudetraining.com/aux/about/aestis)

Develops a treatment for obesity through controlled hypoxia technology. The two principal components are the air separation unit and proprietary control system.

**AGILENT TECHNOLOGIES**

Englewood

[www.agilent.com](http://www.agilent.com)

Provides core electronic and bio-analytical measurement tools to advance life science research.

**AKTIVAX**

Boulder/Aurora

[www.aktivax.com](http://www.aktivax.com)

Developing novel reconstitution, safety syringes for vaccines and biologics.

**ALLERGAN, INC.**

Denver

[www.allergan.com](http://www.allergan.com)

Continually conduct research to develop products that enable medical specialists to help people preserve and protect their vision, move freely, best express their inner beauty and lead healthy and active lives.

**ALLISON MEDICAL INC**

Littleton

[www.allisonmedical.com](http://www.allisonmedical.com)

Develops products to assist specialists in the medical and veterinary industries, and have designed and provided essential syringes, needles and custom items for various industries.

**ALLOSOURCE**

Centennial

[www.allosource.com](http://www.allosource.com)

Develops, processes and distributes life-enhancing bone and tissue allografts to the medical community.

**ALLPRO**

Broomfield

[www.allprodental.com](http://www.allprodental.com)

Produces a large selection of non-latex prophylactic cups, prophylactic angles and other dental products.

**ALPHA MOLD WEST**

Broomfield

[www.alphamoldwest.com](http://www.alphamoldwest.com)

Plastic injection mold-making facility for the medical industry.

**ANGIOSLIDE, INC.**

Wheat Ridge

[www.angioslide.com](http://www.angioslide.com)

Privately held medical device company that developed a unique Embolic Capture Angioplasty solution, PROTEUS™, which provides a combination of PTA balloon and embolic capture.

**ANIMAL CARE SYSTEMS, INC.**

Centennial

[www.animalcaresystems.com](http://www.animalcaresystems.com)

Provides innovative rodent caging systems for the life-science industry.

**ANIMARK, INC.**

Aurora

[www.animark.us](http://www.animark.us)

Manufactures and sells ultrasound pregnancy detectors and ovulation predictors for livestock breeding.

**APDYNE MEDICAL COMPANY**

Denver

[www.apdyne.com](http://www.apdyne.com)

Manufactures and distributes the Apdyne Phenol Applicator Kit used to anesthetize the tympanic membrane during in-office myringotomy procedures.

**AQUEOUS BIOMEDICAL**

Colorado Springs

[www.aqueousbio.com](http://www.aqueousbio.com)

Develops biocompatible materials and geometric designs that can be applied to stents, shunts, artificial organs and drug delivery devices. Their first product, the Oculieve™ shunt, is designed to control over-pressurization inside the eye caused by glaucoma.

**ARCSCAN, INC.**

Morrison

[www.arcscan.com](http://www.arcscan.com)

Early stage med device startup developing VHF Ultrasound for comprehensive ophthalmic imaging.

**ARCTURUS STAR PRODUCTS LLP**

Cortez

[www.arcturusstar.com](http://www.arcturusstar.com)

Pioneering Vibrational Energy Therapy for the wellness and beauty professions. Vibrational energies incorporate subtle low frequencies of light, sound, and electrical waves. Their therapeutic specialty is in the area of lymphatic health.

**ASI MEDICAL, INC.**

Centennial

[www.asimedical.net](http://www.asimedical.net)

Developer of specialized mobile and integrated dental carts, as well as unique dental instruments for the modern dental office.

**ASPIRE BIOTECH, INC.**

Colorado Springs

[www.aspirebiotech.com](http://www.aspirebiotech.com)

Provides contract services for all phases of product development from concept to launch, and produces its own skin sealant and wound-closure adhesives.

**AURI-STIM MEDICAL**

Denver

[www.net1device.com](http://www.net1device.com)

Offers an alternative therapy for migraine headaches, hormonal migraine, chronic headaches, premenstrual syndrome (PMS), nicotine and narcotics addictions using the NET-1000 device.

**AVANTES**

Broomfield

[www.avantes.com](http://www.avantes.com)

Produces, develops and sells spectrometers, light sources, fiber optic multiplexer, fiber optic cables, software, fiber optics, accessories to the medical device industry.

**BAL SEAL ENGINEERING, INC.**

Colorado Springs

[www.balseal.com](http://www.balseal.com)

Produces seals and canted-coil springs for sealing, holding, latching, and electrical contact in a variety of applications throughout the medical market.

**BAXTER HEALTHCARE CORPORATION**

Englewood

[www.baxter.com](http://www.baxter.com)

Baxter International, through its subsidiaries, develops, manufactures and markets products that save and sustain the lives of people with hemophilia, immune disorders, infectious diseases, kidney disease, trauma, and other chronic and acute medical conditions.

**BEACON BIOTECHNOLOGY**

Aurora

[www.beaconbiotechnology.com](http://www.beaconbiotechnology.com)

BrightSPOT Reader detection platform and luciferase-based diagnostic assays combine cutting-edge hardware and novel biology in a way that is both powerful and simple.

**BECKMAN COULTER**

Fort Collins

[www.beckmancoulter.com](http://www.beckmancoulter.com)

Develops and produces instruments for the diagnostic industry. Specializes in the fields of immunocytochemistry, flow cytometry, and microbiology.

**BELL DENTAL PRODUCTS, LLC**

Englewood

[www.belldental.com](http://www.belldental.com)

Designs, develops, and manufactures precision dental equipment based on electric motor technology.

**BIO2 MEDICAL, INC**

Golden

[www.bio2medical.com](http://www.bio2medical.com)

Medical device manufacturer founded to design, develop, and subsequently manufacture a range of medical products in response to clinical needs.

**BIOCARE SYSTEMS, INC.**

Parker

[www.biocaresystems.com](http://www.biocaresystems.com)

Designs, develops and markets patent-protected, FDA cleared, new health-care devices (LumiWave™) that use deep-tissue light therapy to decrease pain, accelerate healing and improve quality of life.

**BIODESIX, INC.**

Aurora, Broomfield

[www.biodesix.com](http://www.biodesix.com)

Molecular diagnostics company advancing the revolution in personalized medicine by providing physicians timely and clinically useful information.

**BIO-LOGISTICS PRECLINICAL, INC.**

Pierce

[www.bio-logistics.com](http://www.bio-logistics.com)

Offers engineering and regulatory support and preclinical strategic development to the medical device industry.

**BIOPTIX**

Boulder

[www.biopixinc.com](http://www.biopixinc.com)

Offers a new, patented approach to label-free analysis, called Surface Plasmon Enhanced interferometry (SPE).

**BIOTRICITY MEDICAL INC.**

Aurora

[www.biotricitymedical.com](http://www.biotricitymedical.com)

Research and manufacturing company specializing in developing long-term power requirements for implanted devices based on bioelectric generation.

**BIOVISION TECHNOLOGIES, INC.**

Golden

[www.biovisiontech.com](http://www.biovisiontech.com)

Develops and manufactures micro-visualization solutions that enable endoluminal and minimally invasive medical procedures in both human and veterinary medicine. The imaging technologies and customized micro-endoscope solutions are integrated to reduce incision size and speed healing.

**BODYSYNC, INC.**

Aurora

[www.bodysync.com](http://www.bodysync.com)

Applies evidence-based genetic information to develop personalized products that help individuals achieve their health goals.

**BOULDER DIAGNOSTICS**

Boulder

[www.boulderdiagnostics.com](http://www.boulderdiagnostics.com)

Boulder Diagnostics is a specialty diagnostics company dedicated to developing diagnostic reagents and test for infectious diseases and other protein targets that can benefit from a reliable, easy to use test for laboratory, physician's office or home use. We focus on underserved markets where the current state of the art is inadequate for effective diagnosis.

**BOULDER INNOVATION GROUP, INC.**

Boulder

[www.boulderinnovators.com](http://www.boulderinnovators.com)

Develops and manufactures image-guided surgical navigation digitizers and industrial 3D capture and modeling equipment.

**BROADWEST CORPORATION**

Denver

[www.broadwest.com](http://www.broadwest.com)

Develops and manufactures ergonomic mammography viewing equipment.

**C5 MEDICAL WERKS**

Grand Junction

[www.c5medicalwerks.com](http://www.c5medicalwerks.com)

Offers ceramic manufacturing, materials expertise, and custom engineering support to prototype and commercialize designs and patents to orthopedic companies for hip, spinal and dental implants.

**CANBERRA INDUSTRIES**

Greenwood Village

[www.canberra.com](http://www.canberra.com)

Manufactures and supplies analytical instruments, systems and services for radiation detection and radiation monitoring.

**CAR-MAY L.L.C.**

Berthoud

[www.car-may.com](http://www.car-may.com)

Unlike basic metering pumps, Car-May's systems provide pumping capability, fluid measurement, and flow control all in one compact module.

**CARE ELECTRONICS, INC.**

Boulder

[www.medicalshoponline.com](http://www.medicalshoponline.com)

Offers a range of electronic monitoring and alarm equipment for the home health and long term care markets.

**CAROPA PLASTICS, INC.**

Englewood

[www.caroba.com](http://www.caroba.com)

Provides custom injection molds and specializes in the needs of the medical and high technology industries.

**CARSAN ENGINEERING, INC.**

Golden

[www.carsaneng.com](http://www.carsaneng.com)

Designs and manufactures products for several of the leading OEMs in the medical, dental, industrial, semiconductor, entertainment, and video projection markets.

 **CASCADE TEK**

Longmont

[www.cascadetek.com](http://www.cascadetek.com)

Cascade TEK is an accredited medical device testing laboratory located in Longmont CO and Oregon. Specializing in package testing, accelerated aging, photostability, UV, temperature/humidity, vibration, shock testing services.

**CEA TECHNOLOGIES, INC.**

Colorado Springs

[www.ceatechnologies.com](http://www.ceatechnologies.com)

Provides product development and complete product assembly and packaging services to the medical industry.

**CERAPEDICS, INC.**

Westminster

[www.cerapedics.com](http://www.cerapedics.com)

Globally supplying the orthopedic and spinal communities with quality products, services and educational opportunities to improve patient outcomes

 **CERESCAN**

Denver

[www.cerescanimaging.com](http://www.cerescanimaging.com)

Specialize in state of the art functional brain imaging utilizing a proprietary process including the latest generation high resolution gamma camera, the industry's leading brain image reconstruction software, specially trained board-certified physicians and research-based knowledge to provide unparalleled diagnostic medical reports.

**CERTOL INTERNATIONAL, LLC**

Commerce City

[www.certol.com](http://www.certol.com)

Provide patients and healthcare professionals with innovative products and responsible solutions to the complicated infection control challenges of the 21st century.

**CLEAN ROOM DEVICES, LLC**

Westminster

[www.cleanroomdevices.com](http://www.cleanroomdevices.com)

Manufactures products that are engineered specifically for "clean room" environments.

**CLIFFORD CONSULTING & RESEARCH, INC.**

Colorado Springs

[www.ccrmlab.com](http://www.ccrmlab.com)

Clifford Materials Reactivity Testing (CMRT) is a laboratory screening process used to help identify existing sensitivity problems to various chemical groups and families of compounds in an individual patient.

**COCHLEAR AMERICAS**

Centennial

[www.cochlearamericas.com](http://www.cochlearamericas.com)

Designs, manufactures and distributes hearing implants including the Nucleus Freedom and Baha implants.

**COLDQUANTA, INC.**

Boulder

[www.coldquanta.com](http://www.coldquanta.com)

Focuses on the development of BEC (Bose-Einstein Condensate) generating devices and systems, allowing them to be accessible to a wide range of research, educational, and industrial institutions. Our products are intended for use in scientific and industrial applications requiring high performance and reliability.

**COLIBRI HEART VALVE**

Broomfield

[www.colibrihv.com](http://www.colibrihv.com)

Researches and develops novel heart valve technologies.

**COLORADO LASER TECHNOLOGIES, INC.**

Colorado Springs

[www.coloradolasermarking.com](http://www.coloradolasermarking.com)

Provides YAG laser engraving technology, as well as CO2 and YAG laser cutting services.

**COLORADO PRECISION PRODUCTS, INC.**

Boulder

[www.coloradoprecision.com](http://www.coloradoprecision.com)

Provides diamond turned and polished optical parts. Fabricator of X-ray telescope optical components. Produces and offers air bearing LVDT contact linear measurement systems, .05 microinch resolution.

**COMEG U.S.A. ENDOSCOPY, INC.**

Denver

[www.sopro-comeg.com](http://www.sopro-comeg.com)

A product range producing high quality video imagery that meets the needs of the surgeons in terms of products, budget and services, whatever their specialty.

**CONFI-DENTAL PRODUCTS COMPANY**

Louisville

[www.confidental.com](http://www.confidental.com)

Manufacture a wide range of dental and healthcare products including composites, cements, creams, lotions & ointments.

**CONMED ELECTROSURGERY**

Centennial

[www.conmed.com](http://www.conmed.com)

Designs and manufactures RF electrosurgical generators and accessories of the highest quality, safety and value for use in surgical procedures performed in virtually every hospital, surgery center and physicians office.

**COORSTEK**

Golden

[www.coorstek.com](http://www.coorstek.com)

Custom engineering, materials expertise, operational excellence, and rapid execution.



**CORGENIX MEDICAL CORPORATION**

Broomfield

[www.corgenix.com](http://www.corgenix.com)

The Colorado facility is engaged in research, development, manufacture, and marketing of in vitro diagnostic products for use in disease detection and prevention.

 **COVIDIEN**

Boulder

[www.covidien.com](http://www.covidien.com)

Offers an extensive product line, including pulse oximetry and airway and temperature management devices, ventilators, vessel sealing, and electrosurgery equipment.

 **CROSSTREES MEDICAL, INC.**

Boulder

[www.crosstreesmedical.com](http://www.crosstreesmedical.com)

Privately-held company developing advanced devices and instruments for the treatment of vertebral body compression fractures (VCF) in the spine.

**CHART DENVER**

Denver

[www.chartindustries.com](http://www.chartindustries.com)

Manufacturing services to companies who want to out-source some or all of their manufacturing processes, and to companies that have capacity issues with their current manufacturing resources.

**C. R. BARD, INC./MEDIVANCE**

Louisville

[www.crbard.com](http://www.crbard.com)

Leading multinational developer, manufacturer and marketer of innovative, life-enhancing medical technologies in the fields of vascular, urology, oncology and surgical specialty products.

**CYTOLOGIC INC.**

Boulder

[www.cytologic.com](http://www.cytologic.com)

Commercialization of an immunotherapy device for treatment of cancer.

**DARKHORSE TECHNOLOGIES**

Boulder

[bparks@colorado.edu](mailto:bparks@colorado.edu)

Commercializes a patented technology for affordable, hand-carried, battery operated instruments for on-site genetic detection using Polymerase Chain Reaction (PCR).

**DATAWAVE TECHNOLOGIES CORPORATION**

Berthoud

[www.dwavetech.com](http://www.dwavetech.com)

Manufactures a wireless and battery-free device for acquiring and transmitting data from electrodes and other biosensors to a receiver placed meters away for electrophysiology, neurophysiology and physiology related research on both humans and large animals.

