

Bioscience

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Colorado

2006-2007

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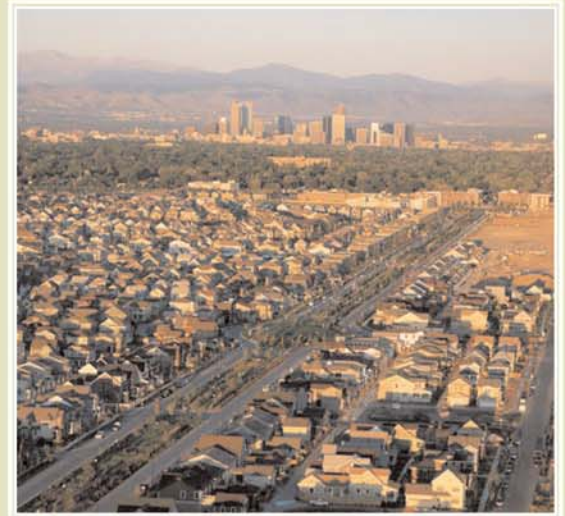
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Fitzsimons—Take advantage of the opportunity

Receive state-of-the-art business and research support in our 160-acre bioscience park.



INVESTMENT

Fitzsimons—Benefit from our investment

Enjoy the spectacular Rocky Mountain West in Colorado's \$4.3 billion "square mile of life sciences" home to the University of Colorado's medical education, research and hospital complex, The Children's Hospital and a 160-acre bioscience park.

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at Fitzsimons

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Bioscience Colorado

Welcome to BioScience Colorado, the annual collaborative publication of the Colorado BioScience Association and the Colorado Office of Economic Development and International Trade.

BioScience Colorado provides an in-depth look at Colorado's growing life sciences community, from biotech entrepreneurs to university research programs and medical device pioneers. We are proud of our accomplishments and eager to face the challenges that lie ahead.

In 2003, *An Action Plan to Grow Colorado's Bioscience Cluster* recommended several priorities. These included nurturing collaborative partnerships; appointing a state advocate for bioscience; continued development of the Fitzsimons bioscience park; and forming a unified industry association. Although we've now accomplished each of these steps, we know this is only the beginning.

It is no secret that Colorado is a great place to live. It is also a great place to do business. Our Western culture inspires an entrepreneurial spirit that is producing incredible results in new research and development. On behalf of the Colorado BioScience Association, we invite you to enjoy this glimpse into our past, our present, and, most of all, our future.



Denise Brown,
executive director
Colorado Bioscience
Association

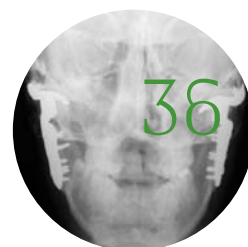
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Bioscience Grows Best



Photo courtesy of University of Colorado

The Colorado Office of Economic Development and International Trade is committed to growing Colorado's bioscience industry and we're proud to announce that Colorado is home to more than 400 bioscience companies with nearly 15,000 employees.

Take a peek in the back of this magazine to see the most up-to-date listing of the approximately 200 medical device companies and 210 biotech and pharmaceutical companies that are located in Colorado. Of course, new bioscience companies are launched every day in Colorado, so we're sure we missed some.

Part of Colorado's success comes from investing in and following a statewide action plan. In 2003, the Battelle Memorial Institute delivered a statewide plan called Colorado's Place in the Sun: An Action Plan to Grow Colorado's Bioscience Cluster. Colorado's bioscience industry, government and research institutions consistently refer to the plan and make amendments when actions are completed, new programs are developed and new directions are taken. The 2004

updated plan is available for viewing and download at www.AdvanceColorado.com.

In 2004, the state of Colorado created the **Colorado Venture Capital Authority**, a state fund dedicated to investing in early- and seed-stage companies throughout the state. In fact, in 2005 the managers chose Taligen Therapeutics, a bioscience company, as the first investment deal of the new fund.

Colorado consistently ranks among the top states as a place to live and to succeed in business. Check out these rankings and our in-depth Colorado Data Book on www.AdvanceColorado.com to gain additional insight into Colorado's unique opportunities.

at High Altitude



Independent Rankings:

Organization	Rank
Development Report Card for States (Corp. for Enterprise Development)	A (Honor Roll: 11 consecutive years)
State Science & Technology Index (Milken Institute)	2
Economic Freedom in North America (The Fraser Institute)	1
New Economy Index (Milken Institute)	3
New Economy Index (Progressive Policy Institute)	4
Metro Area & State Competitiveness Report 2002 (Beacon Hill Institute)	4
Tax Friendly State (Tax Foundation)	4
America's Best Cities & States (National Policy Research Council)	2
Most Preferred State to Live In (Harris Poll)	4

Rankings & Financial Assistance

Demographics:	Rank
Percent of population with college degree or higher	2
Percent population growth 2000-2002	2
Percent of population over age 65 (lowest)	4

Venture Capital
 According to Ernst & Young, in 2005 Colorado's companies received \$647 million in funding, with \$164.7 million of that going into the bioscience industry.

Economics:	Rank
Concentration of High Tech Workers (American Electronics Association)	1
Gross State Product Growth, 1997-2001*	4
Average annual pay	9
Growth in New firms, 2001-2002	2

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Some low rankings are good:	Rank
Total tax burden	40
State & local government tax burden	47
Per capita energy expenditures	49
Natural gas costs for industrial users	48



COLORADO BUSINESS

Financial Assistance Options

VENTURE CAPITAL:

The state of Colorado provides funding for two venture capital funding models — Certified Capital Companies and the Venture Capital Authority.

Certified Capital Companies (CAPCOs): The state has six Certified Capital Companies that make loans and provide equity to Colorado businesses. The CAPCOs are independently operated and generally make funding decisions. Minimum and maximum investments generally range from \$100,000 — \$3.3 million.

Venture Capital Authority (VCA): The state provides funding for a new venture capital program to provide seed and early-stage capital to businesses. The Venture Capital Authority fund manager will make nearly \$50 million in investments in Colorado businesses over the next ten years.

BIOSCIENCE R&D STATE SALES TAX REFUND:

Colorado bioscience companies can receive a refund of state sales and use taxes paid on the sale, storage, use or consumption of tangible personal property that is being used in Colorado directly or predominantly for research and development of biotechnology.

MANUFACTURING EQUIPMENT EXEMPTION:

Bioscience companies purchasing manufacturing equipment and machine tools that cost over \$500 are exempt from state sales and use tax on these purchases. The following items are also exempt from state sales and use taxes: component parts, fuels and electricity, ink and newsprint, aircraft parts used in general maintenance, interstate long distance telephone charges, farm equipment and machinery and packaging materials.

ECONOMIC DEVELOPMENT COMMISSION (EDC):

Business incentive funds are available for businesses that commit to meet certain job creation or retention requirements. Incentives vary based on a number of factors; however, requests generally range between \$1,000 and \$3,000 per each fulltime job created. The local community must also provide matching funds/incentives to the business.

ENTERPRISE ZONE (EZ):

A variety of tax benefits are provided for businesses expanding or locating new business facilities in economically distressed areas of the state (state designated enterprise zones).

JOB TRAINING GRANT FUNDS:

Through the Colorado FIRST Program (targeted to new jobs being created that need training) and the Existing Industry Program (targeted to existing jobs that need retraining for the business to remain competitive), the state has funds available to assist with employee training for specific businesses. Generally, up to \$800 per employee trained may be provided. Businesses must pay for a minimum of 40 percent of the total training costs.

BUSINESS LOANS:

The state has 15 Business Loan Funds that operate primarily in the rural areas of the state. The funds are locally driven, with each loan fund having its own local review committee and board of directors. Generally, the maximum loan size is \$250,000; however, this may vary based on the availability of capital and other factors. Businesses typically commit to meet certain job creation or retention requirements.

INFRASTRUCTURE ASSISTANCE/GRANTS:

The state has funds available to assist with constructing public infrastructure needed by a specific business, primarily in rural areas of the state. The state provides the funding to an eligible city or county. A business needs to commit to certain job creation or retention requirements. Generally, funding may be provided up to \$500,000; however, this amount may vary based on a number of factors.

FEASIBILITY STUDY GRANTS:

The state has funds available to assist with feasibility studies in rural areas. Funding goes to an eligible city or county; however, the study must be completed in conjunction with a specific business. The specific business needs to commit to certain job creation or retention requirements if the project is determined to be feasible and is implemented. Generally, funding may be provided up to \$20,000 per study. This amount may vary based on a number of factors.

For more information visit www.AdvanceColorado.com or call the OEDIT at 303-892-3840.

Fitzsimons

—BUILDING A LIFE SCIENCES CITY FOR THE 21ST CENTURY
PROVIDING INNOVATION THROUGH OPPORTUNITY, INVESTMENT & SYNERGY

Fitzsimons Development



Photo courtesy of University of Colorado

The Fitzsimons site is undergoing a \$4.3-billion transformation into a square mile dedicated to excellence in patient care, education, basic science research, and bioscience research and development.

A unique development is changing the landscape of the Colorado bioscience industry. The transformation of the former Fitzsimons Army Medical Center—located in the heart of Aurora, Colorado—into a state-of-the-art, integrated life sciences city for the 21st century is well underway. With its concentration of exceptional talent, extraordinary facilities, and vision for collaboration and resource sharing, Fitzsimons is evolving into one of the most advanced scientific communities in the world.

Led by the Fitzsimons Redevelopment Authority, the Fitzsimons site is undergoing a \$4.3-billion transformation into a square mile dedicated to excellence in patient care, education, basic science research, and bioscience research and development.

Over 5,000 people are already employed at Fitzsimons with plans for more than 30,000, with jobs in teaching, patient care, basic-science research, and biotechnology research and development.

A New Phase of Opportunity

In addition to providing space and support to early-stage bioscience companies, the Fitzsimons Redevelopment Authority is working in partnership with a large national real estate developer to build new facilities to accommodate a variety of life sciences companies, including expansion-stage bioscience companies and pharmaceutical R&D operations at the Fitzsimons site.

The partnership with this real estate partner will accelerate the development of the bioscience park contributing years of economic growth to the area.

Investment

The many partners contributing to the life sciences community at Fitzsimons include the University of Colorado at Denver and Health Sciences Center, the University of Colorado Hospital, The Children's Hospital, University Physicians Inc., and the Fitzsimons Redevelopment Authority. Together, they have already invested more than \$1 billion in completed construction and dozens of new projects are breaking ground in the next year.

When NIH Director Elias Zerhouni visited Fitzsimons, he praised the University of Colorado as a "visionary institution" for the development of its Fitzsimons campus. "You are really poised to go to the next level," said Dr. Zerhouni. "No one has put together the power—intellectual and physical—to do what you are doing today. Colorado is setting a new trend, and we're watching with enthusiasm and want to be your partner in that."

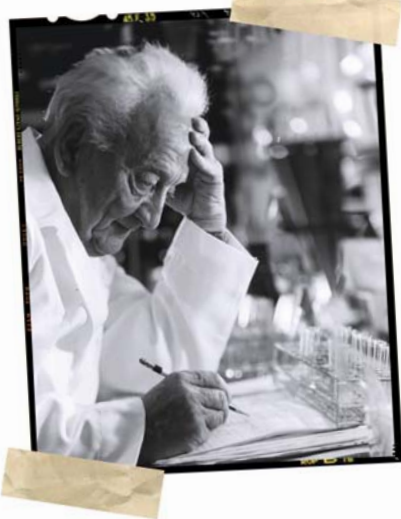
Synergy

Collaborations at Fitzsimons are facilitated by formal programs and informal encounters. Facilities, services, and support provide start-up and early-stage bioscience companies the prime opportunities to succeed. An affiliation agreement provides bioscience companies special consideration for access to university core labs and services.

In addition, the Fitzsimons BioBusiness Incubator provides hands-on business development assistance and access to advice from top bioscience professionals to young bioscience companies on their way to commercializing their technology or product.

The close proximity of The University of Colorado's research complex, which houses more than 1,600 researchers, allows the bioscience companies located at Fitzsimons easy access to a variety of core labs, such as state-of-the-art animal facilities, and labs for biostatistics and bioinformatics support, cytogenetics, DNA sequencing, NMR, flow cytometry, PCR tissue culture/monoclonal antibody, and much more.

A bioscience company in any stage of its development and of any size can be accommodated in the life sciences city at the Fitzsimons site. To learn more about how to become a part of this exciting project, contact the Fitzsimons Redevelopment Authority at 720-859-4100 or info@colobio.com or click on to www.colobio.com or www.uchsc.edu/Fitzsimons.



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Infectious diseases kill 15 million people a year, and are the leading cause of death in developing nations. But until recently, U.S. pharmaceutical companies found little profit in vaccines, antibiotics and related drugs.

Vaccines are costly to produce but have low profit margins. Sometimes the actual number of doses used is small, while the potential for pandemic is large. Often the afflicted live in countries too poor to buy drugs, or in spots too remote to store refrigerated products.

Small Companies Fighting Small Bugs

These market forces are changing. The National Institutes of Health and private foundations are investing hundreds of millions of dollars into vaccine research and commercialization, as part of an effort to wipe out global scourges as well as defend against biological agents that could be used as bioterrorism weapons. Further, an affluent middle class that can afford medications has emerged in some developing nations, widening the market. As a result, the biotechnology industry is taking a closer look at treating communicable illnesses, and Colorado's schools and companies stand at the forefront of this infectious disease revolution.

Colorado State University in Fort Collins has a long history of infectious disease research; it is home to a Level-3 biocontainment lab and neighbor to the Division of Vector-Borne Infectious Diseases of the Centers for Disease Control. The university's microbiologists specialize in studying zoonotic infectious diseases, those transmitted to humans by animals or insects.

In 2005, the school was awarded a four-year, \$40 million federal grant to develop treatments and vaccines for bioterrorism agents and infectious diseases, such as plague and hantavirus. The award designates CSU as a "regional center of excellence," linking it with other universities, hospitals and companies in the Rocky Mountain region, and providing funding to test new ideas.

The grant, part of a federal effort to speed product development by fostering partnerships between universities and industry, was the single largest research award in the school's history.

At the same time, the school broke ground on a \$33 million regional biocontainment lab. The new building will more than double CSU's Level-3 lab space to 50,000 square feet, and provide FDA-certified "good laboratory practice" and "good manufacturing practice" facilities. These certifications must be met for companies to submit their products to the FDA, and their existence is the gateway to new product development.

"Fundamentally we're going to have the infrastructure and human resources to take basic discoveries into preclinical FDA testing situations," says CSU microbiologist Dr. Barry Beaty, who heads the center.

Companies across the country have already contacted Beaty to book time in the lab, even though it won't be finished until mid-2007. But the national interest, he says, will fuel significant economic development in Colorado.

"Our belief is that companies will eventually co-locate to Northern Colorado," he says. "This is a world center for research on these types of pathogens."

Other Colorado companies researching or manufacturing products to aid the fight against infectious diseases include Roche Colorado, Mycologics, RxKinetix and Windom Peak Pharmaceuticals.

One of the first companies to take advantage of the CSU center is **InViragen**, a two-year-old Fort Collins startup. The firm has licensed technologies from the Fort Collins-based division of the Centers for Disease Control and is working to commercialize vaccines for plague, West Nile virus and dengue fever.

Dengue has no cure, and leads to 10 million cases of dengue fever a year and as many as a half a million hospitalizations – mainly for children. The disease is transmitted by mosquitoes and can be caused by four different strains of an RNA virus. For a vaccine to be safe, it must neutralize all four strains, a challenge no manufacturer has met.

InViragen's most advanced vaccine is based on an attenuated strain of the dengue-2 virus, much as the

Near the end of 2005, privately held **Replidyne** filed its first new drug application with the FDA for Orapem. The Louisville company hopes Orapem will be approved to treat bacterial infections such as pneumonia, sinusitis and bronchitis, an \$8.5 billion market. The firm expects the FDA to respond by the end of 2006.

Orapem is a unique antimicrobial that, according to the company, in lab tests has shown promise against types of antibiotic-resistant bacteria. Further clinical studies are planned. Drugs similar to Orapem are delivered intravenously, but there has been no oral antibiotic of its type in the U.S.

"We feel Orapem has certain features that make it very attractive for the antibiotic marketplace," says Jill Clark, Replidyne's senior director of finance and administration.

"Our belief is that companies will eventually co-locate to Northern Colorado. This is a world center for research on these types of pathogens."

—Dr. Barry Beaty, Head of the Regional Center of Excellence



Photo courtesy of Colorado School of Mines

measles-mumps-rubella and yellow fever vaccines are based on safe modifications of virulent viruses. But here's the twist: scientists genetically engineered the safe dengue-2 backbone to contain antigens for the other three viral strains. The result is a vaccine shown to be safe and effective against dengue fever in mice and monkeys.

"We're excited for two reasons," says InViragen Chief Executive Officer Dan Stinchcomb. "First and foremost is the opportunity to save children's lives worldwide, and secondly, there is a significant commercial opportunity as well."

Stinchcomb founded InViragen after working in nearby Loveland at publicly traded Heska Corp. **Heska**, originally founded on research done at CSU, now holds more than 200 patents on animal diagnostics, therapies and vaccines. The 300-person company had product sales of \$65.7 million in 2004, and anticipates a growing market for its companion animal products such as its diagnostic instruments, feline respiratory disease vaccine and one-step diagnostic tests for canine heartworm and other diseases.

Forty miles south of CSU, three Boulder area firms have infectious disease programs in various stages of development.

"If Orapem were to be approved, it would be positioned as a unique, first-in-class drug."

The focus on antibacterial drugs was strategic, Clark says. While big pharmaceutical companies have largely ignored the anti-infectives market, it could provide attractive returns for a lean firm such as 57-person Replidyne. Investors agree: the company has raised \$121.5 million to date.

Much smaller **MicroPhage** has taken a different approach to antibiotic-resistant bacteria. The Longmont firm is developing a way to more rapidly identify these pathogens, helping doctors prescribe the correct drugs.

MicroPhage's name tells its story. The three-year-old company has found phages, or inert viruses, that infect particular bacteria. The virus then replicates within the bacteria, making it easy to identify their presence.

Researchers at the **Colorado School of Mines** first applied phages to bacteria in biological warfare research. MicroPhage spun out of the university in 2002, and turned its attention to *E. coli* and *Staphylococcus aureus*, bacteria prevalent in wound and blood-borne infections.

The company has raised \$3.55 million largely from Colorado-based angel investment groups such as CTEK Angels and Vail's Alpine Angels. With the money, it plans to run clinical trials of its E. coli and Staphylococcus aureus diagnostics this summer. If the results are good, MicroPhage will submit to the FDA in the fall.

"It's been exciting," says Marketing Manager Scott Conlin. "When I started it was just a few of us, and now we are 13 people. And we're on the cusp of having a product, and see that the technology works very well."

Many biotech entrepreneurs are motivated by a passion to save lives and the chance to strike it rich. Aktiv-Dry is an exception.

"We're not doing it for the money," says the company's co-founder Dr. Brian Quinn. "This is purely a humanitarian project for us."

Boulder-based **Aktiv-Dry's** technology and products are based on biochemistry work at the University of Colorado

in Boulder on how to make very fine, dry powders. The six-person company was founded in 2005 with a \$19.5 million grant from the Foundation for the National Institutes of Health. Through a worldwide collaboration of industry and research partners, Aktiv-Dry aims to develop a dry, inhalable measles vaccine that needs no refrigeration at a cost of about 25 cents a dose.

"Key to the success of this project is that we make very, very inexpensive inhalation technologies," Quinn says. He and his partners are experimenting with a delivery system that could be as simple a drinking straw through which the vaccine could be inhaled in one puff.

Measles remains a huge burden to the developing world, killing 2,000 people a day. Victims are mainly poor children who live in hot climates who cannot access the refrigerated-serum measles vaccine.

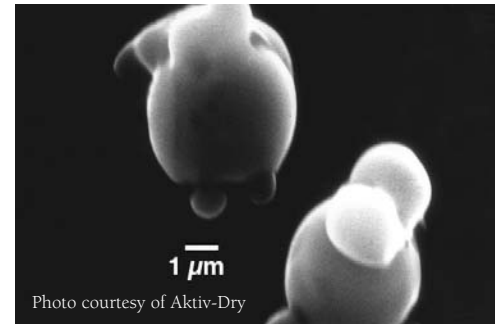


Photo courtesy of Aktiv-Dry

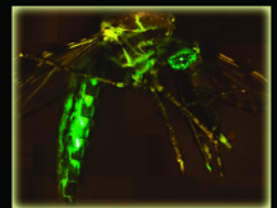
Infectious Diseases

Colorado State University

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"Great research universities create value for society by developing human talent and technology. Society realizes that benefit when technology transfer results in new products and services, when startup companies succeed and when our human talent is ready to do the work required for success. Colorado State University accepts the responsibilities of being a great 21st century land-grant institution and invites industry partners to engage us in research, technology transfer and the search for human talent."

*Henry S. Gardner, Jr.
Interim Vice President for Research*

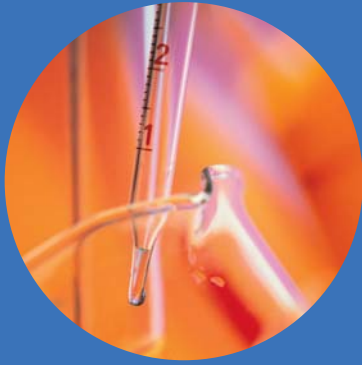


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Colorado State University
Knowledge to Go Places



THE GROWTH OF COLORADO'S 2ND GENERATION BIOTECH LAB SPACE

While biopharmaceutical companies have a presence throughout the Front Range, Northwest Denver has developed into the most defined cluster. In the past 15 months, there have been 447,000 square feet of completed real estate transactions involving biopharmaceutical companies in the Northwest Denver real estate submarket, located along the U.S. 36 corridor and extending north to Longmont.

Of these transactions, approximately 200,000 square feet was true growth or absorption of new space. While modest when compared to other established biotech markets, this is a meaningful statistic for a state focused on putting itself on the map as an up and coming biotech industry hub.

One of the most positive recent developments stemming from the growth of the biopharmaceutical industry in Colorado has been the increasing supply of second-generation biotech lab space. An available inventory of biotech lab space is critical to stimulate the growth of the industry in our state by providing affordable real estate solutions for young biotech companies.

The supply of second-generation lab space has been concentrated in the Northwest Denver biotech cluster. Of the 200,000 square feet of recent absorption, three of the four transactions – totaling 53,000 square feet – involved

the leasing of second-generation lab space by companies new to Colorado. These include:

- Insmed, which leased 25,000 square feet in the former Baxter Healthcare pilot plant facility in Boulder; Insmed also leased another 16,000 square feet in a second former Baxter Healthcare building in Boulder following FDA approval of IPLEX;
- Atrius Bioscience, which leased 12,000 square feet in the former Proligo facility in Boulder;
- Source Precision Medicine, which leased 7,000 square feet of biotech lab space at 2500 Central Ave. in Boulder.

Second-generation biotech lab facilities with significant existing infrastructure in place are available for biopharmaceutical companies looking for lab space today including:

- Array BioPharma, which wants to sublease 23,000 square feet of office, biology and chemistry lab space in Boulder;
- Sirna Therapeutics, which wants to sublease 30,000 square feet of office and biology lab space Boulder;
- The former Biotrol facility in Louisville has 9,000 square feet of office and biology lab space available.