**dBMEDX**

Littleton

[www.dbmedx.com](http://www.dbmedx.com)

Developing next-generation, automated, wireless 3D ultrasound devices based upon our patent-pending full-view architecture.

**DCS SURGICAL**

Boulder

[www.dfjmercury.com](http://www.dfjmercury.com)

Early stage company formed to evaluate potential new surgical procedures for the treatment of sinusitis.

**DENVER INSTRUMENT COMPANY**

Arvada

[www.denverinstrumentusa.com](http://www.denverinstrumentusa.com)

Designs and manufacturers analytical balances, electrochemistry instruments, moisture analyzers, and titration controllers.

**DENVER OPTIC COMPANY**

Englewood

[www.eyeprothetics.com](http://www.eyeprothetics.com)

Specializes in the fitting and fabrication of two types of ocular prosthesis.

**DESERT GLASS WORKS**

Colorado Springs

[www.dgw.com](http://www.dgw.com)

Manufactures quartzware for the medical and research industries.

**DIAZAMED**

Fort Collins

[www.diazamed.com](http://www.diazamed.com)

Development of advanced materials and utilize leading technologies to create more biocompatible surfaces.

**DIE CUT TECHNOLOGIES**

Northglenn

[www.diecuttech.com](http://www.diecuttech.com)

Offers precision material conversion, skilled assembly and manufacturing efficiencies, including cleanroom facilities.

**DIRECTED ENERGY SOLUTIONS**

Colorado Springs

[www.denergysolutions.com](http://www.denergysolutions.com)

Develops advanced laser and optical device solutions for medical applications.

**DNTLWORKS EQUIPMENT CORPORATION**

Centennial

[www.dntlworks.com](http://www.dntlworks.com)

Manufactures portable, mobile and self-contained dental systems.

**DOUBLE HELIX**

Boulder

Emerging startup that commercializes computational optical-digital imaging technologies used in range estimation, super-resolution, and 3D imaging biomedical imaging.

**dpix, INC.**

Colorado Springs

[www.dpix.com](http://www.dpix.com)

Produces high-resolution amorphous silicon (a-Si) sensor arrays for medical X-ray imaging.

 **E.I. MEDICAL IMAGING**

Loveland

[www.eimedical.com](http://www.eimedical.com)

Manufacturer of highly portable and ruggedized ultrasound devices for the veterinary industry.

 **EIDO**

Broomfield

Anatomic localization medical device developer in patent pending stage.

**ELDON JAMES CORPORATION**

Loveland

[www.eldonjames.com](http://www.eldonjames.com)

Designs and manufactures a diverse line of plastic and stainless steel hose fittings with a single-barb design.

**ELECTRONIC MATERIALS, INC. (EMI)**

Breckenridge

[www.emiuv.com](http://www.emiuv.com)

Offers a complete line of EMCAST UV adhesives, epoxies, sealants, encapsulants and coatings, EMI also offers room temperature, thermal and Visible light cure adhesive systems.

**ELLAB, INC.**

Centennial

[www.ellab.com](http://www.ellab.com)

Manufactures thermal validation solutions for food and pharmaceutical industries.

**EMPIRICAL TESTING CORPORATION**

Colorado Springs

[www.empiricaltesting.com](http://www.empiricaltesting.com)

Provides medical device testing services that add value throughout the product development cycle, with a focus on spinal implant device testing.

**ENCISION, INC.**

Boulder

[www.encision.com](http://www.encision.com)

Designs and manufactures innovative surgical devices. Developed AEM® Laparoscopic Instruments to improve electrosurgery and reduce the chance for patient injury in minimally invasive surgery.

**ENDOSHAPE, INC.**

Boulder/Aurora

[www.endoshape.com](http://www.endoshape.com)

Manufactures surgical and medical instruments focusing on shape memory polymer devices for endoluminal application.

**ENPLAS CORPORATION**

Colorado Springs

[www.enplas.com](http://www.enplas.com)

Enplas is striving to gaze into the future through "OPTPLANICS": a new concept that fuses the latest optical and electronics technologies on the basis of engineering plastics, the highly functional materials that Enplas has been pursuing since its inception.

**es2 TECHNOLOGIES, INC.**

Englewood

[www.es2technologies.com](http://www.es2technologies.com)

Product design group that specializes in bringing concepts to life through an interdisciplinary system engineering, product safety and manufacturing engineering team.

**EVERGREEN RESEARCH, INC.**

Golden

[www.evergreenresearch.com](http://www.evergreenresearch.com)

Offers a complete range of development services from product definition and feasibility studies through detailed design to pilot-run and low-volume production to the medical device industry.

**EVEIA MEDICAL**

Boulder

[www.eveiamedical.com](http://www.eveiamedical.com)

Development stage company focused on creating a bioanalytical system designed to conduct immunassay tests. Key attributes include; low femtomolar sensitivities, short assay development cycles and results in 10-20 minutes. The product consists of the instruments, software and reagents required for analyte measurement.

**EXTREME DIAGNOSTICS**

Boulder

[www.extremediagnosics.com](http://www.extremediagnosics.com)

Develops noninvasive measurement systems, including optical systems such as custom holographic and interferometric instruments. Specializes in structural health monitoring, nondestructive testing, and materials processing.

**FALCON REHABILITATION PRODUCTS**

Denver

[www.falconrehab.net](http://www.falconrehab.net)

Designs and builds high quality, innovative quadriplegic seating systems and accessories (Falcon Rehabilitation Products, LaBac Seating Systems, Gel Ovations).

**FIREFLY MEDICAL, INC.**

Fort Collins

[www.fireflymedicalinc.com](http://www.fireflymedicalinc.com)

Designs and develops innovative durable medical equipment for clinical healthcare markets.

**FISCHER MEDICAL TECHNOLOGIES, INC.**

Broomfield

[www.fischermti.com](http://www.fischermti.com)

Designs, manufactures, and markets imaging systems for the screening and diagnosis of breast cancer.

**FLASHBACK TECHNOLOGIES**

Longmont

[www.flashbacktechnologies.com](http://www.flashbacktechnologies.com)

Fast, non-invasive detection of acute blood loss volume and prediction of cardiovascular collapse in emergency situations.

**FLUONIC**

Boulder

[www.fluonic.com](http://www.fluonic.com)

Develops infusion therapy systems with disposable sensors for OEM and proprietary pumping systems.

**FUTURA SURGICAL INC.**

Wheat Ridge

[www.futurasurgical.com](http://www.futurasurgical.com)

Development, manufacture and sales of orthopedic products

**GE ANALYTICAL INSTRUMENTS**

Boulder

[www.geinstruments.com](http://www.geinstruments.com)

Manufactures instruments used to measure total organic carbon (TOC) in water for pharmaceutical applications and medical research.

**GENESEE BIOMEDICAL, INC.**

Denver

[www.geneseebiomedical.com](http://www.geneseebiomedical.com)

Manufactures cardiac surgery instruments and devices.

**GNATHODONTICS, LTD.**

Lakewood

[www.gnatho.com](http://www.gnatho.com)

Specializes in functional dentistry, advanced implant work, precision partial dentures, combination cases and metal-free fixed restorations.

**GRANT DENTAL TECHNOLOGY CORPORATION**

Colorado Springs

[www.grantdentaltech.com](http://www.grantdentaltech.com)

Dental implants and surgical/restorative tools.

**HACH COMPANY**

Loveland

[www.hach.com](http://www.hach.com)

Manufactures and distributes analytical instruments and reagents used to test the quality of water and other aqueous solutions.

**HEI ADVANCED MEDICAL OPERATIONS**

Boulder

[www.heii.com](http://www.heii.com)

Develops and manufactures high performance components, medical software, medical devices, and non-medical products. Produces microcircuits and subsystems for hearing and medical applications.

**HIRSH PRECISION PRODUCTS, INC.**

Boulder

[www.hppi.com](http://www.hppi.com)

Manufactures precision-machined and assembled components for the medical industry.

**HYPERION LABS, LLC**

Fort Collins

[www.hyperion-labs.com](http://www.hyperion-labs.com)

Plasma-based modifications including: self organized patterning or texturization, physical thin film deposition, plasma enhanced chemical vapor deposition, and ion implantation.

**ILLUMASONIX LLC**

Aurora

[www.alliedminds.com/subsidiaries/illumasonix](http://www.alliedminds.com/subsidiaries/illumasonix) In partnership with Allied Minds, we will develop and commercialize a new non-invasive vascular disease detection procedure which will provide near real-time assessment of detailed blood flow patterns within the cardiovascular system.

**IMAGISTX, INC.**

Highlands Ranch

[www.imagistxprostate.com](http://www.imagistxprostate.com)

Ultrasound system that is potentially able detect and target for biopsy and focal therapy prostate cancer.

**InDevR, INC.**

Boulder

[www.indevr.com](http://www.indevr.com)

Develops and manufactures biomedical instruments including molecular diagnostic assays, virus measurement systems and detection technologies for micro-arrays.

**INFINITY PHOTO-OPTICAL COMPANY**

Boulder

[www.infinity-usa.com](http://www.infinity-usa.com)

Manufactures long-distance and continuously-focusable microscope technology, macro systems, internal-focusing devices and other lenses.

**INJECTECH, LLC**

Loveland

[www.injectech.net](http://www.injectech.net)

Provides molding, assembly and design of medical components and fittings for OEM device manufacturers. Class 100,000 cleanroom molding and assembly available.

**INTEC, INC.**

Boulder

[www.intec.com](http://www.intec.com)

Manufactures precision temperature controllers and microscope hot stage systems for temperature cycling, food sciences, materials characterization, forensics, polymers and liquid crystals and microbiology.

**INTERTEK**

Boulder

[www.intertek.com](http://www.intertek.com)

Offers testing, inspection and certification of products, commodities and systems for medical devices. Performs FDA 510(k) reviews, electrical safety certification including CE Marking, testing to the MDD and IVDD, risk analysis, EMC and performance testing.

**IPAX, INC.**

Englewood

[www.ipaxinc.com](http://www.ipaxinc.com)

Assembles and packs medical products, focusing on bringing new medical products to the marketplace. Specialty is small to medium production runs, also has the capacity and the manpower to take on the larger jobs.

**JORGENSEN LABORATORIES, INC.**

Loveland

[www.jorvet.com](http://www.jorvet.com)

Designs and manufactures instruments which are used in the animal health field including specialty instruments, surgical suture, and veterinary equipment.

**JORTEK SURGICAL, INC.**

Boulder

[www.jortek.com](http://www.jortek.com)

Develops innovative orthopedic devices with a focus on joint and tissue preservation and augmentation.

**KENT SYSTEMS**

Loveland

[www.kentsystems.com](http://www.kentsystems.com)

KENT Systems designs, manufactures, and distributes Plastic Quick Couplings, Tube Fittings, and Media Bags.

**KESTREL LABS, INC.**

Boulder

[www.kestellabs.com](http://www.kestellabs.com)

Kestrel Labs combines internal research and development projects with consulting and contract development of innovative, patient monitoring concepts and other medical technologies.

**KURZ MEDICAL**

Aurora

[www.kurzmed.com](http://www.kurzmed.com)

Manufactures and sells ENT devices worldwide. We are in particular focused on passive middle ear implants/prosthesis for ossiculoplasty in titanium and nitinol.

**LANX, LLC**

Broomfield

[www.lanx.com](http://www.lanx.com)

Specializes in systems and implants for all segments of spinal surgery. Integrating leading technology, intellectual property and state-of-the-art engineering, each product is designed to simplify surgery and improve the quality of care for patients worldwide by providing surgeons with innovative spinal products.

**LEAP FROGG, LLC**

Grand Junction

**970-260-7494**

Dynamic compression system which reduces nursing time and is more comfortable.



**LEEDS PRECISION INSTRUMENTS, INC.**

Denver

[www.leedsmicro.com](http://www.leedsmicro.com)

Offers microscopes and custom-engineered products ranging from small modifications on a microscope stand that accommodate specific applications, to large specialized systems, such as an optical comparison bridge for forensic science.

**LENOX MACLAREN SURGICAL INSTRUMENTS**

Louisville

[www.lenoxmaclaren.com](http://www.lenoxmaclaren.com)

Manufactures precision orthopedic and neurological surgical instruments.

**LIGHT LABS**

Aurora

[www.lightlabsusa.com](http://www.lightlabsusa.com)

Distributes, PCR tubes, TPP tissue culture, pipette tips, microcentrifuge tubes, barrier tips, latex gloves, PCR supplies, and much more.

**LOGISENS CORPORATION**

Fort Collins

[www.logisens.com](http://www.logisens.com)

Develops biosensor and software technology, enabling a significant breakthrough in real-time measurement and reduction of stress.

**MAGNELAB, INC.**

Longmont

[www.magnelab.com](http://www.magnelab.com)

Manufactures custom magnetic components (transformers/inductors) for the medical field.

**MAYER MEDICAL TECHNOLOGIES, INC.**

Grand Junction

[www.mayermedical.com](http://www.mayermedical.com)

Mayer Medical Technologies, Inc. improves health and saves lives by innovating new products, providing seed capital to medical start-ups, and assisting medical professionals in developing their product ideas.

**mBIO DIAGNOSTICS**

Boulder

[www.mbiidx.com](http://www.mbiidx.com)

Develops a low-cost, high sensitivity, multi-pathogen detection system for diagnostics.

**MEDICAL MODELING, INC.**

Golden

[www.medicalmodeling.com](http://www.medicalmodeling.com)

Produces highly accurate 3-D physical models of human bone structure from imaging such as CT or MRI.

**MEDTRONIC NAVIGATION, INC.**

Louisville

[www.medtronicnavigation.com](http://www.medtronicnavigation.com)

At the forefront of surgical navigation solutions, guiding the industry to a higher standard of care for several clinical specialties, including cranial neurosurgery, functional neurosurgery, spinal, ENT, joint replacement and orthopaedic trauma surgeries.

**MEINHARD GLASS PRODUCTS**

Golden

[www.meinhard.com](http://www.meinhard.com)

Produce finer, more narrowly sized-dispersed aerosols while maintaining the high quality, low cost and simplicity of design and operation that characterize the MEINHARD® nebulizer.

**MESA LABORATORIES, INC.**

Lakewood

[www.mesalabs.com](http://www.mesalabs.com)

Provides dialysis meters and related supplies to dialysis clinics world wide.

**METAMATRIX, LLC**

Boulder

[www.zorbent.com](http://www.zorbent.com)

Manufacturers of ZORBENT which absorbent is designed to leave no residue, reducing the risk associated with slippery surfaces and is completely safe to use and represents no health hazard

**MICRO IMAGING SOLUTIONS, LLC (MIS)**

Englewood

[www.micro-imaging.us](http://www.micro-imaging.us)

Developed an innovative-patented technology that can be utilized in the manufacture of micro-digital CMOS cameras.

**MICROLIFE MEDICAL HOME SOLUTIONS, INC.**

Golden

[www.mimhs.com](http://www.mimhs.com)

Proprietary hand-held medical devices and systemic solutions offer healthcare providers evidence-based and practice-tested methods for accurate assessment, diagnosis, and treatment of cardiovascular and metabolic diseases.

**MIKRON CORPORATION DENVER**

Aurora

[www.mikron.com](http://www.mikron.com)

Supplies transfer machining systems for complex parts, cutting tools with high performance standards, self medication and diagnostic devices.

**MIND STUDIOS**

Colorado Springs

[www.mind-studios.com](http://www.mind-studios.com)

A full service product design and research studio housed within the University of Colorado at Colorado Springs. Offers concept generation, advanced prototyping, engineering and consumer research, human factors design and manufacturing solutions.

**MITOMICS (USA) INC.**

Aurora

[www.mitomicsinc.com](http://www.mitomicsinc.com)

Pioneering the development of molecular tests based on the mitochondrial genome in order to improve clinical insight and therapeutic decisions that affect patients worldwide.

**MONTVIEW BIOMEDICAL DESIGN INC (MBD INC.)**[montviewbiomed.com](http://montviewbiomed.com)

Aurora

Designs, develops and creates engineering solutions for the biomedical industry.

**MUSCLESOUND, LLC**

Denver

[musclesound.com](http://musclesound.com)

Developed a process to measure muscle glycogen content real time using non-invasive ultrasound technology.

**nSPIRE HEALTH, INC.**

Longmont

[www.nspirehealth.com](http://www.nspirehealth.com)

Develops, manufactures and markets respiratory care products and services focused on cardiopulmonary diagnostics, respiratory core lab services, and disease management solutions.

**NEBA HEALTH LLC**

Boulder

[www.nebahhealth.com](http://www.nebahhealth.com)

Develops neuropsychiatric medical devices, such as Neba™ an experimental, small format EEG-based device being studied under an Investigational Device Exemption from the Food and Drug Administration.

**NEURO ASSESSMENT SYSTEMS**

Denver

[www.neuroassessments.com](http://www.neuroassessments.com)

Provides an objective brain-based measure of neurocognitive symptoms associated with a wide range of brain health issues including concussion and Alzheimer's disease.

**OLYMPUS SOFT IMAGING SOLUTIONS CORPORATION (OSIS)**

Lakewood

[www.soft-imaging.de](http://www.soft-imaging.de)

Produces, markets, and sells image acquisition and processing software and hardware for all areas of electron microscopy.

**OPTIBRAND LTD., LLC**

Fort Collins

[www.optibrand.com](http://www.optibrand.com)

Developed optical imaging system for veterinary diagnostics.

**OPTIENZ SENSORS**

Centennial

[www.optienzensors.com](http://www.optienzensors.com)

OptiEnz has revolutionized measurement capabilities for organic chemical concentration; now providing continuous, real-time, in-place sensor solutions.

**OTOLOGICS, LLC**

Boulder

[www.otologics.com](http://www.otologics.com)

Develops and commercializes surgically implantable alternatives to conventional "in the ear" hearing aids.

**OVAL WINDOW AUDIO**

Nederland

[www.ovalwindowaudio.com](http://www.ovalwindowaudio.com)

Produces induction loop assistive listening systems and visual and vibrotactile technologies that help deaf and hard of hearing individuals.

**PARÉ SURGICAL, INC.**

Centennial

[www.paresurgical.com](http://www.paresurgical.com)

Develops surgical instruments such as the Quik-Stitch endoscopic suturing system.

**PARKEIR MEDICAL**

Highlands Ranch

[www.parkermedical.com](http://www.parkermedical.com)

Provides airway management products that make intubation safer for the patient and easier for the medical professional.

**PARTICLE MEASURING SYSTEMS**

Boulder

[www.pmeasuring.com](http://www.pmeasuring.com)

Designs, manufactures, and services precision microcontamination monitoring instrumentation and software used for detecting particles in aerosols, liquids, slurries, gas streams and vacuum processing environments as well as surface molecular contamination monitoring.

**PCC/ADVANCED FORMING TECHNOLOGY**

Longmont

[www.pcc-oft.com](http://www.pcc-oft.com)

Offers thixoforming and metal injection molding for the medical device industry.

**PEAK ROBOTICS, INC.**

Colorado Springs

[www.peakrobotics.com](http://www.peakrobotics.com)

Manufactures robots, special equipment, and turnkey automated systems for a variety of industries including: biotech, electronics, medical, semiconductor, etc.

**PEDDLE MASTER, INC.**

Johnstown

[www.peddlemaster.com](http://www.peddlemaster.com)

Designs and manufactures handicapped driving aids. The Peddel Master is totally portable and can be installed and removed in a matter of seconds.

**PERNICKA CORPORATION**

Fort Collins

[www.pernicka.com](http://www.pernicka.com)

Offers analytical testing that meets or exceeds the requirements of MIL-STD 750/883 method 1018 and 45662A for companies in the semiconductor, aerospace, basic & applied research, surface analysis, thin film deposition, laser technology, and medical products industries.

**PHARMAJET, INC.**

Golden

[www.pharmajet.com](http://www.pharmajet.com)

Develops a needle-free technology that has a low cost, single use, disposable polypropylene vial or cartridge, suitable for the delivery of common vaccines and standard dose injectable liquid medicines.

**PHYSICAL ACTIVITY INNOVATIONS**

Fort Collins

Developing unique, footwear-based systems that motivate users to increase their daily physical activity.

**POLYNEW, INC.**

Golden

[www.polynewinc.com](http://www.polynewinc.com)

Develops Polymer ice and methods of making and using them.

**PORTA-LUNG, INC.**

Lakewood

[www.portalung.com](http://www.portalung.com)

Provides non-invasive ventilator support for long-term patients who need more portability than the iron lung allows, while maintaining the same level of ventilating efficiency.

**PRECISION BIOPSY****Aurora**

In partnership with Allied Minds, we are working to develop and commercialize technology for the accurate diagnosis of prostate cancer which uses advanced spectroscopy imaging techniques in combination with tissue biopsy.

**PRECISION DIAGNOSTIC INSTRUMENTS****Westminster****www.pdimeters.com**

Designs and manufactures professional quality, affordable test equipment.

**PRECISION GLASSBLOWING****Centennial****www.precisionglassblowing.com**

Provides custom and OEM scientific glass for custom synthesis, pharmaceutical, environmental, petrochemical, research, commercial, government and medical laboratories.

**PREFERRED MEDICAL PRODUCTS, INC.****Englewood****www.preferredmedicalproducts.com**

Manufactures stainless steel medical components for hypodermic needles and lancet type products.

**PRESCOTT'S, INC.****Monument****www.surgicalmicroscopes.com**

Provides reconditioned operating microscopes and allied accessories that function as intended by the original equipment manufacturer.

**PROBETRONIX, LLC****Colorado Springs**

Manufactures oscilloscope probes.

**PRODUCTS GROUP INTERNATIONAL, INC.****Lyons****www.productsgroup.com**

Researches, develops and engineers ultrasound medical and veterinary equipment.

**PROPEL LABS, INC.****Fort Collins****www.propel-labs.com**

Experienced and knowledgeable instrument development team designing the next generation of bio-instrumentation tools. Focused on research tools, such as single cell analyzers and cell sorters.

**PROTOMED, INC.****Westminster****www.protomed.net**

Creates accurate anatomical models from CT scans by using the latest imaging software and laser driven technology.

**PROTOTYPE CASTING, INC.****Denver****www.protcast.com**

Manufactures non-ferrous prototype parts for the medical industry, specializes in RPM (Rubber Plaster Mold) casting, sand casting and rapid investment casting.

**PTA CORPORATION****Longmont****www.ptacorp.com**

Manufactures aluminum and steel molds for projects with lifetime runs of 5,000 to 250,000 pieces for medical applications.

**QUEST PRODUCT DEVELOPMENT CORPORATION****Wheat Ridge****www.quest-corp.com**

Helps bring to market medical products and analytical systems for small start-ups to research universities and international corporations. grants from NIH, DOD, NASA and NIST.

**RADIOLOGICAL IMAGING TECHNOLOGY, INC****Colorado Springs****www.radimage.com**

Provides clinical and research physicists with a high precision automated QA tool for advanced radiation therapies.

**RAND-SCOT, INC.****Fort Collins****www.randscot.com**

Designs and manufactures products for persons with disabilities including BBD Cushions and Mattress Overlays, EasyPivot Patient Lifts, and Saratoga Exercise Products.

**RAPID PROTOTYPING CORPORATION****Longmont****www.rapidpro.com**

Offers engineering and design and other manufacturing services for the medical device industry.

**RJD MACHINING****Parker****www.rjdmachining.com**

Specializes in precision production runs and some prototype work for OEM's in the medical industry.

**ROCKY MOUNTAIN INSTRUMENT COMPANY (RMI)****Lafayette****www.rmico.com**

Designs and manufactures optics and coatings (ultraviolet through far infrared) for the medical industry.

**ROCKY MOUNTAIN ORTHODONTICS, INC. (RMO)****Denver****www.rmortho.com**

Serves all areas of orthodontics including pediatric orthodontic prevention, interceptive pediatric orthodontics, mixed dentition orthodontics, adult orthodontics, reconstructive dentistry orthodontics, TMJ orthodontics, surgical orthodontics and breathing/sleep problem related orthodontics.

**SAMSON DESIGN ASSOCIATES, INC.****Boulder****www.samsondesign.com**

Provides full service product development ranging from concept to production specifications, with many products for the medical field.

**SANDHILL SCIENTIFIC****Highlands Ranch****www.sandhillsci.com**

Designs, manufactures and distributes diagnostic products focused on gastroenterology.

**SCIENCE CARE****Aurora****www.sciencecare.com**

Provide human tissue for medical research and education. We serve as a link between individual donors and medical researchers and educators.

**SCIENTECH, INC.****Boulder****www.scientech-inc.com**

Manufactures analytical instruments: semi-micro balances, analytical balances, semi-analytical balances, and toploading balances for the medical industry.



**SCOTT ORTHOTIC LABS, INC.**

Fort Collins

[www.scottorthotic.com](http://www.scottorthotic.com)

Manufactures Orthotic and Prosthetic Components, Pre-fabricated Orthotics, and Custom O&P Devices.

**SECURISYN MEDICAL**

Highlands Ranch

[www.securisyn.com](http://www.securisyn.com)

Dedicated to a continuous process of increasing the safety and effectiveness of our unique life-saving product, which is utilized by skilled medical practitioners to deliver the highest quality emergency and intensive care to their patients.

**SEALCON**

Centennial

[www.sealconusa.com](http://www.sealconusa.com)

Manufactures cable management components, including liquid tight strain relief fittings, flexible conduit, M23 circular connectors and related products for the health care industry.

**SHAPE OPHTHALMICS LLC**

Aurora

Develops state of the art devices and novel treatments for ophthalmic conditions through the application of advanced smart materials.

**SHARKLET TECHNOLOGIES, INC.**

Aurora

[www.sharklet.com](http://www.sharklet.com)

Engineers surface technologies (Sharklet™) that controls the growth of dangerous bacteria.

**SHIPPERT MEDICAL TECHNOLOGIES CORPORATION**

Centennial

[www.shippertmedical.com](http://www.shippertmedical.com)

Manufactures and distributes medical disposable products and instruments. Serves the ear, nose and throat, plastic surgery, cosmetic surgery, emergency/trauma care, family practice, pediatric, ophthalmology and dermatology fields.

**SIENCO, INC.**

Arvada

[www.sienco.com](http://www.sienco.com)

Manufactures and distributes Class II medical devices, disposable supplies, reagents and accessories for in-vitro diagnostic use. Also, provides tools for hemostasis monitoring and viscoelastic evaluations.

**SNOASIS MEDICAL**

Denver

[www.snoasismedical.com](http://www.snoasismedical.com)

Focused on the development and commercialization of regenerative tissue and medical device products for use in dental surgery.

**SOMALOGIC, INC.**

Boulder

[www.somalogic.com](http://www.somalogic.com)

Uses aptamer array technology and bioinformatics capabilities to discover disease-specific biomarkers and protein signatures. Develops medical diagnostics based on these signatures.

**SONTEC INSTRUMENTS, INC**

Centennial

[www.sontecinstruments.com](http://www.sontecinstruments.com)

Provides a broad line of instruments as well as custom instrument manufacturing and in-house repair service.

**SOPHONO, INC.**

Boulder

[www.sophono.com](http://www.sophono.com)

Developed the world's first non-percutaneous, implantable bone anchored hearing device.

**SORIN GROUP**

Arvada

[www.sorin.com](http://www.sorin.com)

Develops and produces cardiovascular and autologous transfusion therapy products.

**SOUND SURGICAL TECHNOLOGIES, LLC**

Louisville

[www.vaser.com](http://www.vaser.com)

Offers ultrasonic technologies and related techniques for aesthetic surgery.

**SPARTON**

Frederick

[www.sparton.com](http://www.sparton.com)

Leading contract manufacturer of low to medium volume, complex products for the medical device, biotech and industrial instrumentation markets.

**SPECTRUM LASER & TECHNOLOGIES, INC.**

Colorado Springs

[www.spectrumlaser.com](http://www.spectrumlaser.com)

Provides contract design and manufacturing services for the medical industry.

**SPECTRANETICS CORPORATION**

Colorado Springs

[www.spectranetics.com](http://www.spectranetics.com)

Develops, manufactures, markets and distributes single-use medical devices used in minimally invasive procedures within the cardiovascular system.

**ST CARDIO TECHNOLOGIES, LLC**

Broomfield

[www.stcardio.com](http://www.stcardio.com)

Designs, develops, and manufactures electronic medical devices for use in electrophysiology cardiac cath labs.

**ST. RENATUS, LLC**

Fort Collins

[www.st-renatus.com](http://www.st-renatus.com)

First needle-free, dental anesthetic suitable for use in procedures involving most of the upper teeth. Uses an accurate and sophisticated method to anesthetize the upper teeth without the risk and pain of a needle.

**STNDRD INFUSION**

Parker

[www.stndrdinfusion.com](http://www.stndrdinfusion.com)

Early-stage medical device company in the drug infusion market with a standardized pump capable of performing the product requirements currently met by syringe, cassette, and ambulatory pump configurations.

**STRIONAIR, INC.**

Louisville

[www.strionair.com](http://www.strionair.com)

Manufactures and markets a product that uses disposable media and that can be installed in any air handler or HVAC system.

**STROKE RECOVERY SYSTEMS, INC.**

Denver

[www.strokeaid.com](http://www.strokeaid.com)

Develops the AutoMove AM800 that teaches healthy parts of the brain after a stroke to take over lost functionality.

**SUMMIT DOPPLER SYSTEMS**

Golden

[www.summitdoppler.com](http://www.summitdoppler.com)

Manufactures ultrasound Doppler systems used to detect fetal heartbeat and to monitor peripheral arterial and venous blood flow.

**SUNDANCE DIAGNOSTICS, INC.**

Boulder

[www.sundancedx.com](http://www.sundancedx.com)

Working to develop the world's first genetic safety tests to predict a patient's risk of antidepressant-induced suicidal thinking or behavior.

**SUNRISE MEDICAL INC**

Longmont

[www.sunrisemedical.com](http://www.sunrisemedical.com)

Provides home healthcare products including wheelchairs, respiratory, daily living aids, and speech augmentation devices.

**SUREFIRE MEDICAL INC.**

Boulder

[www.surefiremedical.com](http://www.surefiremedical.com)

The company is developing a novel infusion system for the interventional radiology market.

**SURGIREAL PRODUCTS**

Fort Collins

[www.surgireal.com](http://www.surgireal.com)

Creates and introduces innovative products and methods for surgical training.