Second-generation lab facilities are rarely “plug and play” or ready for a company to simply hook up its IT systems and get to work. But the spaces listed above do provide the opportunity to save significant dollars on improvements because of the infrastructure installed and paid for by previous biotech tenants.

The transaction structure for biotech companies leasing space typically mirrors standard lease transactions with the exception of tenant improvements and restoration requirements at the end of the lease term. The majority of the improvement dollars for lab space buildout continues

to be shouldered by the tenant. This is due to a landlord community that is just now starting to recognize the future value of previously installed infrastructure and the potential for higher lease rates for similar users down the line. Approximately 45 percent of the 447,000 square feet of transactions discussed above were completed at rent levels that were 25 to 40 percent higher than market. This trend has led to our ability to successfully remove restoration obligations for several of our biotech clients upon their lease renewal.

As the biopharmaceutical industry continues to grow in Colorado, the opportunity to secure second-generation lab spaces will likely multiply. This is good news for the economic growth of our state.

Eric Brynestad is a senior associate within the national life science practice of The Staubach Company. Brynestad specializes in representing the interests of biotechnology, pharmaceutical, and medical device companies in the identification of and negotiation for mission-critical laboratory and manufacturing facilities.



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- Economic Incentives Negotiation

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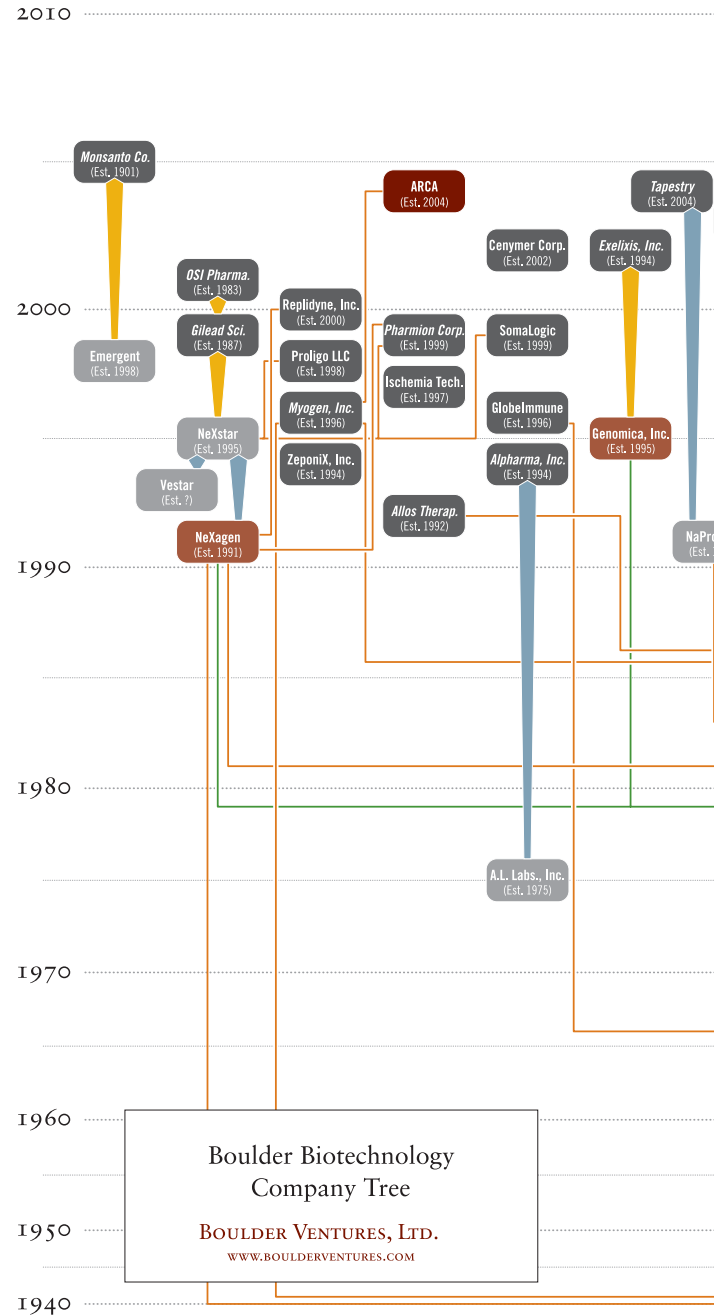
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A Brief History of Boulder Biotech

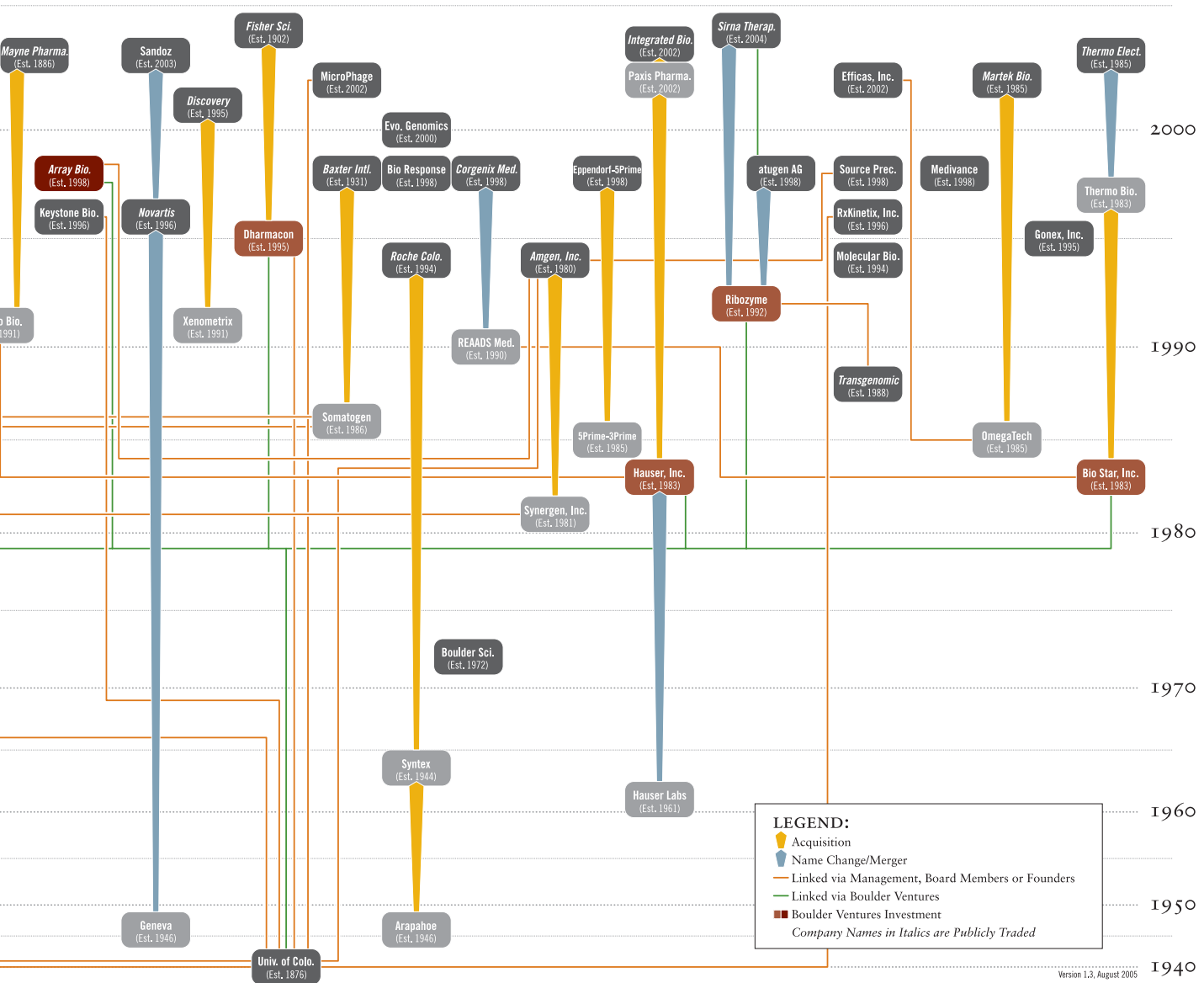
Kyle Lefkoff, Boulder Ventures Ltd.

It was not by design that a pharmaceutical industry was created in Boulder. In the early 1970s, neither the city nor county of Boulder had a biotech cluster in its master plan for future economic development. At that time, the University of Colorado had no intellectual property strategy, certainly not one focused on startup companies in the life sciences. Neither Roche, which bought Syntex, nor Novartis, which bought Geneva Generics, had a Boulder location on their corporate radar screens. In fact, as late as 1985, you could count the homegrown pharmaceutical companies in Boulder on two hands. So what happened over the past 20 years to make the Boulder Valley one of the top markets for startup biotechnology companies in the world?



Bioscience Colorado

2010



Colorado Biotech History

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A Brief History of Boulder Biotech – continued

It started with the inventors, all CU professors. Their collective gift – as research scientists with the enthusiasm for a new model of drug discovery and the drive to create new companies in Boulder around their ideas – started an industry. These thought leaders attracted professional management and venture capital dollars, and their financial and operational success created a new generation of venture-backed startup companies. Along the way, a physical and intellectual infrastructure geared toward life sciences development grew up around Boulder to support these local companies. Finally, CU's administration got dragged into the fray, and began to participate in the success of the companies its researchers were creating. Biochemistry professor Marv Caruthers, who pioneered the chemical synthesis of DNA, teamed up with a small

group of scientists including Lee Hood, Winston Salser, Norm Davison and John Carbon to form Amgen in 1980. They established the company in southern California and hired its legendary CEO, George Rathmann, but Amgen always maintained a Boulder operation.

At first, Amgen used the Boulder facility to support and commercialize inventions that came from Caruthers' lab, but in the 1990s, Amgen built a factory in Longmont for its most important protein product, EPO. Today, Amgen is the largest biotech company in the world, and remains one of the largest biotech employers in Boulder County with operations in both Longmont and Boulder.

Amgen's founding investors didn't miss the opportunity to spin off an instrument business based on Caruthers' chemical synthesis discoveries, so they founded Applied Biosystems with many of the same group of initial scientists and a patent licensed from CU.

The Caruthers lab also produced an impressive list of graduate students who, as biotech innovators, went on to start successful companies of their own in Boulder and beyond. The list includes: Dave Goddel, a founder of Genetech and Tularik; David Snitman, one of Amgen's first Boulder employees and later a founder of Array BioPharma; Stephen Scaringe, who founded Dharmacon; Peter Seeberger, who was a founder of both Ancora and Momenta; Lyndal Hesterberg, an Amgen scientist who became CTO of Biostar and later founded BaroFold; and Bill Marshall, an Amgen scientist who became CEO of Dharmacon.

Larry Gold, Larry Soll, Mike Yarus and David Hirsh – all of CU's Molecular, Cellular, and Developmental Biology (MCDB) department – founded Synergen in Boulder in 1981, and pursued a drug development strategy similar to Amgen's. Synergen became Boulder's first home-grown biotech company to attain a \$1 billion public market value

B i o s c i e n c e C o l o r a d o

in 1991, based on investors' expectations for the company's sepsis treatment, IL-1ra. IL-1ra was itself an invention of CU researcher Bill Ahrend of the CU Health Sciences Center (UCHSC). But it failed in clinical trials, and Synergen was acquired by Amgen in 1994 for far less money.

The near-greatness of Synergen only intensified Gold's efforts to create a world-class drug company in Boulder. His discovery, with Craig Tuerk of MCDB, of the SELEX process opened up a vast new pool of potential candidates. Gold formed NeXagen in 1991, and merged it with Vestar in 1995 to form NeXstar Pharmaceuticals.