**SUPREME CABLE TECHNOLOGIES, INC.**

Thornton

[www.supremecable.com](http://www.supremecable.com)

Manufactures quality custom cable assemblies and wire harnesses.

**SWAN VALLEY MEDICAL, INC.**

Aurora

[www.swanvalleymedical.com](http://www.swanvalleymedical.com)

Developed a line of urology instruments that allow for safer, faster, and more economical treatment of common urological disorders.

**SYNERGY HEALTH AMERICAS**

Denver

[www.synergyhealthplc.com](http://www.synergyhealthplc.com)

Offers electron beam sterilization for medical and pharmaceutical devices.

**SYNTHE, INC.**

Monument

[www.synthes.com](http://www.synthes.com)

Develops, produces and markets instruments, implants and biomaterials for the surgical fixation, correction and regeneration of the human skeleton and its soft tissues.

**TRS, INC.**

Boulder

[www.oandp.com/products/trs](http://www.oandp.com/products/trs)

Develops, manufactures, and markets body-powered prosthetic devices. Designs and builds technology for persons missing hands.

**TAPELESS WOUND CARE PRODUCTS, LLC**

Englewood

[www.tapelesswoundcare.com](http://www.tapelesswoundcare.com)

Manufactures and distributes a system of patented secondary wound dressing retention devices, offering an alternative to traditional secondary wound dressings, for both human and animals.

**TARTAN ORTHOPEDICS, LTD**

Northglenn

[www.tartanortho.com](http://www.tartanortho.com)

Manufactures sacro lumbar belts, dorsal lumbar belts (corsets and moldable inserts), Ottenberg style elbow splint, pelvic traction belts, arm slings, cervical collars, acromioclavicular splints, and ankle supports.

**TDA RESEARCH, INC.**

Wheat Ridge, Golden

[www.tda.com](http://www.tda.com)

Provides automated catalyst testing equipment to large chemical companies and national laboratories.

**TECH-X CORPORATION**

Boulder

[www.txcorp.com](http://www.txcorp.com)

Specializes in scientific and engineering software, including visualization and algorithm development.

**TENSEGRITY PROSTHETICS, INC.**

Boulder

[www.tensegrityprosthetics.com](http://www.tensegrityprosthetics.com)

Develops a prosthetic foot that mimics the functional biomechanics of the human foot in walking.

**TELSANO HEALTH**

Aurora

[www.telsano.com](http://www.telsano.com)

Telsano manufactures both the preventive health monitoring devices that gathers and analyzes our personalized data but also provides the innovation to securely display your data and trend charts anywhere anytime.

**TERABAT**

Longmont

[www.terabat.com](http://www.terabat.com)

Developing a disruptive detection platform based on terawaves technologies that will revolutionize disease diagnosis and patient care.

**TERUMO BCT**

Lakewood

[www.terumobct.com](http://www.terumobct.com)

A global leader in blood component and cellular technologies, is the only company with the unique combination of apheresis collections, manual and automated whole blood processing, and pathogen reduction coupled with leading technologies in therapeutic apheresis and cell processing.

**THE HARLOFF COMPANY**

Colorado Springs

[www.harloff.com](http://www.harloff.com)

Manufactures and sells a line of crash carts, medication carts and other specialty carts for hospitals, nursing homes, clinics and surgery centers.

**THE SYNAPTIC CORPORATION**

Aurora

[www.synapticusa.com](http://www.synapticusa.com)

Develops Synaptic®, a patented pain control technology that works without drugs. Marketed in accordance with FDA regulations for the treatment of acute and chronic pain.

**THERATOGS, INC.**

Telluride

[www.theratogs.com](http://www.theratogs.com)

Produces an orthotic undergarment and strapping system that gives clients with sensorimotor impairment a new modality for improving postural alignment and stability.

**TISSUE GENETICS, INC.**

Denver

[www.tissuegenetics.com](http://www.tissuegenetics.com)

Molecular diagnostics company with unique technology for improving the care of patients with genetic diseases using biomarkers to identify patients with hereditary diseases and to determine the course of care.

**TMJ IMPLANTS, INC.**

Golden

[www.tmj.com](http://www.tmj.com)

Designs and manufactures alloplastic implants for the treatment of temporomandibular joint disorders and injuries.

**TOLTEC INTERNATIONAL, INC.**

Lakewood

[www.toltec.biz](http://www.toltec.biz)

Toltec provides medical device engineering services compliant with US FDA and international regulatory standards. We assist medical device companies with the development and maintenance of medical devices in full compliance with the regulations and standards.

**TOUCH OF LIFE TECHNOLOGIES, INC. (TOLTECH)**

Aurora

[www.toltech.net](http://www.toltech.net)

Develops procedural simulators in the areas of orthopaedics, gastroenterology, rheumatology, radiology, ophthalmology, and general surgical procedures.

**TRANSTRACHEAL SYSTEMS, INC.**

Englewood

[www.tto2.com](http://www.tto2.com)

Develops and manufactures innovative respiratory therapy products that advance medical therapy for persons requiring continuous supplemental oxygen, including the SCOOP transtracheal oxygen therapy system.

**TRELLEBORG SEALING SOLUTIONS MOUNTAIN**

Broomfield

[www.trelleborg.com](http://www.trelleborg.com)

Supplies high-quality products and solutions for industrial sealing and bearing systems. Activities are focused in many business areas including the food and pharmaceutical industries, as well as medical engineering.

**ULTRALINQ HEALTHCARE SOLUTIONS, INC.**

New York, NY

[www.UltraLinq.com](http://www.UltraLinq.com)

Cloud-based medical image management solution providing users with the ability to view, review, collaborate, transport and archive images and data.

**ULTRATHERA TECHNOLOGIES, INC.**

Colorado Springs

[www.ultrathera.com](http://www.ultrathera.com)

Life sciences company dedicated to improving human performance by applying advanced technologies to physiological and neurological needs. Maker of AeroStim™ and PointScribe™.

**UNISYN MEDICAL TECHNOLOGIES**

Golden

[www.unisynmedical.com](http://www.unisynmedical.com)

Leading provider of sustainable solutions to the diagnostic imaging industry.

**VALUE PLASTICS, INC.**

Fort Collins

[www.valueplastics.com](http://www.valueplastics.com)

Designs and manufactures plastic tubing fittings and connectors.

**VALVEXCHANGE, INC.**

Greenwood Village

[www.valvexchange.com](http://www.valvexchange.com)

Develops a bioprosthetic heart valve with a percutaneously-exchangeable leaflet set that provides lifetime service without anti-coagulation therapy.

**VISTA LIFESCIENCES**

Parker

[www.vistalifesciences.com](http://www.vistalifesciences.com)

Innovative Healthcare Technology Solutions for Global Healthcare Challenges

**WALKMED INFUSION, LLC**

Englewood

[www.walkmed.net](http://www.walkmed.net)

Offers solutions for ambulatory infusion therapy and pain management.

**WAVI COMPANY**

Boulder

The platform is based on the Electroencephalograph (EEG) that integrates with physician diagnostic tools and a research library. Helps with interpretation and treatment of brain ailments and performance including TBI, PTSD, Alzheimer's Age Management and depression.

**WESTMED, INC.**

Greenwood Village

[www.westmedinc.com](http://www.westmedinc.com)

Designs, manufacturers and markets medical devices to anesthesia and respiratory professionals.

**WI LLC – MEDICAL DEVICE PRODUCT DEVELOPMENT**

Englewood

[www.wiinc.net](http://www.wiinc.net)

Designs and engineers medical devices. Including innovative services such as laser welding, assay design, and air bubble management.

**XIMEDIX, INC.**

Colorado Springs

[www.ximedix.com](http://www.ximedix.com)

Manufactures and sells single patient use medical products for the anesthesia, respiratory care, critical care and emergency medicine applications.

**XNTERA**

Aurora

Medical Devices will produce initially premium medical syringes for dental market with the strategic product benefits of automatic safety, ease of use, and comfort for the patient. Later on products will be developed to meet the demands in other medical fields such as psychiatric, nuclear and diabetes.

**YAMATO CORPORATION**

Colorado Springs

[www.yamatocorp.com](http://www.yamatocorp.com)

Manufactures and sells weighing equipment and systems for medical facilities.

**ZETEK, INC.**

Aurora

[www.zetek.net](http://www.zetek.net)

Manufactures the OvaCue family of ovulation prediction products.

**ZYNEX MEDICAL, INC.**

Lone Tree

[www.zynexmed.com](http://www.zynexmed.com)

Offers electrotherapy products, utilizing various methods of non-invasive muscle stimulation and electromyography technology, Interferential Current (IFC) and Transcutaneous Electrical Nerve Stimulation (TENS).



## BIOTECHNOLOGY, PHARMA AND RELATED COMPANIES

**ACCERA, INC.**

Broomfield  
www.acerapharma.com

Commercial-stage healthcare company focused on the discovery and development of pioneering therapeutics to treat serious diseases. Accera has developed Axona, the first proprietary commercialized Alzheimer's disease therapy that address the recognized physiological hallmark and metabolic defect of hypometabolism, the brain's inability to optimally metabolize glucose.x

**ADA TECHNOLOGIES, INC.**

Littleton  
www.adatech.com

Development and commercialization of innovative technologies.

**ADVANCED REGENERATIVE THERAPIES (ART)**

Fort Collins  
www.art4dvm.com

Provides a stem cell isolation and expansion service for veterinary medicine.

**AGILENT NUCLEIC ACID SOLUTIONS**

Boulder  
www.agilent.com

Agilent Nucleic Acid Solutions develops and manufactures therapeutic oligonucleotide in a multi-product, 33,500 square foot facility.

**AGRIPRO COKER**

Berthoud  
www.agriproheat.com

Develops and delivers superior wheat seed genetics in North America.

**AKTIV-DRY**

Boulder  
www.aktiv-dry.com

Provides dry powder processing solutions for the vaccine, pharmaceutical, and biotechnology industries.

**ALBANY MOLECULAR RESEARCH, INC (AMRI)**

Denver  
www.amriglobal.com

Performs services including drug discovery, pharmaceutical development, and manufacturing of active ingredients and pharmaceutical intermediates for many of the world's leading healthcare companies.

**ALLERGAN, INC.**

Denver  
www.allergan.com

Multi-specialty health care company focused on discovering, developing and commercializing innovative pharmaceuticals, biologics, medical devices and over-the-counter consumer products

**AMERICAN ALLIED BIOCHEMICAL, INC.**

Aurora  
www.aablabs.com

Specializes in the purification and distribution of restriction endonucleases enzymes.

**AMGEN, INC.**

Boulder / Longmont  
www.amgen.com

Discovers, develops, manufactures and markets human therapeutics based on advances in cellular and molecular biology. Amgen's operations in Colorado are dedicated to the mission of assuring patient supply and creating a world-class capability for rapid commercialization, launch and transfer of bulk biopharmaceutical products. In addition to licensed manufacturing of EPOGEN, NPlate, XGEVA, Prolia and clinical therapeutics, Amgen Colorado pursues strategic contract manufacturing opportunities.

**AMIDEBIO, LLC**

Boulder  
www.amidebio.com

Focused on providing peptide and protein research reagents and clinical products for a diverse array of research and commercial targets using proprietary Biopure-Process™ technology.

**AMPIO PHARMACEUTICALS, INC.**

Denver  
ampiopharma.com

Develops innovative proprietary drugs for inflammation, eye disease, kidney disease, CNS disease, metabolic disease and male sexual dysfunction.

**ANTRIABIO**

Denver  
antriabio.com

Lead diabetes product candidate, AB101, is a once-a-week injectable basal insulin that is currently in preclinical development. AB101 is administered by subcutaneous injection and targets patients with type 1 and type 2 diabetes who require basal insulin for the control of hyperglycemia.

**ANABOLIC LABORATORIES**

Colorado Springs  
www.anaboliclabs.com

Focused line of nutritional products, with state-of-the-art pharmaceutical manufacturing facilities in California and Colorado.

**ANIMAL HEALTH OPTIONS**

Golden  
www.animalhealthoptions.com

Animal Health Options has been offering high quality antioxidants and nutritional supplements that meet or exceed industry standards and provide a noticeable benefit to dogs, cats and horses.

**APOLOGIC PHARMACEUTICALS, LLC**

Aurora  
www.apologic.com

Focused on the development and commercialization of Breceptin, a unique oncolytic drug for the treatment of a wide range of solid tumors.

**AQUATIC BIOSYSTEMS**

Fort Collins  
www.aquaticbiosystems.com

Full-service organism culturing facility specializing in the production and distribution of freshwater and marine organisms for aquatic toxicology, biomonitoring and other research activities.

**ARCA BIOPHARMA, INC.**

Broomfield, Aurora  
www.arcabiopharma.com

Specializes in developing and commercializing genetically-targeted therapies for heart failure and other cardiovascular diseases.

**ARIEL PHARMACEUTICALS**

Broomfield  
www.arielpharma.com

Clinical-stage specialty pharmaceutical company focused on acute neurology. Lead product, AP-1531, is an EP4 receptor antagonist in Phase II for acute migraine. Tamiasyn is a proprietary IV product in Phase I for hemorrhagic shock. Both products target major unmet medical needs where there is little competition.

**ARRAY BIOPHARMA**

Boulder, Longmont  
www.arraybiopharma.com

Discovers, develops and commercializes targeted small molecule drugs to treat debilitating and life-threatening diseases such as cancer.

**ATLAS BIOLOGICALS, INC.**

Fort Collins  
www.atlasbio.com

Manufacture, market and distribute animal sera and cell culture reagents

**AUROGEN**

Fort Collins  
www.aurogen.com

Produces a pharmaceutical treatment for diabetic neuropathy, with a second invention showing that neurotrophic hormones can act across the blood-brain barrier to treat various brain disorders.

**AURORA ONCOLOGY**

Aurora  
Researching DT-EGF Toxic Fusion Protein for treatment of bladder cancer.

**AVIDITY, LLC**

Aurora  
www.avidity.com  
Develops and sells molecular affinity tools for connecting molecules.

**BAROFOLD, INC.**

Aurora  
www.barofold.com  
Pressure Enabled Protein Manufacturing (PreEMT™) technology to improve the tolerability, efficacy and safety of a wide variety of protein therapeutics for bio-pharmaceutical companies, research institutions, and government agencies.

**BIORESPONSE, LLC**

Boulder

[www.bioresponse.com](http://www.bioresponse.com)

Researches, develops and commercializes dietary supplements for better absorption and functional foods.

**BIOSERVE SPACE TECHNOLOGIES**

Boulder

[www.colorado.edu/engineering/BioServe](http://www.colorado.edu/engineering/BioServe)

Researches space life science with a wide range of biotechnology applications involving animals, plants and microorganisms. Specializing in conducting microgravity life science research and designing and developing space flight hardware.

**BIOSYNTRX INC.**

Colorado Springs

[www.biosyntrx.com](http://www.biosyntrx.com)

Develops nutraceuticals to address the micronutrient needs of the dry eye, cataract, macular degeneration, glaucoma and diabetic retinopathy patient.

**BOLDER BIOTECHNOLOGY, INC.**

Boulder

[www.bolderbio.com](http://www.bolderbio.com)

Uses advanced protein engineering technologies to create proprietary human protein pharmaceuticals with enhanced therapeutic properties.