Under the leadership of Gold and its talented young CEO, Pat Mahaffy, NeXstar brought two drugs to market and achieved a public market value of more than \$500 million before its sale to Gilead Sciences in 1998.

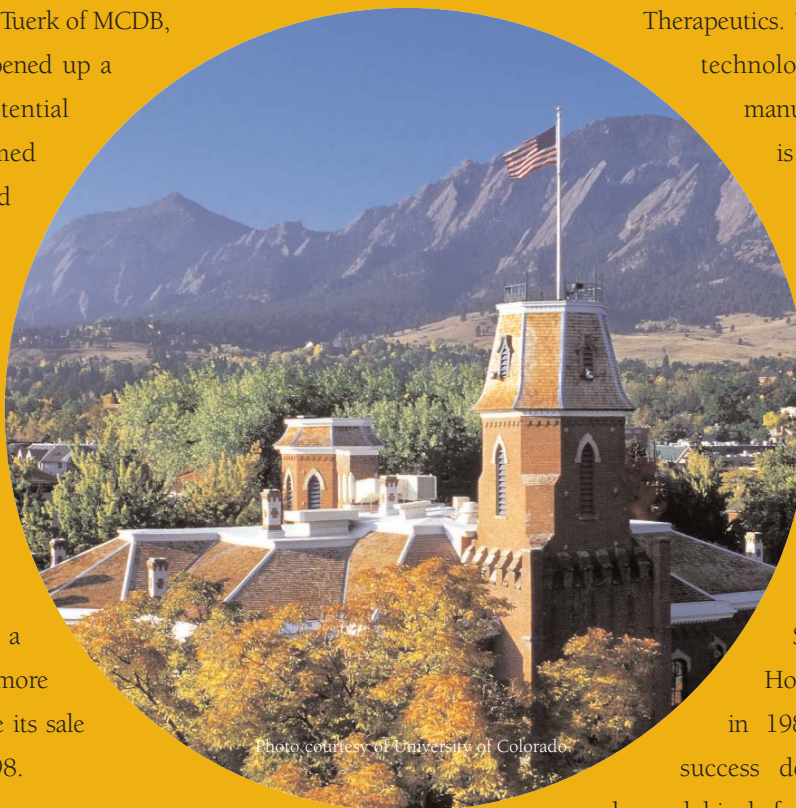
NeXstar also spun off a host of successful biotech companies, including Proligo, Archemix, OSI Pharmaceuticals, and Gold's follow-on success at SomaLogic. Mahaffy went on to start one of the most successful Boulder pharmaceutical companies of the recent past with Pharmion in 1999, backed by a blue-chip list of East and West Coast VC funds. NeXstar's discovery of Macugen was licensed by Eyetech Pharmaceuticals (now part of OSI), and is now marketed by Pfizer as the leading treatment for macular degeneration. Most

importantly, CU shared in the financial success of NeXstar and its spin-offs as both an equity owner and licensor of the SELEX discoveries. These proceeds helped pay for the new MCDB building on the CU Boulder campus.

Another success from CU is Tom Cech, Nobel laureate in biochemistry for his discovery of ribozymes, and the founder of RPI, which later became Sirna Therapeutics. The development of the technologies surrounding the manufacture and use of RNA is a key aspect to many of the companies that have come from the Cech, Gold, and Caruthers labs at CU. As a result, Boulder is the center of RNA research in the world.

CU researchers Charles Scoggins and Steve Hoffman started Somatogen in 1986, and achieved great success developing recombinant hemoglobin before the company's sale to

Baxter in 1998. In addition to its financial returns, Somatogen – like Amgen, Synergen and NeXstar – became the basis for a number of next-generation Boulder biotech companies, including Allos, Replidyne and Myogen. CU figured prominently in these companies, especially in Myogen, founded by Mike Bristow of UCHSC and MCDB Chairman Leslie Leinwand. Myogen's late-stage pipeline of cardiovascular products has propelled its value to more than \$2 billion, and set the stage for a new generation of successful CU spin-offs.





Another success from CU is Tom Cech, Nobel laureate in biochemistry for his discovery of ribozymes, and the founder of RPI, which later became Sirna Therapeutics.

A Brief History of Boulder Biotech – continued

Based on the success of the first and second generation of biotech companies, Boulder has assembled a premier cluster of life sciences startups. The combination of established public companies, a world-class research university, renowned entrepreneurial faculty, an experienced technology transfer office, and the highest quality of life in the country has created an excellent platform for pharmaceutical development. Now in its third decade of development and its third generation of companies, the future for biotech in the Boulder Valley appears bright for all of us.



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Colorado Biotech History

GOOD CHEMISTRY

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FROM TUBERCULOSIS SANATORIUMS TO 21ST CENTURY MEDICINE



It began as a medical myth: tuberculosis patients in the 1890s believed Denver's abundant sunshine and dry air would cure them. Of course it wasn't true, but as patients flocked to the area, hospitals arose that now rank amongst the world's premiere respiratory centers.

The 113-year-old **National Jewish Research and Medical Center** stands among them. After tuberculosis-killing antibiotics arrived with the Second World War, National Jewish refashioned itself into a pulmonology and immunology center of excellence.

Today, National Jewish has been ranked the No. 1 respiratory hospital in the nation by U.S. News & World Report for eight years in a row. While small, with only 125 researchers and three academic departments – immunology, medicine and pediatrics – the institute is home to world-class researchers and clinicians. Those include Drs. Philippa Marrack and John Kappler, whose ongoing research has revealed the pivotal role the T cells play in detecting and fighting infection, and Dr. Erwin

Gelfand, a pediatric immunologist who built one of the earliest animal models for asthma.

To get a sense to the institution's influence, consider this. From 1993 to 2003, work done by National Jewish molecular biology and genetics researchers was the 13th most cited in the world in other scientist's papers. The hospital's biology and biochemistry research was ranked 15th in the world, and immunology ranked 22nd, in terms of citations in other scientist's papers.

And, as if a testament to the hospital's success, more than a half a dozen Denver-based biotech and medical device companies work nearby on cures for lung and immune system ailments.

"There are a large number of very prominent researchers in asthma and inflammation at National Jewish," said Dr. Woodruff Emlen, president of Denver-based Taligen Therapeutics. "They are definitely a resource for company like us."

Gelfand, who has served as National Jewish's chair of pediatrics for the past 19 years, says, "I cannot imagine a better place to be surrounded by colleagues who collaborate, who are open. We have among the best scientists, among the best clinicians."

In recent years, National Jewish has attracted \$40 million to \$50 million in grants annually. A quarter of its funds come from industry, and licensing deals have grown each year. Technology transfer will become even more important in light of recent changes at the National Institutes of Health, Gelfand predicts.

The NIH has shifted funds toward biodefense, away from the formerly popular areas of asthma and immunology. Increasingly, he predicts, research at National Jewish will be funded by collaboration with the pharmaceutical industry and through outlicensing good ideas.

One example of such outlicensing is **Taligen Therapeutics**, founded in March 2004. The company, headquartered at the Colorado Bioscience Park in Aurora, is based on research done by Gelfand and Dr. V. Michael Holers, who chairs the department of rheumatology at the University of Colorado School of Medicine.

Holers identified a cascade of protein reactions in the immune system that leads to inflammation, a key aspect of asthma. The doctor discovered that by blocking a particular molecule early in the chain reaction, he could limit inflammation. He tested the idea using Gelfand's animal models.

The idea has attracted significant interest. If successful, a resulting product could treat the estimated 5 to 10 percent of asthma sufferers who don't respond to milder treatments, a market size of 10 million people worldwide. Taligen has won more than \$800,000 in Small Business Innovation Research (SBIR) grants, as

well as \$100,000 proof-of-concept financing from the University of Colorado. In September 2005, the company announced it had raised \$3.75 million in Series A venture financing. Of that, \$240,000 came from the state of Colorado itself, through a new state-backed venture capital program designed to fuel emerging bioscience companies.

The next step is for the company to take its antibodies and turn them into a product, explains Dr. Woodruff Emlen, Taligen's president. Then comes a long series of clinical trials followed by application to the FDA for drug approval.

A SINGLE PNEUMONIA-CAUSING BACTERIUM GROWING AND DIVIDING IN 60 MINUTES INTO A CLONE, AS ANALYZED BY ACCEL8'S BACCER8R™ INSTRUMENT. THE BACCER8R ELIMINATES CULTURING BY MEASURING THE RESPONSES OF INDIVIDUAL BACTERIAL CELLS TO DIFFERENT TESTS, A METHOD ACCEL8 CALLS QUANTUM MICROBIOLOGY™.

In an industrial park on the other side of Denver, 14-employee **Accelr8** (pronounced "accelerate") is developing a machine to rapidly diagnose strains of pneumonia acquired in hospital intensive care units. The machine uses slides, lasers and statistical analysis to marry classical microbiology with high-tech micro-array technology.

In the ICU, mechanical ventilators "breathe" for a patient, involving placing a tube in the patient's windpipe so air can be delivered to the lungs. Sometimes ventilation can lead to pneumonia, a serious

bacterial infection. Doctors typically use X-rays or sputum cultures to diagnose the disease, but these methods can take hours or days. Accelr8 aims to identify the strains in eight hours, allowing doctors to prescribe optimal antibiotics. That, the firm says, will save thousands of lives and millions of dollars in costly hospital stays.

"The problem is that antibiotic resistance has become so widespread and it moves so fast," says David Howson, president of Accelr8. "You have to get it right the first time." The company is working with Denver Health, the city's public safety-net hospital, and already has its first diagnostic prototype in the lab.

21st Century Medicine – continued

“Denver probably has more world-class expertise in pulmonology than any other city in the world,” Howson says. “Because we’re focused on respiratory infections, and there is such a history of pioneering in respiratory medicine, the expertise here is just phenomenal.”

Pulmonology and immunology are naturally connected at National Jewish, as the institution specializes in asthma and allergies. Allergies are an immunological disorder, and asthma concerns both the lungs and the immune system. Therefore, immunological diseases are the focus of several local companies.

Still at a very early stage of development, **Sentry Biosciences** has licensed technology from the University of Colorado to develop treatments for many diseases, including stroke and autoimmune diseases. Sentry’s science focuses on how to regulate the chromosomal DNA associated with apoptosis, or planned cell death.

Many parts of healthy human bodies are naturally programmed to die, such as old or damaged skin and other cells. But when under attack by disease, the body’s process goes awry, with cells living longer or dying sooner than they should. The cell’s DNA regulates this process, and Dr. Ding Xue of the University of Colorado at Boulder has discovered a set of enzymes associated with the process.

Sentry, which licensed Xue’s enzymes from the University of Colorado, hopes to validate them as clinical targets and then identify, develop and commercialize small molecules that can modify the enzymes.

“From a scientific perspective, there’s reason to believe it could be a very valuable technology,” says Randy Swenson, Sentry’s founder.

Amgen, one of the largest and oldest biotechnology companies in Colorado, has facilities in Longmont and Boulder. It manufactures its rheumatoid arthritis treatment, Kineret, in Boulder.

Rheumatoid arthritis, an autoimmune disease, is characterized by excess production of interleukin-1, which leads to pain, swelling and joint stiffness. Kineret is a second-line therapy that helps manage excess levels of interleukin-1 in the body. It is manufactured in E. coli bacteria; the bacteria are grown to produce a protein that forms the basis of the injectible drug.

The product received FDA approval in 2001 and reached worldwide sales of \$70 million by 2002. Kineret was Amgen’s first product to be exclusively manufactured in Colorado.

The 25-year-old company is headquartered in Thousand Oaks, Calif., and no longer undertakes any research in Colorado. But as a manufacturing entity, the company has been on a recent hiring spree for manufacturing experts, quality control managers and process

development engineers. By mid-2006, more than 1,000 people will work for Amgen in Boulder and Longmont. Amgen has found that attracting talent to Colorado has been easy.