**BOULDER SCIENTIFIC COMPANY**

Mead

[www.bouldersci.com](http://www.bouldersci.com)

Provides organometallic compounds to the pharmaceutical, polymer, and specialty chemical industries.

**BROTICA**

Bellvue

[www.interval33.com](http://www.interval33.com)

Produces Interval33, a termite attractant which works by producing the precise level of CO<sub>2</sub> that has been shown to attract termites, all natural and animal safe.

**CARGILL RESEARCH**

Fort Collins

[www.cargill.com](http://www.cargill.com)

Develops, processes and markets science-based, health promoting ingredients for food and dietary supplement industries worldwide.

**CATALENT PHARMA SOLUTIONS, INC.**

Boulder

[www.catalent.com](http://www.catalent.com)

Designs, manufactures and distributes specialized medical products for fluid management of pleural effusion and ascites.

**CBL (CHEMICAL AND BIOPHARMACEUTICAL LABORATORIES)**

Boulder

[www.cblbiopharma.com](http://www.cblbiopharma.com)

Offering peptide starting materials, peptide intermediates, and industrial and commercial-scale manufacturing of proprietary and generic GMP and non-GMP peptides.

**CDARBURG HAUSER**

Denver

[www.cedarburghauser.com](http://www.cedarburghauser.com)

Full service API manufacturer of GMP materials that include small molecule APIs, adjuvants, conjugates and toll manufacturing substances.

**CELL>POINT**

Centennial

[www.cellpointweb.com](http://www.cellpointweb.com)

Develops novel radiopharmaceutical imaging agents, radiotherapeutic agents and local regional radio/chemotherapeutic drug delivery systems for the diagnosis, treatment and post therapy assessment of cancer, cardiovascular disease, infectious disease and metabolic diseases.

**CETYA THERAPEUTICS, INC.**

Fort Collins

Founded to commercialize analogs of the class I isoform selective histone deacetylase inhibitor (HDACi) largazole, targeting unmet medical needs, especially in oncology, neurodegeneration, autoimmunity, and hemoglobinopathies.

**CÉVAN INTERNATIONAL, INC.**

Longmont

[www.cevan.com](http://www.cevan.com)

Delivers vitamins, minerals and botanical extracts as well as specialty nutraceutical formulations and antioxidants.

**CHATA BIOSYSTEMS**

Fort Collins

[www.chatasolutions.com](http://www.chatasolutions.com)

Manufactures blended reagents, HPLC mobile phases, standards, buffers and dissolution media.

**CHD BIOSCIENCE, INC.**

Fort Collins

[www.chdbioscience.com](http://www.chdbioscience.com)

Developing a biocide which is a derivative of a natural molecule, is environmentally friendly ("green") and which has shown to be extremely efficacious against a broad range of pathogens including the difficult to kill MRSA and c-difficile microbes that are the source of secondary infections in hospitals and other healthcare facilities.

**CLINIMMUNE LABS**

Aurora

[www.clinimmune.com](http://www.clinimmune.com)

Comprises five laboratories to provide services to kidney, heart, lung, pancreas, and hematopoietic stem cell transplant programs around the world.

**CLOVIS ONCOLOGY, INC.**

Boulder

[www.clovisoncology.com](http://www.clovisoncology.com)

Focused on acquiring, developing and commercializing innovative anti-cancer agents in the US, Europe and additional international markets.

**COLORADO BIOLABS, INC.**

Frederick

[www.proferrin.com](http://www.proferrin.com)

Colorado Biolabs, Inc., the manufacturer of Proferrin® ES and Proferrin® Forte, was founded in 1997 with a plan to develop and market Proferrin – an oral iron supplement made from heme iron polypeptide (HIP). Our proprietary process results in an oral iron product that provides an optimal amount of HIP in a single tablet.

**COLORADO GENETICS, INC.**

Loveland

[www.coloradogenetics.com](http://www.coloradogenetics.com)

Provides livestock embryo-transfer research, artificial insemination, embryo collection, freezing and transfer, and international import and export services.

**COLORADO HISTO-PREP (CH-P)**

Fort Collins

[www.histoprep.com](http://www.histoprep.com)

Produces high quality slides, clinical chemistry and hematology data and fully integrated and detailed seamless pathology reports.

**COLORADO MICRO TECH**

Fort Collins

Focused on improving the workflow of the Anatomic Pathology laboratory of today by applying new and creative microfluidics technologies developed at Colorado State University.

**COLORADO SERUM COMPANY**

Denver

[www.colorado-serum.com](http://www.colorado-serum.com)

Supplies veterinary biologic vaccines, instruments, laboratory reagents and serums for the veterinary industry.

**CORDEN PHARMA**

Boulder

[www.cordenpharmacolorado.com](http://www.cordenpharmacolorado.com)

Corden Pharma Colorado is the small to large-scale resource for peptides manufacturing.

**CRESTONE, INC.**

Boulder

[www.crestonepharma.com](http://www.crestonepharma.com)

Drug discovery and development company focused on developing novel treatments for serious bacterial infections.

**CYTOSKELETON, INC.**

Denver

[www.cytoskeleton.com](http://www.cytoskeleton.com)

Offers kits for drug screening, signal transduction and cytoskeletal research specializing in the production of purified proteins and easy-to-use kits to study biochemical and cellular processes.

**DAVITA CLINICAL RESEARCH (DCR)**

Denver

[www.davitadclinicalresearch.com](http://www.davitadclinicalresearch.com)

Offers a complete array of early-phase study capabilities through its two state-of-the-art research facilities.

**EFFICAS, INC.**

Boulder

[www.efficas.com](http://www.efficas.com)

Develops bioactive products that offer natural relief from asthma and allergies in both humans and animals.

**ELISA TECH**

Aurora

[www.elisatech.com](http://www.elisatech.com)

Provides immunoassays for the measurement of cytokines, growth factors, and lipid inflammatory mediators.

**EVOLUTIONARY GENOMICS (EG)**

Lafayette

[www.evolgen.com](http://www.evolgen.com)

Identifies genes with a high likelihood of commercial value for downstream validation through their proprietary Adapted Traits platform.

**FLAGSHIP BIOSCIENCES**

Westminster

[www.flagshipbio.com](http://www.flagshipbio.com)

Oncology drug development and tissue analytics and pathology services.

**FLUTRENDS INTERNATIONAL CORPORATION**

Denver/Aurora

[www.flutrends.com](http://www.flutrends.com)

Biotechnology company that plans to develop and commercialize products for the prevention of influenza.

**GENE CHECK, INC.**

Greeley

[www.genecheck.com](http://www.genecheck.com)

Gene Check is a diagnostic laboratory specializing in veterinary genetics. In addition, Gene Check maintains a dynamic biotech research program, including rare DNA sequence and SNP detection.

**GENENTECH**

Denver

[www.gene.com](http://www.gene.com)

Using human genetic information to discover, develop, manufacture and commercialize medicines to treat patients with serious or life-threatening medical conditions.

**GENESIS LABORATORIES, INC.**

Wellington

[www.genesislabs.com](http://www.genesislabs.com)

Provides services to clients in the agrochemical and pharmaceutical industries, rodenticide research and development, as well as invasive species, zoonotic disease, and conservation research.

**GENETHERA, INC.**

Westminster

[www.genetheranet](http://www.genetheranet)

Develops and markets the latest molecular technologies to eradicate "cross over" diseases such as Johne's Disease, Mad Cow Disease, Chronic Wasting Disease, and E.coli. Develops assay tests and vaccines to eradicate the threat to humans of diseases transmitted up the food chain by cattle, elk and deer.

 COLORADO BIOSCIENCE ASSOCIATION MEMBER

**GONEX INC.**

Fort Collins

[www.cedusinc.com](http://www.cedusinc.com)

Dedicated to the research, development and commercialization of hormonal based health care strategies for both the human and companion animal markets including technology for sterilizing companion animals with a single injection.

**GLAXOSMITHKLINE**

Denver

[www.gsk.com](http://www.gsk.com)

Produces medicines that treat six major disease areas – asthma, virus control, infections, mental health, diabetes and digestive conditions as well as vaccines and new treatments for cancer.

**GLIACOR THERAPEUTICS LLC**

Fort Collins

Characterize the efficacy and safety of a novel series of antiinflammatory compounds to test their suitability as a new treatment for blocking the progression of Parkinson's.

**GLOBEIMMUNE, INC.**

Louisville

[www.globeimmune.com](http://www.globeimmune.com)

Discovers, develops and manufactures potent, targeted molecular immunotherapies called Tarmogens, targeted antigens that distinguish diseased cells from normal cells, for the treatment of cancer and infectious diseases.

**GREAT LAKES PHARMACEUTICALS**

Denver

[www.glypharma.com](http://www.glypharma.com)

Development leading to commercialization of innovative, effective product for prevention of catheter related microbial infections in clinical and in outpatient settings

**GREFFEX, INC./ISOGENIS, INC.**

Aurora

[www.greffex.com](http://www.greffex.com)

Develops and produces new therapeutics for immune suppression in humans to prevent transplant rejection, improve gene therapy and develop novel approaches to the treatment of autoimmune diseases.

**HAUSER LABORATORIES, DIVISION OF MICROBAC**

Boulder

[www.hauserlabs.com](http://www.hauserlabs.com)

Provides research, development, and testing to the pharmaceutical, natural products, dietary supplement, and medical device industries.

**HEMOGENIX**

Colorado Springs

[www.hemogenix.com](http://www.hemogenix.com)

Private contract research service and assay development laboratory specializing in developing predictive in vitro assay platforms for primary human and animal target cells and stem cell hemotoxicity testing.

**HEPQUANT, LLC**

Aurora

[www.hepquant.com](http://www.hepquant.com)

Designed test parameters using continuous variables that may be correlated to clinical features or may be followed over time to measure disease progression. HepQuant-E is non-invasive, uses stable (not radioactive) isotopes, and relies on natural, well-defined hepatic functions to measure the portal circulation.

**HESKA CORPORATION**

Loveland

[www.heska.com](http://www.heska.com)

Develops advanced diagnostics and specialty products for veterinary practices that focus on companion animals.

**HIBERNA CORPORATION**

Boulder

Pursuing the potential clinical application of hibernation in order to slow metabolism thereby extending survival limits in traumas that reduce oxygen to certain cells, e.g. in the heart and brain.

**HOSPIRA, INC.**

Boulder

[www.hospira.com](http://www.hospira.com)

Supplies injectable generic and specialty pharmaceuticals. The Colorado site specializes in the supply of active pharmaceutical ingredients for both internal and external markets.

**ICANDXR**

Aurora

Developing small molecules that stimulate the number and function of white blood cells.

**ICVRX**

Aurora

[www.icvr.com](http://www.icvr.com)

Drug reformulations and delivery systems targeting disorders of the central nervous system.

**imuTEK LABORATORIES, INC.**

Fort Collins

[www.imutek.com](http://www.imutek.com)

Develops and markets bovine colostrums for the nutrition and health products industry. The first manufacturer to receive an indication for colostrum for the passive transfer of antibodies (immunoglobulins) in dry powder form.

**INVIRAGEN, INC.**

Fort Collins

[www.inviragen.com](http://www.inviragen.com)

Focused on developing life-saving vaccines to protect against emerging infectious diseases worldwide. Inviragen's lead product is a vaccine to protect against dengue fever.



**INVITRIA**

Fort Collins

[www.invitria.com](http://www.invitria.com)

InVitria develops, manufactures and markets a portfolio of high performance and well defined cell culture products and reagents used in bioprocessing, biopharmaceutical formulation, stem cell & regenerative medicine, life science research and diagnostics.

**JOHNSON & JOHNSON**

Denver

[www.jnj.com](http://www.jnj.com)

Manufactures a broad selection of health care products, as well as a provider of related services, for the consumer, pharmaceutical, and medical devices and diagnostics markets.

**JHPIEGO-DENVER**

Aurora

Designing and implementing effective, low-cost technologies – first product aimed at improving the management of postpartum hemorrhage.

**KEEN INGREDIENTS, INC.**

Louisville

[www.keeningredients.com](http://www.keeningredients.com)

Develops process to de-bitter and stabilize quinoa naturally. Supplying the natural and gluten free industries with high quality Quinoa ingredients.

**KEETON INDUSTRIES, INC.**

Wellington

[www.keetonaqua.com](http://www.keetonaqua.com)

Researches and develops biological water treatment, aeration, ozone aeration, solids removal, biofiltration and other new technologies.

**KIMBALL GENETICS, INC.**

Denver

[www.kimballgenetics.com](http://www.kimballgenetics.com)

Genetic testing laboratory specializing in DNA analysis for common genetic disorders that are preventable or can be treated.

**KROMATID, INC.**

Fort Collins

[www.kromatid.com](http://www.kromatid.com)

Develops a method and kit using chromatid paints to improve detection of chromosomal inversions. The improvement is important to medical applications such as cancer and birth defects.

**LABS, INC.**

Denver

[www.labs-inc.org](http://www.labs-inc.org)

Provides laboratory testing services focused on donor eligibility determination and final product safety; infectious disease, microbiology, histocompatibility and environmental monitoring.

**LEGACY BIODESIGN, LLC**

Johnstown

[www.LegacyBioDesign.com](http://www.LegacyBioDesign.com)

Conducts peptide and protein formulation and assay development work for biopharma companies. The company also specializes in drug delivery and process development of biotechnology-based products.

**LIFE BIOSCIENCE INC.**

Longmont/Aurora

[www.lifebioscience.com](http://www.lifebioscience.com)

Develop and commercialize innovative product platforms.

**LIFETIME PHARMACEUTICALS**

Aurora

Developing several classes of small molecules that stimulate production and function of WBCs

**LOHOCLA RESEARCH CORPORATION**

Aurora

[www.lohocla.com](http://www.lohocla.com)

Research & development company that is at the forefront of discovery of medications for chronic pain, addictive and other mental health and neurological disorders.

**MACLEOD PHARMACEUTICALS, INC.**

Fort Collins

[www.macleodpharma.com](http://www.macleodpharma.com)

Develops and manufactures anti-bacterial pharmaceuticals for the veterinary industry.

**MARTEK BIOSCIENCES CORPORATION**

Boulder

[www.martek.com](http://www.martek.com)

Develops, manufactures and sells products from microalgae. Products include nutritional supplements and food ingredients which play a role in promoting mental and cardiovascular health.

**MBC PHARMA, INC.**

Aurora

[www.mbcpharma.com](http://www.mbcpharma.com)

Biopharmaceutical company focused on discovering and developing drugs for bone diseases such as cancer and osteoporosis.

**MEDIMMUNE, LLC**

Denver

[www.medimmune.com](http://www.medimmune.com)

Strives to provide better medicines to patients, new medical options for physicians, and rewarding careers to employees.

**MEDIRAL INTERNATIONAL, INC.**

Denver

[www.mediral.com](http://www.mediral.com)

Develops, manufactures and sells homeopathic pharmaceuticals taking into consideration antidotes.

**MENOGENIX**

Aurora

[www.menogenix.com](http://www.menogenix.com)

Clinical stage biotechnology company focused on the development of an approved drug, in a new indication, menopause, and the menopause-like symptoms that occur in certain breast and prostate cancer patients.