“People have found, in general, that the quality of life and the location is a plus,” says Debbi Ford, Amgen’s Colorado spokeswoman. “The opportunity for recreational activities, obviously the proximity to the mountains and the cost of living are all considered a plus for people who want to relocate here.”

“THE OPPORTUNITY FOR RECREATIONAL ACTIVITIES, OBVIOUSLY THE PROXIMITY TO THE MOUNTAINS AND THE COST OF LIVING ARE ALL CONSIDERED A PLUS FOR PEOPLE WHO WANT TO RELOCATE HERE.”
— DEBBIE FORD, AMGEN

OTHER FIRMS with respiratory care product divisions in Colorado include BioStar and Ferraris Respiratory.

Colorado Companies Tackle CANCER

A cure for cancer is the Holy Grail of modern medicine. But so far, despite more than a half-century of research and a handful of incremental successes, researchers have yet to make a giant breakthrough.



Photo courtesy of Allos Therapeutics, Inc.

The scope of the problem is clear: cancer is the No. 2 killer of Americans, second only to cardiac disease, taking 500,000 lives a year. And the incidence of cancer is rising in developing nations as people live longer, making cancer a truly global disease.

Cancer is a syndrome of many diseases, all characterized by uncontrolled cell growth, and those cells ability to invade other tissues. Treatments include chemotherapy, radiation and surgery. Cancer treatment itself can be so debilitating that counteracting its effects has proven a multibillion dollar market. And in most cases, cancerous cells re-emerge after treatment, eventually leading to death.

“It’s a few yards and a cloud of dust,” says Leonard Shaykin regarding modern cancer research. Shaykin, chief executive officer of Tapestry Pharmaceuticals, continues, “There have not been any major leaps in cancer treatment; it’s all been very incremental because our knowledge is really so sparse.”

Founded in 1992 as NaPro BioTherapeutics, Boulder-based **Tapestry** is one of Colorado’s oldest biotechnology firms. The publicly traded company is among more than a half dozen Colorado firms at work on cancer treatments.

Tapestry initially grew, harvested and sold paclitaxel, the generic form of an early broad-spectrum chemotherapy drug. Oncologists still use taxanes such as paclitaxel in cancer chemotherapy, often in combination with other medications.

In 2003 Tapestry sold its paclitaxel business and turned its attention to developing a third-generation taxane designed to overcome the body’s resistance to the earlier medication. The company expects to put the compound, TPI 287, into Phase II clinical trials this year.

Taxanes attack cells’ microtubules, small fibrous cell components that are fundamental to cell division. Taxanes cause those microtubules to stick together; preventing cell division, and eventually spurring cell suicide.

"We believe certain cancers will eventually become a chronic disease, treated with a combination of targeted therapies," the company says in its SEC filings. "Array is building a pipeline of products to meet these new regimens."

Colorado Companies Tackle Cancer – *continued*

The problem, explains Tapestry's Chief Financial Officer Gordon Link, is that tumors become resistant to taxanes, much like bacteria grow resistant to antibiotics. After a while, tumor cells overproduce a protein that grabs foreign substances and pumps them out of the cell.

"Our compound is designed to overcome that resistance," Link says. "We have very good in vitro data, and nice in vivo data suggesting that's the case. We are now in the clinic in patients. Time will tell – keep watching."

Chemotherapy drugs are poisons. They are designed to kill cancer cells, while allowing surrounding healthy tissue to live. Inevitably, the process is imprecise, and healthy cells die, too.

Now cancer researchers are capitalizing on decades of research into what makes cancer cells different from the rest of the body. That has resulted in so-called "targeted therapies" that attack specific chemical markers or chemical pathways in tumor cells.

The resulting drugs can attach to tumor cell surfaces or enter the cells themselves, interfering with ongoing functions. Unlike older chemotherapy, targeted therapies have the potential to slow down cancer cell growth while doing minimal damage to the rest of the body.

Eight-year-old publicly traded **Array BioPharma** is at the forefront of the targeted chemotherapy revolution. Its lead candidate, currently in Phase I trials, is a MEK inhibitor. MEK is an enzyme that plays a role in the cascade of interactions that leads to cancer cell growth.

"If you think of cancer cells like a copy machine that went crazy, and just kept producing copy after copy, the drug interferes with the copy machine at the point of the MEK protein," explains Array Spokeswoman Tricia Haugeto.

Array, which has facilities in Boulder and Longmont, was founded by scientists who left bioscience giant Amgen in 1998. The company has four other targeted medications in the pipeline. The 270-person firm has invested \$164 million in research to date, and struck deals with AstraZeneca and Genentech.

"We believe certain cancers will eventually become a chronic disease, treated with a combination of targeted therapies," the company says in its SEC filings. "Array is building a pipeline of products to meet these new regimens."

Chemotherapy sends drugs to kill cancer cells. Cancer immunotherapy, on the other hand, stimulates the body's natural defense system to attack tumors. A fast-growing Colorado firm, **GlobeImmune**, has a cancer vaccine ready to enter Phase II clinical trials this year

The 53-person Louisville firm, based on technology licensed from the University of Colorado, develops therapeutic vaccines called Tarmogens using brewer's yeast. Unlike traditional

vaccines that shore up the body's defenses against a future infection, these vaccines drive the immune system to fight cells it has come to live with, however uncomfortably. GlobeImmune's cancer vaccine stimulates a T cell response against cells with genetic mutations that lead to wild proliferation. The firm genetically engineers yeast to contain proteins "specific to the disease we are trying to combat," explains Kirk Christoffersen, the company's senior director of corporate development.

After the Tarmogens are injected, "antigen-presenting cells pick up this yeast, they chop it apart with molecular scissors, and they take the pieces and present them to the immune cells," Christoffersen says. "Those T cells get activated, and they go and hunt for any cell that has the same marker – in this case, every cancer cell that displays certain proteins."

GlobeImmune is also working on a Hepatitis C vaccine, and considering applications of its yeast-based technology in AIDS and influenza. The company, which raised \$38.4 million in a Series B financing in 2005, is committed to Colorado.

"We've had great venture capital support locally," Christoffersen says. "Colorado has a great quality of life, and there's a really interesting, growing biotech community that has enabled us to stay and recruit top talent here."

Radiation therapy is used to treat almost every kind of solid tumor, and a handful of Colorado companies – including Boulder-based RxKinetix and Westminster-based Allos Therapeutics– are working to make it more effective.

Radiation works best in tumor cells that have a high concentration of oxygen. Oxygen-deficient tumor cells, such as some brain tumor cells, call for two to three times as much radiation before they are killed.

Publicly traded **Allos Therapeutics'** drug Efavoxyn was created to solve this problem by increasing the release of

hemoglobin circulating in and around tumors. The company hopes by mid-2006 to complete enrollment in Phase III clinical trials for Efavoxyn, looking at its application in brain metastases that have spread from breast cancer.



"We've had great venture capital support locally," Christoffersen says. "Colorado has a great quality of life, and there's a really interesting, growing biotech community that has enabled us to stay and recruit top talent here."



Photos courtesy of RxKinetix and Array BioPharma

Privately held **RxKinetix** is also working to improve radiation by making it more tolerable. The 23-person firm has high hopes for a compound to ameliorate a miserable side effect of head and neck radiation – oral mucositis: painful ulcers that form in the patient's mouths. These sores make it difficult to talk, eat or swallow, and patients often need opiates to manage their pain.

RxKinetix, founded on technology licensed from the University of Colorado, has developed an innovative gel infused with an anti-oxidant medication. The gel, RK-0202, is liquid at room temperature and viscous when it warms up. The patient swishes the medicated gel around his mouth, effectively coating the mucous membrane and protecting it from harmful irradiation.

While RK-0202 doesn't entirely prevent oral mucositis, it slows its progression, allowing patients to finish their therapies and keeping them out of the hospital, says Joanna Money, RxKinetix vice president of corporate development.

No drugs today treat this condition, she adds. "This is a huge quality of life issue for patients, and for the health-care system there is a huge pharmacoeconomic benefit."

Phase II trials were completed in 2005, and a Phase III trial is planned for completion in 2008. To that end, the firm has raised \$26 million to date, primarily from Colorado-based Aweida Venture Partners.

RxKinetix sees initial potential for RK-0202 in the approximately 40,000 people who are diagnosed with head and neck cancer each year.

Colorado Companies Tackle Cancer – continued

“But we believe the market opportunity for this drug is even bigger,” Money says. “It could easily be expanded to other (radiation) patients. And a lot of chemotherapy patients get this disease as well.”

While many Colorado pharmaceutical companies are developing cancer treatments, one medical devices company is on the attack as well.

2006 will be **Valleylab’s** year of microwave ablation, a technology that destroys cancer lesions by “cooking” them from the inside out.

The 39-year-old Boulder-based company, a wholly owned subsidiary of Tyco International as part of its Tyco Healthcare division, is well-known in the medical community for radio frequency ablation technology. Its Cool-tip RF ablation system is used by surgeons to treat inoperable liver cancer.

Using radio frequency current, the Cool-tip system quickly heats and coagulates large volumes of tissue. RF ablation procedures can be performed during open surgery percutaneously or laparoscopically, depending on the physician’s discretion. It is an excellent alternative or adjunct therapy for patients with non-resectable liver lesions who may otherwise be unable to be successfully treated with surgery or chemotherapy.

Valleylab has been working on microwave ablation since July 2005 when Tyco Healthcare purchased Vivant Medical Inc., which developed the technology. Microwave ablation works similarly to RF ablation as a treatment for inoperable tumors. The technology is being tested in clinical trials, and the company expects to be able to commercialize it this year, said Donna Ford-Serbu, director of marketing for ablative therapies.

“There’s a lot of excitement for this new technology,” Ford-Serbu says, which is being targeted toward lung, liver, kidney and bone metastases.

The new technology drove much of the 1,200-employee company’s hiring in the past year, Ford-Serbu says. Direct sales and R&D staff has grown by 150 percent and 200 percent, respectively.

OTHER COLORADO COMPANIES developing or marketing oncology care products include Pharmion, Amgen, OSI Pharmaceuticals, Cytologic, SomaLogic, Thinc Pharmaceuticals, Newellink USA, Radiological Imaging Technology, Cell-Point and CeMines.



Building a Colorado Team -

Memoirs of a Control Freak

By Sherry Fox President/CEO BioCare Systems Inc.

“I was taken by surprise when the Colorado BioScience Association asked me to write an article about how “easy” it was to utilize Colorado vendors to create a bioscience company and get a product to market. Truthfully, it was anything but easy.”



Most of the Colorado bioscience companies feel they must go outside the state to find affordable parts and services. In fact, there are many qualified Colorado companies that offer bioscience products and services, and they feel they must go outside the state to get clients.

Hopefully, with the help of CBSA these two separate entities – bioscience companies and bioscience vendors – can connect right here in Colorado and build this sector into the dynamic industry with the economic advantage we would all like to see.

The challenges of researching, developing, engineering and manufacturing a regulated medical device are almost insurmountable for a small entrepreneurial company. It's been said that “ignorance is bliss,” and certainly that

applies here. I have started, owned, operated or been a partner in four previous businesses with some measure of success; however, I had never attempted to market a medical device, much less invent, develop and manufacture anything. I just believed it was possible.

The story begins in 1999 when I got an idea to create a company with the purpose of developing and marketing innovative health-care devices to improve quality of life. I co-founded BioCare Systems Inc. with my late husband, Joe Pecukonis. Joe was an engineer, a business owner and an inventor with 14 patented products on the international market. After selling his company in 1999, we decided together to investigate cutting-edge health-care technologies. Research led us to photobiostimulation, or photon therapy – the use of light energy for healing.

The science behind photon therapy has a nearly 100 year history, but we found it was underutilized in the U.S. The

Building a Colorado Team - Memoirs of a Control Freak – continued

scientific literature on photon therapy includes more than 2,500 titles substantiating its ability to promote and enhance healing and pain relief. Today the technology – in the form of lasers – is used by physiotherapists and sports medicine specialists to treat a wide variety of acute and chronic musculoskeletal aches and pains. Dentists use it to treat inflamed oral tissues and to heal ulcerations. Dermatologists use it to treat edema, ulcers, burns and dermatitis. Rheumatologists use it to relieve pain and treat chronic inflammation and autoimmune disorders. Other specialists are applying this therapy to effect nerve regeneration. Photon therapy is also used in veterinary medicine and rehabilitation clinics.

In the clinical setting, photon therapy has proven effective for increasing the speed, quality and tensile strength of tissue repair; to give pain relief, to resolve inflammation, and to improve function of damaged neurological tissue. But research indicated that the most effective treatment protocol for pain relief involved daily treatments, for up to every six hours, at least twice per day. We saw an opportunity to develop a product for over-the-counter, in-home use. Because LED light is safer, less expensive and as effective as the laser technology used in clinical settings, we thought using LEDs instead of lasers would enable a product to be successfully developed for the consumer market. We made a value decision to pursue this approach.

Once our decision was made, we created a prototype and began to look for outside resources to get the product into production. As a somewhat insecure control freak, I insisted from the start to use as many local vendors as possible.

The first step was to file a strong patent application. We hired **John Ley**, a local patent attorney who has a formidable bioscience client base and an international reputation. John has since filed seven additional patents and numerous trademark applications for us. He has been an integral part of the team, meeting on numerous occasions with the engineering group to help direct product development from a sound IP perspective.

Our first patent was issued in late 2001. But in September my husband, Joe, died of mesothelioma, a rare cancer, and never saw it issue. I took a bit of time, consulted with John Ley and others regarding the potential for BioCare and my ability to put together a team to help me get the product to market. I made a decision in January 2002 to go forward and complete the project. A year later I incorporated BioCare Systems Inc. and began the full-time pursuit of the mission I had begun with Joe.

The first step I took was to join the **Colorado BioScience Association** and begin attending its informal breakfast meetings. I had heard about the association from a personal friend, Dr. Steve Nordeen, a research pathologist at the University of Colorado Health Sciences Center.

Steve later agreed to become a member of BioCare’s advisory board. Through the association I began to attend a broad scope of meetings, breakfasts, conferences, boot camps and other “networking” events. In taking full advantage of each opportunity I began to feel more comfortable in the bioscience space.

Management teams and consultants got me through the first year and helped BioCare reach a point of building a real team to manufacture product. I chose Clay Anselmo’s Reglera Corp. to represent BioCare in all our regulatory matters. **Reglera** is a Denver-based regulatory consulting firm with clients countrywide. How fortunate to have Reglera here, as the firm is expert in dotting i’s and crossing t’s and staying on the true path of regulatory compliance. In addition, Clay and his staff have performed above and beyond the call of duty – ahead of schedule and under budget.

After receiving 510(k) FDA clearance in December 2004 I thought we ready to begin production and began to interview FDA registered manufacturing facilities. **Byers Peak**, located in Wheat Ridge, clearly met all of the criteria which included experience, professionalism and excellent references. President Phil Prescott has been a true team member for two years.



Next, we interviewed a number of marketing and public relations companies to help position us for selling product. What good fortune to find **The Pascoe Associates** and **The Wolper Group** right here in downtown Denver. The two specialize in branding, public relations, and marketing communications for the health-care industry and have clients across the country.

An early task was naming the product and creating a corporate and product image. As part of that process we conducted a series of focus groups. We turned to long-time Denver-based researcher Dr. Dave Beaty, of **Beaty and Associates**, to conduct the research. From these groups we learned many amazing things, but the most important was that the prototype design didn't have the necessary visual appeal for our end users.

This insight set us on a new path of finding an engineering group to redesign the product. This was really a challenge because by now many companies from all over the country showing interest. However, I had been steadfastly working to keep everything here in the community and chose **Wi**, based in the Inverness Business Park. **Wi** owner Dave Wright convinced me that he and his staff would serve as my engineering department. **Wi** was also the only firm that was willing to commit to making every effort to meet our challenging schedule and limited budget.

To address the complex electrical components in the product we brought in Bill Bowers, president of **Cintron Technologies**. Dave and Bill have been an exceptional team and have since collaborated on a number of projects. Kevin Keilbach, an optical engineer also assisted as a consultant on a number of occasions and conducted independent testing for us at the CAPA labs in Boulder.

Finally, the design was engineered. We felt confident that we had met all user requirements and kept within the parameters of our regulatory requirements. When another 510(k) FDA approval was issued in October 2005, we selected **Universal Tooling** in Boulder for most of our tooling, component production and parts manufacturing.

I would most definitely keep my team of Colorado owned and operated vendors who have been there for me every step of the way and gone the extra mile on many, many occasions.

President Wally Boehmer has been on board as a committed team member making sure we had quality parts on time. At the recommendation of Bill Bowers, we selected **Linear Manufacturing** in Colorado Springs as our circuit board house. President Jay Palace has been exceptional to work with, also pushing to meet deadlines. **Insight Performance Group** in Denver has been providing quality pad printing and labeling and has been wonderful to work with.

On the corporate team I am fortunate to have a new partner, Jon Weston, who came on board as COO in June. I am also grateful to operations manager Lanaya Reiter, without whom I would be lost. We have legal representation from John Eckstein and Deb Conroy at **Fairfield and Woods**, and **Phil Hall** is our CPA. Throughout the last two years, my dear friend Paulette Murphy, president of **Phaelix Inc.**, has helped with "brutally honest" scientific research and has willingly attended conferences and workshops to keep us up to date on current scientific findings on photon therapy. Other local vendors include **Protector Corp.** of Longmont that does our strap assembly; **Foam Fabricators** of Denver that makes our foam inserts; **High Performance Engineering** of Colorado Springs that does our injection molding; **Indigio Group** of Denver that takes care of our e-commerce and **Tharco** of Denver that does our boxes. What a Colorado team!

I believe it was diligent effort, hard work, professionalism, focus, caring attitude and "Colorado team spirit" that led this new virtual company to achieve results in record time and significantly under what it typically costs to launch a Class II medical device.

A question I often get asked is, "Would you do it again?" The answer is a resounding, "Yes!" If I were asked, "Would you do it again the same way?" I'd have to say, "Probably not." But I would most definitely keep my team of Colorado owned and operated vendors who have been there for me every step of the way and gone the extra mile on many, many occasions.

CARDIOLOGY COMPANIES:

TAKING
COLORADO'S
PULSE

In 2005 publicly traded Myogen announced encouraging clinical trial results for its two most advanced candidates, ambrisentan and darusentan. The drugs treat pulmonary arterial hypertension and resistant hypertension, respectively.

If progress continues, Myogen will submit a new drug application to the FDA for ambrisentan this year. And the firm is planning to start a Phase III trial for darusentan in 2006.

“This is a pivotal year for us,” says Derek Cole, the company’s director of investor relations.

Myogen is among a handful of firms in Colorado working on treatments for heart diseases, broadly speaking. Some – such as Spectranetics – have long marketed products. Others are in the early stages of venture funding.

Myogen’s darusentan showed promising results in a Phase II trial for resistant hypertension, a condition that affects about 4 million to 12 million people in the U.S. Resistant hypertension is high blood pressure that does not respond to traditional medications; darusentan was found to significantly reduce patients’ systolic and diastolic blood pressure when used on top of three other anti-hypertensive medications. The company plans to launch a Phase III trial this year.

Myogen’s ambrisentan is intended to treat pulmonary arterial hypertension, a rare and lethal condition affecting about 200,000 people. The disease is characterized by high blood pressure in the lungs. Through a complex series of events, the heart eventually pumps less blood to the lungs, leaving patients breathless and unable to walk up a flight of stairs.

Both darusentan and ambrisentan are endothelin receptor antagonists. Endothelin is a chemical produced by endothelial cells – cells that line the insides of blood vessels.

In some cardiovascular diseases, these cells produce too much endothelin. Endothelin receptor antagonists help prevent excess endothelin from causing harm.

In December 2005, Myogen announced positive results for the first of two Phase III trials for ambrisentan. The drug improved patients’ exercise capacity and slowed the progress of their disease, one trial showed. Results from a second trial are due this year.

If the second trial confirms the first, Cole says, “We’d expect to file a new drug application by the end of the year.”

Wall Street analysts’ estimates indicate ambrisentan could achieve \$500 million a year in sales at peak.

Myogen, founded by three academic scientists including University of Colorado’s Dr. Michael Bristow, has grown quickly in recent years. If either ambrisentan or darusentan succeeds through clinical trials, Myogen promises to bring international recognition to Colorado, a significant development.

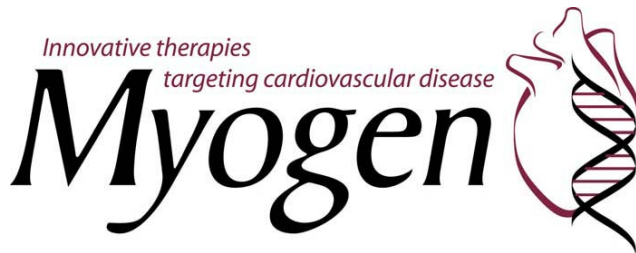
“The state has all the things you need for a world-class biotechnology and medical device presence,” Cole says. “It has a lot of great things going on, and is ready to tip over the tipping point.”

Another company working to treat pulmonary arterial hypertension is Fort Collins-based **PR Pharmaceuticals**. The 60-person firm, known as PRP, develops injectibles that marry medications with the company’s sustained delivery technologies. These formulations allow drugs to be delivered to the body over a period of time. PRP already has



“The state has all the things you need for a world-class biotechnology and medical device presence,” Cole says. “It has a lot of great things going on, and is ready to tip over the tipping point.”

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Cardiology Companies: Taking Colorado's Pulse – continued

one FDA-approved long-acting veterinary product on the market.

Capitalizing on the company's state-of-the-art manufacturing facility and expertise in sustained release technologies, PRP's scientists have turned their attention to developing human therapeutics. The company's lead candidate is PulmoLAR for pulmonary arterial hypertension. It will enter Phase I trials in early 2006.

The active ingredient in PulmoLAR is a drug that inhibits the production of endothelin, increases production of prostacyclin and reduces proliferation of vascular tissues. Unlike existing treatments for pulmonary arterial hypertension, which are delivered through a central venous catheter or multiple daily pills, PulmoLAR would be administered to patients in a subcutaneous injection that provides a treatment lasting up to 30 days.

"Our work in numerous animal models of cardiovascular injury, and in models of PAH in particular, indicates treatment with PulmoLAR has a dramatic effect in improving survival," says Principal Investigator Dr. Stevan Tofovic.

PRP other pipeline products include InsuLAR, a sustained-release once-a-week basal insulin injection for diabetics. Additionally, the firm recently struck a deal with OSI Pharmaceuticals to create a sustained release formulation of OSI's macular degeneration drug, Macugen.

One hundred and twenty miles south of PRP along the Front Range, Colorado Springs is home to **Spectranetics**, one of the state's oldest medical device firms.

The 22-year-old publicly traded company makes and markets both a proprietary laser system and related single-use medical devices that are used to attack cardiovascular disease. Since 1993, Spectranetics' excimer lasers have been FDA approved to remove arterial blockages and open clogged arteries. Like balloon angioplasty, a narrow, flexible tube is inserted into an artery in the patient's arm or leg. Inside the tube is a laser catheter – bundle of optical fibers the carry laser light. The laser catheter is advanced inside the coronary artery to the target obstruction and energized to destroy the obstruction.