**MERCK & CO., INC.**

Denver

[www.merck.com](http://www.merck.com)

Merck and Co. produces products that cover a broad range of areas, including heart and respiratory health, infectious diseases, sun care and women's health. And they focus their research on conditions that affect millions of people around the world – diseases like Alzheimer's, diabetes and cancer – while building strengths in new areas like biologics.

**MIRAGEN THERAPEUTICS**

Boulder

[www.miragentherapeutics.com](http://www.miragentherapeutics.com)

Improves patients' lives by developing innovative microRNA (miRNA) based therapeutics for the treatment of cardiovascular and muscle disease. miRNAs, are a recently discovered class of small RNAs encoded in the genome, are short, single-stranded RNA molecules.

**MOLECULAR BIOSCIENCES, INC.**

Boulder

[www.molbio.com](http://www.molbio.com)

Manufactures products such as water soluble biotinylation reagents, vitamin derivatives, crosslinking reagents, lipophilic probes, fluorophores, radioiodination reagents, and dendritic cores for preparing oligomers.

**MONIMMUNE THERAPEUTICS**

Fort Collins

Developing a pipeline of repurposed compounds focused on monocyte regulation as vaccine adjuvants. MonImmune intends to use currently approved drugs with novel routes of administration to augment vaccine responses. This will allow an abbreviated approval strategy for MonImmune products with a minimum cash outlay when compared with de novo drug development strategies.

**MONSANTO COMPANY**

Englewood

[www.monsanto.com](http://www.monsanto.com)

Leading global provider of technology-based solutions and agricultural products that improve farm productivity and food quality. Monsanto remains focused on enabling both small-holder and large-scale farmers to produce more from their land while conserving more of our world's natural resources such as water and energy.

**MOSAIC BIOSCIENCES**

Denver/Aurora

[mosaicbio.com](http://mosaicbio.com)

Start-up company focused on the development of innovative materials for tissue regeneration and repair.

**N30 PHARMACEUTICALS, LLC**

Boulder

[www.n30pharma.com](http://www.n30pharma.com)

Drugs target nitric oxide reductase (NOR), the most important of which is s-nitrosoglutathione reductase (GSNOR) an enzyme of central importance in human health and disease.

**NANOLY BIOSCIENCE, INC.**

Denver

[www.nanoly.info](http://www.nanoly.info)

Developing a safe and proprietary polymer encapsulation to stabilize and protect therapeutic biological molecules, such as vaccines and enzymes, from below freezing to beyond tropical room temperatures.

**NANOTRANS TECHNOLOGIES**

Aurora

Early-stage company focused on developing a novel ophthalmic drug delivery platform that will topically deliver drug therapies to both the front and back of the eye.

**NEX STEP, INC.**

Lakewood

[www.nexstepcorp.com](http://www.nexstepcorp.com)

Pharmacogenomic Decision Support Solutions.

**NOVARTIS PHARMACEUTICALS CORPORATION**

Broomfield

[www.novartis.com](http://www.novartis.com)

Researches and develops products to protect and improve health and well-being with core businesses in pharmaceuticals, vaccines, consumer health, generics, eye care and animal health.

**NOVUS BIOLOGICALS, INC.**

Littleton

[www.novusbio.com](http://www.novusbio.com)

Develops, tests and markets antibodies for research of human diseases such as cancer, cardiovascular and neurological disorders.

**OBERON FMR**

Aurora

[www.oberonfmr.com](http://www.oberonfmr.com)

Early stage company with proprietary technology capable of producing a cost-effective, sustainably produced protein meal. Oberon's product serves as a fish meal replacement (FMR) or additive ingredient for animal feeds, primarily those destined for the aquaculture industry.

**OMNI BIO PHARMACEUTICAL, INC.**

Greenwood Village

[www.omnibiopharma.com](http://www.omnibiopharma.com)

Advancing broad-spectrum therapeutics targeting bacterial and viral diseases, biohazards, diabetes and transplant rejection.

**ONCOTHERIX**

Aurora

[www.oncotherix.com](http://www.oncotherix.com)

Clinical stage oncology company focused on the development of InCell-RT (Intracellular radiotherapy) for the treatment of locally-advanced cancers (LACs). InCell-RT is a unique, DNA-ligated, nanometer-scale intracellular radiotherapy with the potential to selectively kill cancer cells without causing damage to surrounding healthy tissue and without the development of treatment resistance.

**ONKURE, INC.**

Longmont

Exploring a highly potent and selective HDAC inhibitor as an anti-tumor drug.

**OPX BIOECHOLOGIES**

Boulder

[www.opxbiotechnologies.com](http://www.opxbiotechnologies.com)

Technology platform enables rapid, rational, and robust optimization of microbes and bioprocesses to manufacture bioproducts with equivalent performance and improved sustainability at lower cost compared to petroleum-based alternatives.

**PAMBEC LABORATORIES, INC.**

Loveland

Researches drug discoveries in the field of AIDS.

**PEAK ANALYTICAL, INC.**

Golden

[www.peaklab.net](http://www.peaklab.net)

Specializes in materials and chemical analysis. Performs a variety of molecular and atomic level spectroscopic techniques to identify failures and defects.

**PEPTIVIR**

Aurora

[peptivir.com](http://peptivir.com)

PeptiVir is an early stage biopharmaceutical company focused on the development and commercialization of a conformationally-constrained, synthetic peptide-based vaccine platform for the prevention of viral diseases.

**PFIZER PHARMACEUTICAL COMPANY**

Centennial

[www.pfizer.com](http://www.pfizer.com)

Discovers, develops, manufactures, and markets prescription medicines for humans and animals.

**PHOSPHOSOLUTIONS, LLC**

Aurora

[www.phosphosolutions.com](http://www.phosphosolutions.com)

Designs and produces phosphoproteins solutions using phosphor-specific antibodies. Phosphoproteins are thought to be critical elements in neurological diseases such as Alzheimer's and in cancer.

**PISCES MOLECULAR**

Boulder

[www.pisces-molecular.com](http://www.pisces-molecular.com)

Focused on applying molecular genetics technology to problems of fisheries and aquatic conservation biology.

**PLURA BIOSCIENCES INC**

Lafayette

[www.plurabioscience.com](http://www.plurabioscience.com)

Specialized catalysts and chemicals that enable highly efficient, cost effective and green chemistry solutions in the manufacture of important life science products.

**QGENTA**

Aurora

Harnessing innovative chemistry and biology in the development of molecular targeted agents for the treatment of cancer.

**QUARK PHARMACEUTICALS, INC.**

Boulder

[www.quarkpharma.com](http://www.quarkpharma.com)

Discovers and develops siRNA drug candidates for treating Age-related Macular Degeneration and prevention of Acute Renal Failure.

**QUICKSILVER SCIENTIFIC**

Lafayette

[www.quicksilverscientific.com](http://www.quicksilverscientific.com)

Clinical and environmental mercury lab and dietary supplement manufacturing.

**RAPID SCIENTIFIC SOLUTIONS, LLC**

Golden

[www.rapid-scientific.com](http://www.rapid-scientific.com)

Premier pharmaceutical chemistry development organization supporting the pharmaceutical and biotechnology industries.

**REGENERATIVE SCIENCES INC.**

Broomfield

[www.regenexx.com](http://www.regenexx.com)

Advances stem cell therapies through development of Regenexx™, an injection procedure to treat a wide variety of painful conditions.

**ROCHE CUSTOM BIOTECH**

Indianapolis, IN

[www.roche-applied-science.com](http://www.roche-applied-science.com)

Customize and supply reagents, products and services, customized to the quality and regulatory needs of the customer.

**ROCKY MOUNTAIN BIOSYSTEMS, INC.**

Wheat Ridge

Research and development of transdermal pharmaceuticals and delivery systems, cosmetic devices, and tissue adhesives.

**ROCKY MOUNTAIN DIAGNOSTICS, INC.**

Colorado Springs

[www.rmdiagnosics.com](http://www.rmdiagnosics.com)

Provides immunodiagnostic assays and reagents for biogenic amines, research reagents, a CLIA certified reference laboratory and contract manufacturing services.

**ROCKY MOUNTAIN INSTRUMENTAL LABORATORIES**

Fort Collins

[www.rockylab.com](http://www.rockylab.com)

Provides contract chromatographic and mass spectrometric analysis of pharmaceuticals (both traditional drugs and biotechnology products, such as proteins and peptides and oligonucleotides), veterinary and human endocrinology, and forensic toxicology.

**ROCKY MOUNTAIN REAGENTS, INC.**

Golden

[www.rmreagents.com](http://www.rmreagents.com)

Manufactures stains, culture media and chemistry solutions for the medical industry, as well as titration reagents, indicators, acids, bases, and a variety of chemicals for industrial uses.

**RST BIOSCIENCE LLC**

Aurora

Develop and commercialize assay system to monitor astronauts for viral infection during space flight.

**SAIGENE BIOTECH INC.**

Denver

Developing testing processes to identify harmful algae blooms.

**SANDOZ**

Broomfield

[www.us.sandoz.com](http://www.us.sandoz.com)

Focuses on pharmaceuticals, consumer health, generics, eye care and animal health. Therapeutic categories include anti-infectives, anti-arthritis, cardiovasculars, gastrointestinal agents & psychotherapeutics.

**SIVA THERAPEUTICS INC**

Boulder

[www.sivatherapeutics.com](http://www.sivatherapeutics.com)

Commercialize a proprietary therapeutic device technology, based on gold nanorods, that can be used both independently, and also in conjunction with existing and new cancer drugs.

**STA LABORATORIES, INC.**

Longmont

[www.stalabs.com](http://www.stalabs.com)

Agricultural product testing laboratory that offers seed quality, genomics, plant health and diagnostic services and products.

**SUMMIT PLANT LABORATORIES, INC.**

Fort Collins

[www.plantlabs.com](http://www.plantlabs.com)

Applies laboratory plant cloning and greenhouse technologies to produce planting stocks for breeders, greenhouses, and field crop producers.

**SUVICA, INC.**

Boulder

[www.suvica.com](http://www.suvica.com)

Discovery and development of small molecules for the treatment of cancer.

**TAIGA BIOTECHNOLOGIES, INC.**

Aurora

[www.taigabiotech.com](http://www.taigabiotech.com)

Develops cellular, biologic and small molecule approaches to treat hematological diseases, including cancers, immunodeficiencies and autoimmune conditions.

**THERMO FISHER SCIENTIFIC**

Lafayette

[www.thermofisher.com](http://www.thermofisher.com)

Scientific leadership and innovation in RNAi, Gene Expression, qPCR/PCR Detection, and Molecular Biology technologies come together with the Thermo Scientific Dharmacon, Open Biosystems, ABgene, Finnzymes, and Fermentas product lines to provide world-leading solutions for gene analysis.

**TOLMAR, INC.**

Fort Collins

[www.tolmar.com](http://www.tolmar.com)

Develops and manufactures both proprietary and generic pharmaceutical products with specific focus in therapeutic areas of dental, dermatology, and oncology.

**UBPBIO**

Aurora

Manufactures and sells bioreagents related to the ubiquitin-proteasome pathway.

**UCB, INC.**

Brussels, Belgium

[www.ucb.com](http://www.ucb.com)

Global biopharma focused on severe diseases with operations in about 40 countries .

**UPSHER-SMITH LABORATORIES, INC.**

Denver

[www.upsheer-smith.com](http://www.upsheer-smith.com)

Develops, manufactures and markets a vast range of prescription and over-the-counter products for cardiology, dermatology, women's health and other areas.

**VENAXIS INC.**

Castle Rock

[www.venaxis.com](http://www.venaxis.com)

Primarily focused on advancing towards commercialization, our recently patented blood-based human diagnostic test, AppyScore™ to aid in the diagnosis of human appendicitis and several novel reproduction drugs for use in high value animals.

**VENTRIA BIOSCIENCE**

Fort Collins

[www.ventria.com](http://www.ventria.com)

Develops a protein expression technology platform called ExpressTec with a product pipeline in human nutrition and therapeutics.

**VENTRUS BIOSCIENCES, INC.**

Greenwood Village

[www.ventrusbio.com](http://www.ventrusbio.com)

A specialty pharmaceutical company focused on the late-stage development and commercialization of gastroenterology products.

**VERDANT BIOSCIENCES CORPORATION**

Denver

[www.verdantbio.com](http://www.verdantbio.com)

Develops plant biochemical regulators that provide superior plant performance and unlock the productive power of plants in markets from floriculture to industrial agriculture.

**VIROCYT, LLC**

Denver

[www.virocyt.com](http://www.virocyt.com)

Focused on the commercialization of novel technologies that enable rapid quantification of viruses, such as the Virus Counter 2100

**VETDC**

Fort Collins

[www.vet-dc.com](http://www.vet-dc.com)

Focused on development of novel devices, diagnostics and therapeutics for emerging veterinary markets.

**VITRO DIAGNOSTICS, INC.**

Golden

[www.vitrodiag.com](http://www.vitrodiag.com)

Develops and commercializes products derived from human cell line research with a focus predominantly in stem cell R&D related to numerous diseases such as heart disease, stroke, Parkinson's and Alzheimer's disease.





**VITROLIFE, INC.**

Englewood

[www.vitrolife.com](http://www.vitrolife.com)

Develops, manufactures and sells products and systems for the preparation, cultivation and storage of human cells, tissue and organs. Product areas include fertility, transplantation and stem cell cultivation.

**VITRO BIOPHARMA**

Golden

[www.vitrobiopharma.com](http://www.vitrobiopharma.com)

Owens US patents for production of FSH, immortalization of pituitary cells, and a cell line that produces beta islets for use in treatment of diabetes. Vitro also owns a pending international patent for generation of pluripotent stem cells.

**VIVALDI BIOSCIENCES**

Fort Collins

[www.vivaldibiosciences.com](http://www.vivaldibiosciences.com)

Developing advanced vaccines for prevention of common seasonal influenza ("flu") and emergent pandemic flu.

**VRL LABORATORIES**

Centennial

[www.vrl.net](http://www.vrl.net)

Laboratory offers full service regulated donor eligibility testing for the human cell and tissue community.

**WARREN ANALYTICAL LABORATORY**

Greeley

[www.warrenlab.com](http://www.warrenlab.com)

Specializes in food microbiology, molecular biology, food chemistry, residue chemistry and nutritional labeling.

**WESTERN STATES BIOPHARMACEUTICALS, INC.**

Aurora

[www.westernstatesbiopharm.com](http://www.westernstatesbiopharm.com)

Novel anti-inflammatory therapeutics for autoimmune diseases

**WILDLIFE PHARMACEUTICALS, INC.**

Fort Collins

[www.wildpharm.com](http://www.wildpharm.com)

Providing pharmaceuticals for the safe and humane care of non-domestic and exotic wildlife species.

**YEWSAVIN, INC.**

Fort Collins

[www.ajorganica.com](http://www.ajorganica.com)

Develops chemical and biochemical technologies. Successfully finished multi-step syntheses using Bromination, Grignard reaction, Suzuki coupling, Amidation, and Esterification reactions.

**ZEOPONIX, INC.**

Boulder

[www.zeoponix.com](http://www.zeoponix.com)

Develops NASA originated technology to produce a soil amendment/fertilizer zeoponic material that utilizes nutrients more efficiently and reduces nutrient leaching into the environment.

## BIOFUELS AND RELATED COMPANIES

**A1 ORGANICS**

Eaton

[www.a1organics.com](http://www.a1organics.com)

Composts and recycles organic by-products from various waste: yard trimmings, wood, biocides, agricultural by-products, manure, brewery by-products, construction debris and food residuals.

**AEROPHASE, INC.**

Longmont

[www.aerophase.com](http://www.aerophase.com)

Research and Development of technologies that reduce environmental impact, and efficient extraction system for biodiesel

**BBI INTERNATIONAL**

Lakewood

[www.bbibiobiofuels.com](http://www.bbibiobiofuels.com)

Offers consulting services, including feasibility studies, market analyses, site & resource assessments, economic impact studies, business plans, industry benchmarking and industry surveys to the biofuels sector.

**THE BIOCER GROUP OF COMPANIES**

Englewood

Emerging group of companies in Agriculture, Forestry, and Biotechnology space. The group has developed its own novel mechanism of multibillion dollar financing and is now prepared to launch a series of emerging bioscience companies.

**BIOFUEL ENERGY CORPORATION**

Denver

[www.bfenergy.com](http://www.bfenergy.com)

Constructs large scale ethanol production facilities in cooperation with Cargill and owns and operates two of the largest dry mill ethanol facilities in the United States.

**BIOLYNCEUS BIOLOGICAL SOLUTIONS**

Estes Park

[www.biolynceusturf.com](http://www.biolynceusturf.com)

Working to help local governments, businesses and citizens to use environmentally safe alternatives to harsh toxic chemicals. Our Biological Solutions renew the natural ecological system with biologically sound products that do not contaminate soil or water resources.

**BIOMASS ENERGY FOUNDATION (BEF)**

Franktown

[biomassenergyfndn.org](http://biomassenergyfndn.org)

Researches alternative fuels such as dried fruit pits, vegetable oil, wood, coffee grounds and the methods to produce biofuels.

**BIOVANTAGE RESOURCES, INC.**

Golden

[www.biovantageresources.com](http://www.biovantageresources.com)

Delivers algae-based bioremediation solutions for municipal, industrial and agricultural wastewater treatment.

**CARBO ANALYTICS, LLC.**

Fort Collins

[www.carboanalytics.com](http://www.carboanalytics.com)

Commercial development of an online sugar monitor with immediate application for more cost effective biofuels production. Colorado Center for Biorefining and

**COLORADO CENTER FOR BIOREFINING AND BIOFUELS (C2B2)**

Boulder

[www.c2b2web.org](http://www.c2b2web.org)

A cooperative research and educational center devoted to the conversion of biomass to fuels and other products. Works to establish groundbreaking research and educational programs for the advancement of renewable energy technologies.

**CIRIS ENERGY, INC.**

Centennial

[www.crisenergy.com](http://www.crisenergy.com)

Start-up company developing a unique biotechnology for the conversion of fossil sources of carbon such as low rank coals to natural gas and valuable chemicals.

**COMMUNITY POWER CORPORATION**

Littleton

[www.gocpc.com](http://www.gocpc.com)

Develops, commercializes and markets modular biopower systems to meet the needs of distributed energy consumers in both developing and developed countries.

**FRONT RANGE ENERGY, LLC**

Windsor

[www.frontrangeenergy.com](http://www.frontrangeenergy.com)

Ethanol producer since 2006. Will process approx. 40 million gallons of ethanol and 396,000 tons of wet distillers' grain annually.

**GEOSYNFUELS, LLC**

Golden

[www.geosynfuels.com](http://www.geosynfuels.com)

Develops a low-cost method to convert cellulosic biomass into fuel. The technology uses biological mechanisms set in a solid-state fermenter ("SSF") to convert the biomass into ethanol and/or methane.

**GEVO, INC.**

Englewood

[www.gevo.com](http://www.gevo.com)

Develops advanced biofuels like isobutanol, butanol that will provide a sustainable path to the replacement of petrochemicals like gasoline, diesel and jet fuel.

**INTERMOUNTAIN CHP CENTER**

Boulder

[www.intermountainCHP.org](http://www.intermountainCHP.org)

Formed by the U.S. Department of Energy to increase adoption of Combined heat and power (CHP) in the states of Arizona, Colorado, New Mexico, Utah, and Wyoming.

**LUCA TECHNOLOGIES, INC.**

Golden

[www.lucatechnologies.com](http://www.lucatechnologies.com)

Researches the ability of naturally occurring microorganisms to convert under-utilized domestic oil, organic-rich shale and coal resources to clean, renewable energy.

**NOVO ENERGY LLC**

Fort Collins

[www.novoenergyllc.com](http://www.novoenergyllc.com)

Colorado-based renewable energy company that provides state-of-the-art technology, equipment, and project support services for the renewable energy and solid waste disposal industries.

**NUEMANN SYSTEMS GROUP**

Colorado Springs

[www.neumannsystemsgroup.com](http://www.neumannsystemsgroup.com)

Research, technology and product development focused on product prototyping of gas-liquid contactor systems for chemical processing and emissions control.

**POLYNEW, INC.**

Golden/Aurora

[www.polynewinc.com](http://www.polynewinc.com)

Developed a new class of PLA bioplastics which it terms "ecobionanocomposites." These are nanocomposites from 100% renewable resources that could be used in a wide variety of applications including medical device applications.

**POWER ECALENE FUELS, INC.**

Arvada

[powerecalene.com](http://powerecalene.com)

Exclusive licensor of a patented nano-catalyst technology that efficiently converts "syngas" or "producer gas" into a premium mixed alcohol transportation fuel called Ecalene™. Ecalene™ is usable as a stand-alone fuel for cars, trucks, buses, jet aircraft and boats.

**PUREVISION TECHNOLOGY, INC.**

Fort Lupton

[www.purevisiontechnology.com](http://www.purevisiontechnology.com)

Develops a carbon-neutral biomass fractionation technology that converts cellulosic biomass into sugars, energy and fiber that are bio-based raw materials to make many industrial and consumer products.

**SOLIX BIOFUELS, INC.**

Fort Collins

[www.solixbiofuels.com](http://www.solixbiofuels.com)

Develops massively scaleable photo-bioreactors for the production of biodiesel and other valuable bio-commodities from algae oil.

**STERLING ETHANOL, LLC**

Sterling

[www.sterlingethanol.com](http://www.sterlingethanol.com)

Produces 42 million gallons of ethanol annually, using the distiller's grain produced as a co-product of ethanol to the areas cattle feeders for its high protein levels.

**SUNDROP FUELS, INC.**

Louisville

[www.sundropfuels.com](http://www.sundropfuels.com)

A solar gasification-based renewable energy company.

**ZEACHEM**

Lakewood

[www.zeachem.com](http://www.zeachem.com)

Developed a cellulose-based biorefinery platform capable of producing third-generation ethanol fuel and intermediate chemicals. Our indirect approach leapfrogs the yield and carbon dioxide (CO<sub>2</sub>) problems associated with traditional and cellulosic based ethanol processes.

## RESEARCH AND EDUCATION INSTITUTIONS

**ADVANCED DIAGNOSTIC LABORATORIES (ADX) AT NATIONAL JEWISH HEALTH**

Denver

[www.njilabs.org](http://www.njilabs.org)

National Jewish Health is known worldwide for treatment of patients with respiratory, cardiac, immune and related disorders, and for groundbreaking medical research. The Advanced Diagnostic Laboratories provide innovative services within the extraordinary clinical and research environment of National Jewish Health. Leveraging our expertise in both laboratory medicine and personalized medicine, we offer an ever-expanding menu of diagnostic tests, as well as contract research services. Our laboratories are CAP and CLIA certified, and have earned the prestigious CAP 15189 accreditation.

**BIOFRONTIERS INSTITUTE**

Boulder

[biofrontiers.colorado.edu](http://biofrontiers.colorado.edu)

State-of-the art research and education facility that links the basic sciences, engineering, clinical practice, and industry at the University of Colorado's Boulder campus.

**BIOLOGICAL SCIENCES CURRICULUM STUDY (BSCS)**

Colorado Springs

[www.bsccs.org](http://www.bsccs.org)

A nonprofit corporation that endeavors to improve all students' understanding of science and technology by developing exemplary curricular materials, supporting their widespread and effective use, providing professional development, and conducting research and evaluation studies.

**BONFILS BLOOD CENTER**

Denver

[www.bonfils.org](http://www.bonfils.org)

One of the nation's leading community blood centers through their commitment to quality service, innovation, research and technology. They offer a full range of blood products and services to healthcare partners including supplying rare blood units or helping to determine the best cross-matched unit to endure the best possible patient outcomes.

**CENTERS FOR DISEASE CONTROL AND PREVENTION / DIVISION OF VECTOR-BORNE INFECTIOUS DISEASE**

Fort Collins

[www.cdc.gov/ncidod/dvbid](http://www.cdc.gov/ncidod/dvbid)

The Division of Vector-Borne Infectious Diseases (DVBD) is part of the U.S. Centers for Disease Control and Prevention (CDC). CDC is the lead federal agency for protecting the health and safety of people at home and abroad. DVBD serves as a national and international reference center for vector-borne viral and bacterial diseases, such as West Nile virus, Lyme disease, plague, tularemia, yellow fever and dengue. It coordinates national disease monitoring activities, conducts field and laboratory research, responds to epidemic situations, develops strategies for disease prevention and control, provides diagnostic reference and epidemiologic consultation, and conducts technical assistance and professional training activities.



**CHILDREN'S HOSPITAL COLORADO**

Aurora

[www.childrenscolorado.org](http://www.childrenscolorado.org)

Children's Hospital Colorado has been ranked for more than a decade as one of the best children's hospitals nationally in U.S. News & World Report, and as the consistent choice eight years in a row by area physicians for the care of their loved ones. Founded in 1908, Children's Colorado is a private, not-for-profit pediatric health-care network dedicated 100 percent to caring for kids. With 1,130 pediatric specialists and more than 2,300 full-time employees, Children's Colorado is home to a number of nationally and internationally recognized medical programs.

**COLORADO CENTER FOR DRUG DISCOVERY (C2D2)**

Fort Collins

[c2d2.org](http://c2d2.org)

A non-profit organization funded through the State of Colorado. The organization promotes drug discovery research with Colorado through a combination of funding, medicinal chemistry and modeling expertise.

**COLORADO SCHOOL OF MINES**

Golden

[www.mines.edu](http://www.mines.edu)

A public research university internationally recognized for its leadership in engineering, applied science and related disciplines, with a special emphasis on the Earth and its resources. These programs, with strong interdisciplinary linkages across the campus, have led to the integration of bioscience and biotechnology into educational and scholarly activities. CSM has created a Bioengineering and Life Science Program that draws upon faculty and students from all of the academic units.

**COLORADO STATE UNIVERSITY**

Fort Collins, Pueblo

[www.colostate.edu](http://www.colostate.edu)

As one of the nation's leading research universities, Colorado State University is committed to realizing its vision as a 21st century land-grant university. CSU leads the world in such areas as infectious disease research, atmospheric science and environmental science. Its faculty members are tackling such issues as the reemergence of tuberculosis, the brown cloud of air pollution in Asian cities, severe weather forecasting, nutrition and wellness, and bioterrorism. In addition to its excellent programs in those areas, CSU offers among the very best professional programs in the United States in areas like veterinary medicine, occupational therapy, journalism, agriculture and construction management. Its programs in the arts, humanities and social sciences are also outstanding.

**CSU RESEARCH INNOVATION CENTER**

Fort Collins

[csuric.org](http://csuric.org)

The Research Innovation Center (RIC) serves as a vehicle to perform collaborative translational-stage research with CSU's life sciences community of researchers, giving it the promise to become the birthplace of medical breakthroughs.

**COMMUNITY COLLEGE OF AURORA (CCA)**

Aurora

[www.ccaurora.edu](http://www.ccaurora.edu)

CCA provides lifelong educational opportunities, prepares the current and future workforce, and promotes excellence in teaching, learning and service. CCA offers a unique Biotechnology Technician Research and Development Certificate designed to train highly skilled lab personnel for the biotech industry.

**COLORADO INSTITUTE FOR DRUG, DEVICE AND DIAGNOSTIC DEVELOPMENT (CID4)**

Aurora

[www.cid4.com](http://www.cid4.com)

CID4 provides management expertise to efficiently transform emerging life science technologies into commercial successes. We do this by identifying and funding potential opportunities, and by utilizing an advanced leadership team to ensure speed to market, putting new products and services to work where they are needed.

**DENVER BOTANIC GARDENS**

Denver

[www.botanicgardens.org](http://www.botanicgardens.org)

One of the top-ranked botanical gardens in the US, Denver Botanic Gardens offers spectacular plant displays and unlimited opportunities for lifelong learning.

**DENVER MUSEUM OF NATURE AND SCIENCE**

Denver

[www.dmns.org](http://www.dmns.org)

The Denver Museum of Nature & Science is the Rocky Mountain region's leading resource for informal science education. A variety of exhibitions, programs, and activities help Museum visitors experience the natural wonders of Colorado, Earth, and the universe.





**DENVER SCHOOL OF SCIENCE AND TECHNOLOGY**

Denver

[www.dsstpublicschools.org](http://www.dsstpublicschools.org)

DSST Public Schools transforms urban public education by eliminating educational inequity and preparing all students for success in college and the 21st century. By creating a powerful learning community centered on core values and a shared commitment to academic excellence, DSST will double the number of college ready graduates in the Denver Public School system by 2020. Over the past decade, DSST has become one of the leading open enrollment STEM schools (Science, Technology, Engineering and Mathematics) in the U.S. and has become a destination for educators nationwide.

**DENVER RESEARCH INSTITUTE**

Denver

[denver-research.org](http://denver-research.org)

Denver Research Institute (DRI), founded in 1997, serves as the non-profit organization affiliated with the VA Eastern Colorado Health Care System. It is dedicated to research and its associated educational and scientific endeavors.

**FRONT RANGE COMMUNITY COLLEGE**

Brighton, Fort Collins, Longmont and Westminster

[www.frontrange.edu](http://www.frontrange.edu)

Front Range Community College, Colorado's largest community college, provides instruction, in both general education and occupational areas, which may lead to a certificate, an associate degree, or transfer to a four-year institution. The college also provides college preparatory education, non-credit instruction for personal and professional development, and workplace skill development. With campuses located in Fort Collins, Longmont and Westminster, the college is proud of its many partnerships to provide quality programs that are responsive to the needs of its local communities.

**KEYSTONE SYMPOSIA ON MOLECULAR AND CELLULAR BIOLOGY**

Silverthorne

[www.keystonesymposia.org](http://www.keystonesymposia.org)

A non-profit organization that serves as a catalyst for the advancement of biomedical and life sciences by connecting scientists within and across disciplines at conferences and workshops held at venues that create an environment conducive to information exchange, generation of new ideas, and acceleration of applications that benefit society.

**NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)**

Boulder

[www.nist.gov](http://www.nist.gov)

NIST is a non-regulatory federal agency that operates eight different science and advanced technology research divisions in Colorado. NIST's list of research accomplishments includes a NIST senior scientist winning the Nobel Prize in 2001 for creating the world's first "Bose-Einstein condensate." In 2003 another NIST scientist won a MacArthur Fellowship for discovering a new quantum gas and was named by Science as one of the top ten scientific advances of the year.