The treatment is often used instead of or in conjunction with balloon angioplasty. Some 446 hospitals worldwide use the company's lasers.

In 2004 Spectranetics revenues were \$34.7 million. That year the company introduced the CliRpath laser system. CliRpath is designed to treat critical limb ischemia, a common consequence of diabetes. It occurs when plaque and blood clots build up in the arteries of the leg, inhibiting blood flow. These peripheral arteries are usually not large enough for balloon angioplasty, and without treatment can lead to foot ulcers, severe pain and amputation.

CliRpath works similarly to Spectranetics' coronary artery system using a fiber-optic catheter inserted into the patient's clogged artery. The laser delivers short bursts of ultraviolet energy through the catheter, removing the blockage.

“We’re very excited about CliRpath,” says Will McGuire, the company’s chief operating officer. “If you look at all of the opportunities in front of the company now, certainly the largest potential application of our technology is in peripheral arteries. The biggest piece of our growth in 2005, and it will be the same for 2006, is from the CliRpath line.”

He estimated the market potential for CliRpath is the 700,000 procedures currently performed each year for critical limb ischemia, “and it could be higher as more people are diagnosed and treated.”

The 200-person company is hiring 20 sales representatives this year, bringing its total sales force to 75, to keep up with demand, McGuire says.

An entirely different sort of catheter is at the center of **CardioOptics’** technology. The Wilmington, Mass. firm, which was founded in Boulder and still employs 10 research and operations employees in Boulder, is commercializing a catheter that allows doctors to see through blood.

The catheter uses infrared light, which lends see-in-the-dark abilities much like those developed in the Gulf War. In this case, the “night vision” will allow doctors to peer through blood-filled arteries and into the heart.

CardioOptics’ first product aims to help guide doctors when they are implanting pacemakers. The Coronary Sinus Access System was approved by the FDA last year, and the company recently raised \$26.5 million in a Series B financing to commercialize it.

Still in the early stages of development, five-person **Cardiac Access LLC** is developing a technology that blurs the lines of medicine, engineering and computer science.

The founders are programming an artificial neural network to detect the difference between benign and pathologic pediatric heart murmurs.

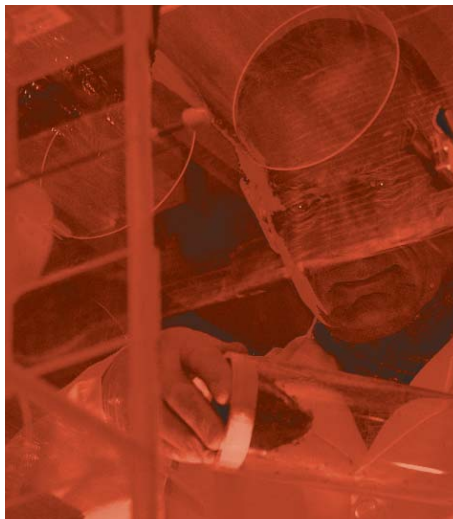
“Many children will have a heart murmur at some point in their life, but the vast majority of murmurs are benign,” explains Chip Galaty, Cardiac Access’ general manager. “Right now, if a community physician hears a heart murmur, she typically refers the patient to a pediatric cardiologist for a complete diagnostic workup.”

To save time and money, Cardiac Access is developing a proprietary software system that will be able to act as the “expert.”

An artificial neural network is being fed digital phonocardiographic signals of heart murmurs. In time, the software will learn the difference between normal and abnormal heart rhythms.

Eventually, the founders hope that the decision support system will allow community physicians to listen to a child’s heart with a digital stethoscope and get a foolproof diagnosis at the point-of-care.

“Wouldn’t it be nice if a community physician heard a murmur the first time, and were able to provide a diagnosis in the same visit?” Galaty says.



“Wouldn’t it be nice if a community physician heard a murmur the first time, and were able to provide a diagnosis in the same visit?” Galaty says.

OTHER COLORADO COMPANIES developing and selling products used in cardiac care include Braun BioSystems, Genesee BioMedical, ARCA Discovery and COBE Cardiovascular.



Colorado's Active Lifestyle Leads to Orthopedics Cluster

Colorado is home to some of the world's best snow skiing, backpacking and marathon races. And so youngsters and baby boomers alike flock to the state in order to race down winter slopes and clamber to alpine meadows.

But at the end of a weekend's fun, hospitals and sports medicine clinics see the consequences: torn cartilage, worn joints, herniated disks.

So perhaps it's no surprise that Colorado is also home to a handful of companies working to improve common orthopedic procedures such as knee realignment, hip replacement and spinal fusion surgeries. These businesses are poised to tap into the tremendous growth in orthopedic surgeries due to the aging U.S. population.

As a Coors family-owned company, **C5 Medical Werks'** lineage goes back to Colorado's earliest days. The company makes ceramic components for the joints used in total hip and knee replacement surgery. It was recently spun out of CoorsTek, a privately-held technical ceramics manufacturing company headquartered in Golden.

CoorsTek was founded in 1910 and has grown to become one of the largest technical ceramics manufacturers in North America. In October 2005, C5 Medical Werks opened its ceramic components manufacturing facility in Grand Junction.

With their hard, smooth surfaces, ceramic implants wear longer than traditional metal or plastic implants.

Although more expensive, ceramic implants are growing in popularity as an increasing number of patients in their 40s and 50s are undergoing joint replacement surgery, and they want those joints to last a lifetime.

"We evaluated the market and determined it was a good growth opportunity for ceramic implants." says Director of Sales and Marketing Tim Haen.

The largest medical device company in the world is also finding opportunity in the joint replacement market. Minneapolis-based Medtronic employs about 275 people at its Colorado-based **Medtronic Navigation**. Navigation systems can be used to remove tumors, implant stimulation devices and align joint replacement implants. More than 1,000 customers in the United States use Medtronic's navigation systems, and the division expects to grow 20 percent a year.

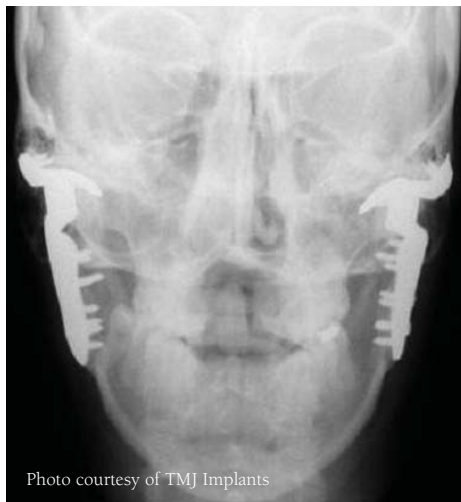


Photo courtesy of TMJ Implants

With their hard, smooth surfaces, ceramic implants wear longer than traditional metal or plastic implants.

Surgical navigation is akin to a global positioning system for surgeons. In the case of knees, it helps them align implants with greater accuracy. Consisting of a computer, a camera and reflective frames, the technology accompanies surgeons in the operating suite. The surgeon places the frames along the patient's leg, the camera takes a picture, and the computer calculates exactly where the prosthesis should go.

Better alignment leads to longer lasting implants and better outcomes. Even the slightest

maladjustment can leave a patient knock-kneed or bow-legged. And the market potential is huge: the American Academy of Orthopedic Surgeons projects that 474,000 knee replacement surgeries will take place in 2030, up from 288,000 in 2005.

iBalance Medical is a Boulder-based startup seeking to halt the progression of joint disease. The seven-person, privately held medical device company has developed a patented system for joint realignment surgery.

Colorado's Active Lifestyle Leads to Orthopedics Cluster – continued

Knee malalignment – either from inherited deformities or damage from injuries – makes the two plates of the knee joint grind down unevenly, much like a tire worn too heavily on one side. Rather than replace the knee, surgeons realign the shin and thigh bones through a procedure known as knee osteotomy.

The procedure is fairly uncommon. Only 19,000 osteotomies were performed in 2003, according to the American Academy of Orthopedic Surgeons. According to iBalance founder Vince Novak, the surgery is rarely recommended because it is difficult to execute for the surgeon and poses a long painful rehab for the patient with varied long-term outcomes.

“We’ve discovered a way to advance the procedure, to take away the surgical complications and to impact rehabilitation,” Novak says. The alternate surgical procedure and accompanying implants are called the Axial Knee Realignment System, and the company plans to have surgeons using the system by early 2007.

Lakewood-based **CeraPedics** has set its sights on the fast growing area of spinal fusion surgery, a complex procedure that uses bone to “weld together” vertebrae along the spine. The procedure can correct spinal deformities, heal fractures and eliminate pain.

With the aging and overweight population, such surgeries are becoming more common. According to the 2005 issue of Medtech Insight, “approximately 500,000 bone grafting procedures take place annually in the U.S. that involve the extremities, pelvis and spine.”

The grafts used to join together one or more vertebrae are the key to spinal fusion surgery. Those grafts originate from either another bone in the patient – known as autograft, from a bone bank – known as allograft, or from bone regrown at the surgical site.

CeraPedics’ eight-person staff is developing a calcium phosphate and peptide-laced putty that would replace autografts and allografts. The synthetic peptide chain stimulates the body to grow its own bone in the areas between vertebrae.

“You’re accelerating the natural process,” explains Dr. Andy Tofe, CeraPedics’ chief executive officer.

While there are two other so-called “bone growth factors” on the market, Tofe believes that in spinal fusion, his firm’s will be just as safe, just as effective, and less costly.

“P-15 is a synthetic peptide,” Tofe says. “You can make it very inexpensively, which allows you to offer it at a fraction of competitors’ cost, at a price that falls within existing reimbursement margins.”

Tofe’s confidence comes from experience. He proved the technology worked at an earlier company, CeraMed Dental. That firm used the peptide technology to help regrow dental bone in areas as small as a raisin and as large as a sugar cube. CeraMed reached \$10 million in sales before being sold in 2001 to Dentsply International, the largest professional dental products company in the world.

CeraPedics submitted its clinical protocol to the FDA last year, and expects to begin clinical trials in the first quarter of 2006.

Golden’s **TMJ Implants** has been creating so-called “medical miracles” for 25 years. The company builds prostheses to replace temporomandibular joints – the flexible joints that attach the lower jaw to the side of the head allowing people to speak, eat and make facial expressions.

Severe temporomandibular joint disease can be the result of trauma, birth defects or joint degeneration. The damaged joint leaves patients severely disfigured.

“You might have a blown-out skull,” says TMJ Implants’ founder Dr. Robert Christensen, a world-renowned leader in this field. “You might have no jaw.”

Christensen founded the company in the latter half of his career as an oral and maxillofacial surgeon. After serving as a surgeon in the Korean War he developed a Los Angeles-based private practice while serving on the medical school faculty of the University of California at Irvine. In the early 1960s that he was among the pioneers to replace a temporomandibular joint with a total prosthesis.

Photo courtesy of Medtronic



With the aging and overweight population, such surgeries are becoming more common.

Christensen moved to Colorado and founded TMJ Implants in 1988.

The 21-person company custom manufactures about half of its chrome alloy prostheses. Collaborating closely with the surgeon who will perform the final implant, TMJ Implants takes a patient's CT scan and creates an anatomical model prior to the operation. Then Christensen videotapes a simulation of the surgery and shares it with the onsite doctor. TMJ Implants will manufacture the prosthesis only after the procedure is approved by the surgeon.