**NATIONAL JEWISH HEALTH**

Denver

[www.njhealth.org](http://www.njhealth.org)

National Jewish Health, the nation's #1 respiratory hospital in the US, attracts thousands of adult and pediatric patients each year who come to us to team up with our expert physicians and researchers and seek treatment for respiratory, cardiac, immune and related conditions. National Jewish Health is also one of the most influential independent biomedical research centers in the world. More than 100 faculty members conduct basic, translational, and clinical research in immunology, respiratory medicine, allergy, cancer, and cell and molecular biology. National Jewish Health ranks among the top ten percent of all institutions for NIH support and for the impact of its research papers in the fields of Molecular Biology, Genetics, and Biology and Biochemistry.

**NATIONAL RENEWABLE ENERGY LABORATORY**

Golden

[www.nrel.gov](http://www.nrel.gov)

The nation's primary laboratory for renewable energy and energy efficiency research and development (R&D). NREL's mission and strategy are focused on advancing the U.S. Department of Energy's and our nation's energy goals. NREL's R&D areas of expertise are: renewable electricity (solar, wind, biomass, geothermal), renewable fuels (biomass, hydrogen), integrated energy system engineering and testing (buildings, electric systems and transportation infrastructures), and strategic development and analysis (economic, financial, and market analysis, planning and portfolio prioritization).

**REGIS UNIVERSITY**

Denver

[www.regis.edu](http://www.regis.edu)

The School of Pharmacy aspires to be the foremost school of pharmacy in the United States where students are nurtured and developed to become leaders in pharmacy practice, research, education, and public service. As a result, students graduate as professionals who are knowledgeable, skillful, and principled, and who are able to make a positive impact on the dramatically changing role of pharmacists in our transforming society. They are educated to be committed to excellence in healthcare, evidenced not only by their knowledge and abilities, but also by their quality of care, integrity, compassion, respect, advocacy, initiative, service and leadership. To achieve these goals, faculty members are dedicated to providing innovative practice models, exploring novel applications of basic and clinical research, and illustrating the value of lifelong learning.

**ROCKY MOUNTAIN INNOSPHERE**

Fort Collins

[www.rmi2.org](http://www.rmi2.org)

At Rocky Mountain Innosphere (RMI), we are helping new clean energy, technology and scientific startup companies turn their great ideas into great businesses. These businesses, in turn, create high wage job opportunities for the community and fuel the growth of the industries of the future.

**ROSE MEDICAL CENTER**

Denver

[www.rosemed.com](http://www.rosemed.com)

Has earned a reputation as Denver's "Baby Hospital" while becoming a leader in comprehensive women's services, internal medicine, endoscopy, heart and vascular care, orthopedics and total joint replacement, bariatric surgery, sports medicine and aesthetic surgery.

**ROCKY VISTA UNIVERSITY COLLEGE OF OSTEOPATHIC MEDICINE (RVUCOM)**

Parker

[www.rockyvistauniversity.org](http://www.rockyvistauniversity.org)

Rocky Vista University College of Osteopathic Medicine (RVUCOM) is one of the newest of the 28 colleges of osteopathic medicine currently established or in development in the United States. With five departments – biomedical sciences, structural medicine, primary care, Osteopathic Principles and Practices, Specialty Medicine and Medical Informatics the faculty and staff of RVUCOM are committed to osteopathic philosophy and heritage, and to advancing the science and the art of the practice of osteopathic medicine.

**SCIENTIFIC EDUCATION & RESEARCH INSTITUTE (SERI)**

Thornton

[www.theseri.com](http://www.theseri.com)

SERI is a unique institute, which combines an orthopedic clinic, specializing in spine surgery, with a clinical research unit and an education and training program. Our facility has available to rent an amphitheater with full AV setup for presentations, as well as a bioskills lab with cadaveric dissection capabilities. We host a variety of educational programs including summer science camps. Additionally we host a large number of training programs sponsored by surgical and medical companies.

**SWEDISH MEDICAL CENTER**

Englewood

[www.swedishhospital.com](http://www.swedishhospital.com)

Level I Trauma Center, serves as the region's referral center for neurotrauma and is a recognized leader in the treatment of stroke. An acute care hospital with 368 licensed beds.

**UNITED STATES GEOLOGICAL SURVEY (USGS) - CENTER FOR BIOLOGICAL INFORMATICS**

Denver

[biology.usgs.gov/cbi](http://biology.usgs.gov/cbi)

The Center for Biological Informatics, at the Denver Federal Center, operates the national Biological Information Infrastructure (NBII). This is the first comprehensive electronic gateway dedicated exclusively to biological science data and information from sources throughout the world.

**UNIVERSITY OF COLORADO**

Boulder, Denver, Aurora, Colorado Springs

[www.cu.edu](http://www.cu.edu)

The University of Colorado System's 52,000 students and 28,000 faculty and staff contribute to every facet of life in Colorado. The state's economic vitality, educated workforce, entrepreneurial climate, cultural capital, health care delivery, and scientific explorations all rely on the driving force of a vigorous state university. By working with other CU academic and research units, as well as local, state, and federal funding agencies, commercial business, and nonprofit organizations, CU is creating a collaborative synergy in important areas that will better the wellness of society. The CU Institute of Bioenergetics, the Colorado Initiative in Molecular Biotechnology, the Center for Computational Biology, and the Center for Pharmaceutical Biotechnology attract intellectual strength to Colorado, provide new educational opportunities, and inspire innovative health care advances. Research and teaching hospitals affiliated with the University of Colorado include: The University of Colorado Hospital, The Children's Hospital, National Jewish Medical and Research Center, Denver Health and the VA Medical Center.

**UNIVERSITY OF COLORADO CANCER CENTER FUND**

Denver

[www.amc.org](http://www.amc.org)

AMC Cancer Research Center, is dedicated to raising awareness and funds for the University of Colorado Cancer Center to support its outstanding programs in cancer prevention, care, education, research and service to the nation. The University of Colorado Cancer Center is the only National Cancer Institute-designated Comprehensive Cancer Center in the Rocky Mountain Region, one of only 40 in the country.

**UNIVERSITY OF COLORADO HEALTH**

Loveland, Fort Collins

[www.pvhs.org](http://www.pvhs.org)

Poudre Valley Health System (PVHS) and the University of Colorado Hospital (UCH) finalized a joint operating agreement in early 2012 that creates a health system its leaders say will widen health care services and provide unparalleled patient care in the Rocky Mountain region. Called University of Colorado Health, the new system combines one of the top-performing community health systems in the nation with the highest-ranked academic medical center in quality in the country. With annual net revenue of \$1.5 billion, it will be one of the region's largest locally-owned health systems and, with nearly 10,000 employees, one of Colorado's largest employers.

**UNIVERSITY OF DENVER**

Denver

[www.du.edu](http://www.du.edu)

Strives to provide the most modern educational and research facilities in the life sciences. Their history spans the Denver Research Institute's development of the first NASA life monitoring sensors, the establishment of a state-of-the-art forensics laboratory, to the 2003 acquisition of the Eleanor Roosevelt Institute with pioneering efforts in genomics and bioinformatics. In 2004, the School of Engineering and Computer Science unveiled Colorado's first undergraduate program in Bioinformatics and a master's degree in Bioengineering. The interdisciplinary mission of the University enabled the Department of Biology to launch new emphases in Bioengineering, Biophysics and Cognitive Neuroscience designed for molecular biology majors. In addition to strong and quality curricula, bioengineering and life sciences at DU carry multimillion-dollar-a-year research studies in the creation of new knowledge and leading edge biotechnologies to improve quality of life for a worldwide community.

**UNIVERSITY OF NORTHERN COLORADO**

Greeley

[www.unco.edu](http://www.unco.edu)

University of Northern Colorado (UNC) is a multipurpose institution with a wide range of graduate and undergraduate programs. The university's mission is to prepare individuals for advanced study, professional careers, and positions of leadership.

**WORK, EDUCATION AND LIFELONG LEARNING SIMULATION (WELLS) CENTER**

Aurora

[www.wellssimulationcenter.org](http://www.wellssimulationcenter.org)

For the first time in Colorado, one facility offers a complete array of state-of-the-art patient simulation tools for building clinical knowledge. Even more exciting, high-speed datacasting technology makes this unique resource available remotely. Students, faculty and practicing nurses and physicians from throughout Colorado can enhance their diagnostic and clinical skills at the WELLS Center either on-site or on-line. Housed in the new Bioscience East building at Fitzsimons, the WELLS Center represents a unique collaboration among educators, providers and policymakers.

**MEMBER FOUNDATIONS****BOETTCHER FOUNDATION  
WEBB-WARING BIOMEDICAL RESEARCH PROGRAM**

Denver

[www.boettcherfoundation.org](http://www.boettcherfoundation.org)

"Founded by the Boettcher Family in 1937 to effectively assist, encourage and promote quality of life for the citizens of Colorado, the Boettcher Foundation invests in education, community services, health, and arts & culture through merit awards, scholarships and capital grants. In 2008, the Webb-Waring Institute became a part of the University of Colorado and is now known as the Webb-Waring Center. The Boettcher Foundation was entrusted with the stewardship of the Webb-Waring Foundation's assets. Through an innovative agreement between the Boettcher Foundation, the Webb-Waring Foundation and the University of Colorado, a new funding area was established at the Boettcher Foundation that supports the work of early-career investigators in the biomedical sciences in Colorado."

**CHILDRENS HOSPITAL COLORADO FOUNDATION**

Aurora

[www.childrenscoloradofoundation.org](http://www.childrenscoloradofoundation.org)

In 1978, Children's Hospital Colorado Foundation was formally established as a separate charitable 501(c)(3) organization dedicated solely to advancing the mission of Children's Hospital Colorado.

**CSU VENTURES, INC.**

Fort Collins

[www.csuventures.org](http://www.csuventures.org)

"CSU Ventures, Inc. (CSUV) is a 501(c)(3) non-profit corporation that actively supports and promotes the transfer of Colorado State University (CSU) research and innovations into the marketplace for the benefit of society. CSU Ventures serves CSU faculty and researchers who wish to protect and license intellectual property; builds relationships with industries and investors seeking to engage with CSU; and leverages CSU innovation to foster business formation and enhance regional economic vitality.

**UNIVERSITY OF COLORADO FOUNDATION**

Boulder

[www.cufund.org](http://www.cufund.org)

The University of Colorado Foundation is a privately governed nonprofit corporation whose mission is to support the University of Colorado. As a valued and trusted partner, the University of Colorado Foundation generates the private support needed in perpetuity for CU to achieve international preeminence as a public research university. Our donors enable CU to reach its full potential to transform lives world-wide through education, research, clinical care and community service.

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www.davitaclinicalresearch.com

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www.hqrlc.com

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www.broomfieldedc.com

**CANADIAN CONSULATE**  
www.international.gc.ca

**CITY & COUNTY OF BROOMFIELD**  
www.broomfield.org

**CITY OF WESTMINSTER**  
www.ci.westminster.co.us

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# Where bioscience means business

Aurora is home to the Anschutz Medical Campus and Fitzsimons Life Science District, one of the largest bioscience redevelopment projects in the United States. The 578-acre site is undergoing a \$5.2 billion transformation that will result in more than 18.5 million square-feet of space dedicated to excellence in health care, education and research.

Visit [www.auroraedc.com](http://www.auroraedc.com) for more information on Colorado incentives, our highly skilled workforce, and other resources that make Aurora the location for your next bioscience venture.



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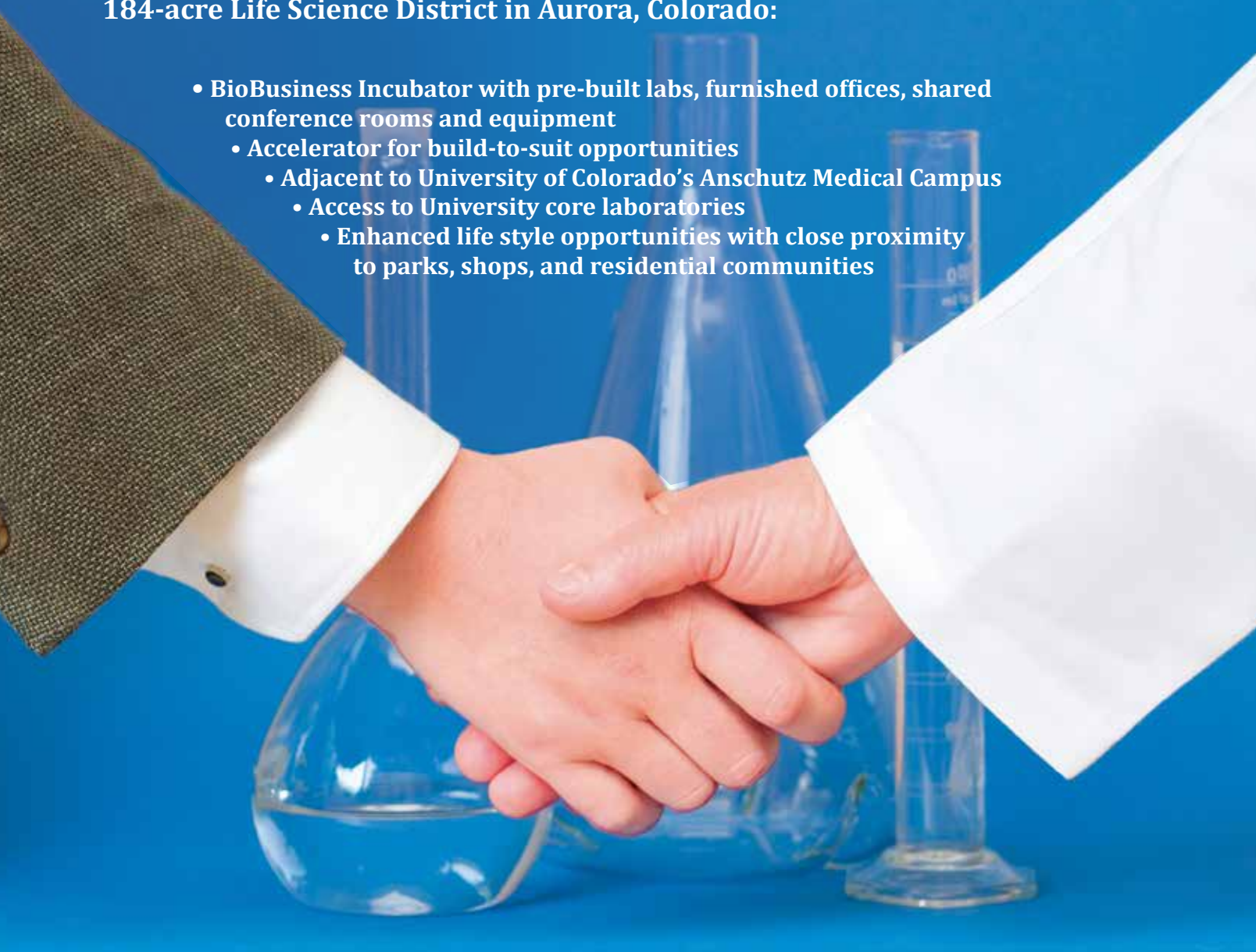


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