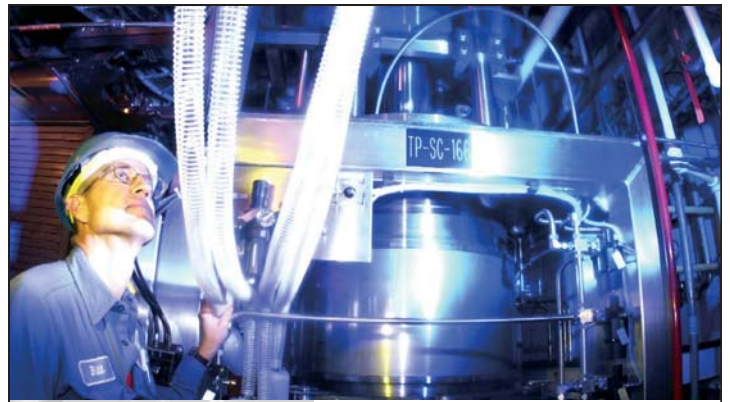
Christensen travels internationally to instruct doctors on TMJ implant surgery. This procedure has been performed on 27,000 people in at least 30 countries to date, at a rate of about 800 surgeries each year.

So while TMJ Implants could be anywhere, it's rooted in the Rockies. "We love the mountains and love Colorado," Christensen says. "It's also a great central spot for us to travel to the world and ship to the world."



Photo courtesy of TMJ Implants

OTHER ORTHOPEDIC COMPANIES with Colorado operations include Medispec, AcuNetx and Synthes.



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www.ableplanet.com

Provides products for people with all levels of hearing loss.

Fort Collins

Accellent

www.accelent.com

Offers a comprehensive menu of outsourcing solutions to the medical device market, including innovative design, integrated engineering, precision component production, finished goods assembly, and complete supply chain management.

Arvada

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Colorado Springs

Accelr8 Technology

www.accelr8.com

Develops medical diagnostic technologies for research and clinical applications. The primary focus is a 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.

Denver

About Packaging Robotics

www.aboutpackagingrobotics.com

Produces affordable robotic package handling systems. The products are engineered to open, fill, transport, seal, code and label a variety of pre-made pouches and bags.

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The Aurora Economic Development Council is the economic development agency responsible for packaging incentives, off-site infrastructure and transportation issues that are related to Fitzsimons. Contact us and realize the possibilities.



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| <p>Accu-Tube Corporation
 www.accutube.com
 Manufactures top quality standard and custom size stainless steel hypodermic medical tubing.</p> | <p>Englewood</p> | <p>AlphaSniffer
 Develops technologies to detect contaminants, toxins and other chemical agents.</p> | <p>Boulder</p> |
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 Engineers and manufactures wireless personal duress systems.</p> | <p>Denver</p> | <p>Anatel Corp.
 www.anatel.com
 Provides instrumentation for monitoring deionized (DI) or ultrapure (UPW) water.</p> | <p>Loveland</p> |
| <p>AcuNetx
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 www.animalcaresystems.com
 Invests in research and development to bring a better mouse cage to the life science industry.</p> | <p>Littleton</p> |
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| <p>Advanced Research Instruments Corp
 www.aricorp.com
 Manufactures electronics for use in scientific and industrial applications. Produces a wide range of products from preamplifiers for PMT's and electron multipliers, to high voltage power supplies, counters and timers, precision rate meters, and computer interfaces.</p> | <p>Golden</p> | <p>Avantes
 www.avantes.com
 Offers miniature spectrometer systems for on-line measurements and analysis, usually consisting of a light source, fiber optic cables and probes and a spectrometer for the analysis of the light.</p> | <p>Broomfield</p> |
| <p>Agilent Technologies
 www.agilent.com
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| <p>AlloSource
 www.allosource.com
 Develops, processes and distributes life-enhancing bone and tissue allografts to the medical community.</p> | <p>Centennial</p> | <p>BD Diagnostic Systems
 www.bd.com
 Manufactures and sells a broad range of medical supplies, devices, laboratory equipment and diagnostic products.</p> | <p>Wheat Ridge</p> |
| <p>AllPro
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 Produces a large selection of non-latex prophylaxis cups.</p> | <p>Broomfield</p> | <p>Bell Dental Products
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Boulder

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Biomedical Research Associates

Aurora

www.bra-llc.com

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Biotrol International

Louisville

www.biotrol.com

Manufactures and markets infection control and preventive products for the dental industry.

bioZhenia

Bellvue

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BP Proteomics

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Centennial

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Byers Peak, Inc.

Wheat Ridge

www.byerspeak.com

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C5 Medical Werks

Denver

Manufactures hip and spinal implants for orthopedic companies. The company is expert in spherical bearing surfaces using materials that provide highly wear resistant options.

Canberra Industries

Arvada

www.canberra.com

Manufactures radiation detection and analysis instrumentation. Supplier of integrated nuclear gamma and alpha spectroscopy instrumentation.

Cardio-Optics

Boulder

www.cardio-optics.com

Invented and developed Trans-Blood Vision™ (TBV™), an enabling, platform technology that provides direct, real-time, optically-based vision through blood and brings the physician's sense of sight into play in blood-filled areas.

Care Electronics

Boulder

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Offers a range of safety alarms to provide safety monitoring for persons in nursing homes and home health care settings.

Caroba Plastics

Englewood

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

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Colorado Springs

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CeMines

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Lakewood

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Certol International

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CLP MicroTechnologies

Boulder

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Develops the new microfabrication technology of Contact Liquid Photolithographic Polymerization (CLiPP) in the area of life-science microfluidics.

COBE Cardiovascular Arvada
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Develops and produces innovative cardiovascular and autologous transfusion therapy products.

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Coherent Technologies Louisville
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Colorado Altitude Training Boulder
www.altitudetraining.com

Advances altitude simulation technology and products.

Colorado Laser Marking Colorado Springs
www.coloradolasermarking.com

Serves the medical, dental ceramic, electronic, military, architectural, and machining industries using the latest in laser engraving technology.

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

COMEG Endoscopes, U.S.A. Denver
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CoorsTek Golden
www.coorstek.com

Technical ceramics manufacturer with over 150 proven ceramic blends for use in implant procedures. Also, offers over 18,000 plastic materials for projects including high-temperature polymers, thermoplastics, fluoropolymers, and bioresorbables and provides custom machined and injection-molded metals.

Corgenix Medical Corporation Westminster
www.corgenix.com

Develops and manufactures innovative diagnostic test kits used to aid in the diagnosis of specific immunological diseases.

- CytoLogic** Fort Collins
www.cytologic.com
 Uses a medical device to treat solid tumors called UNLEASH™ Immunotherapy. In a process similar to kidney dialysis, UNLEASH™ Immunotherapy selectively removes blood-borne inhibitors that protect tumors from the body's own immunological defenses.
- Dako Colorado** Fort Collins
www.dako.com
 Develops and produces antibodies and instruments for the diagnostic industry. Specializes in the fields of immunocytochemistry, flow cytometry, and microbiology.
- Darkhorse Technologies** Boulder
 Commercializing a patented technology that will provide affordable, hand-carried, battery operated instruments for on-site genetic detection using Polymerase Chain Reaction (PCR).
- Delphi Medical Systems** Longmont
www.delphimedical.com
 Focuses on medium volume, high complexity systems for the production of many types of instruments.
- Dentsply Friadent CeraMed** Lakewood
www.ceramed.com
 Designs, manufactures and markets dental implant and surgical devices.
- Denver Biomedical, Inc.** Golden
www.denverbiomedical.com
 Designs, manufactures and distributes specialized medical products for fluid management of pleural effusion and ascites.
- Denver Instrument** Denver
www.denverinstrumentusa.com
 Designs and manufactures analytical balances, electrochemistry instruments, moisture analyzers, and titration controllers.
- Denver Optic Company** Englewood
www.eyeprosthethics.com
 Specializes in the fitting and fabrication of two types of ocular prosthesis. Both are made to cosmetically restore symmetry to the patient's companion eye.
- Die Cut Technologies, Inc.** Northglenn
www.diecuttech.com
 Engineers, designs, and manufactures non-metallic parts that improve the manufacturing processes using a myriad of materials.
- DNA-IntelliGen Corporation** Monument
www.dna-intelligen.com
 Provides innovative and cost-effective personal identification systems based on biometric identity factors (fingerprint, voice, DNA marker, etc.).
- DNTLworks Equipment Corporation** Centennial
www.dntlworks.com
 Manufactures portable, mobile and self-contained dental equipment.
- Elantec Med** Golden
<http://members.aol.com/lmallen.homepage.htm>
 Engages in product development on contract. A drug delivery system research and development company.
- Eldon James Corporation** Loveland
www.eldonjames.com
 Designs and manufactures tubing and hose fittings that are used worldwide as components in medical devices and water filtration systems.
- Ellab Inc.** Centennial
www.ellab.com
 Manufactures the complete thermal validation solutions for food and pharmaceutical industries and for other industries where thermal processing involves safety, energy savings, quality improvement, optimization and where accurate and complete documentation is essential.
- Eltron Research Inc.** Boulder
www.eltronresearch.com
 Research energy, chemical processing, environmental, and catalysis technologies. Identify more efficient strategies for utilization of energy and chemical resources, and provide novel approaches for reducing, controlling and monitoring the environmental impact of these technologies.
- Encision** Boulder
www.encision.com
 Designs and manufactures innovative surgical devices. Pioneered the development of patented AEM® Laparoscopic Instruments to improve electrosurgery and reduce the chance for patient injury in minimally invasive surgery.
- Encynova International** Greeley
www.encynova.com
 Designs and manufactures superior fluid control systems for a broad range of metering and dispensing applications.

Eumedic Incorporated

Lafayette

Produces the Fenzian Treatment System which is a battery powered, hand-held impulse generator that provides symptomatic relief of chronic, intractable pain and adjunctive treatment for post-surgical and post-trauma acute pain.

Evergreen Research

Golden

www.evergreenresearch.com

Contract product development company emphasizing medical devices.

Extreme Diagnostics

Boulder

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.

Feiger Health Research Center

Wheat Ridge

www.feigerresearch.com

A research facility that determines the safety and effectiveness of new medications for the treatment of major depression.

Ferraris Respiratory

Louisville

www.ferrarismedicalusa.com

Develops and manufactures respiratory care products and services. Specializes in cardio-pulmonary diagnostics, asthma management and other non-invasive respiratory solutions.

Fischer Imaging

Denver

www.fischerimaging.com

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

Front Range Laboratories

Loveland

Independent contract laboratory emphasizing pharmaceutical quality control.

Gambro

Lakewood

www.gambro.com

A global medical technology company in renal care products, and blood component technology.

Gambro BCT

Lakewood

www.gambrobct.com

The company's Trima system is the first automated blood collection system to collect a combination of leukoreduced red blood cells, platelets and plasma, helping blood centers be more efficient.

Gambro Renal Products

Lakewood

www.usa-gambro.com

Develops and supplies hemodialysis, peritoneal dialysis and acute dialysis products, therapies and services.

GE Analytical Instruments

Boulder

www.geinstruments.com/ionics

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

Genesee BioMedical

Denver

www.geneseebiomedical.com

Manufactures cardiac surgery instruments and devices.

Gnathodontics, Ltd.

Wheat Ridge

www.gnatho.com

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

Guidant

Englewood

www.guidant.com

Designs and develops cardiovascular medical products.

Hach Company

Loveland

www.hach.com

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

The Harloff Company

Colorado Springs

www.harloff.com

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

HealthTech

Golden

www.healthetech.com

Develops and markets technologically advanced and proprietary diagnostic devices and software that measure and monitor health parameters.

HEI Advanced Medical Operations

Boulder

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

Boulder

www.hppi.com

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

Hosuk America Co. www.hosuk.net Manufactures syringes and packaging products for the medical community.	Aurora	Ionic Fusion www.ionicfusion.com Designs, manufactures, distributes and services equipment for their proprietary process utilizing Ionic Plasma Deposition (IPD). The Ionic Plasma Deposition Process impregnates many metals and ceramics into substrates enhancing the surface characteristics to control microbes in bandages and to increase the lifetime for implanted devices.	Longmont
iBalance Developed a solution for knee misalignment that preserves and restores natural knee surfaces. The Axial Knee Realignment System (AKR) comprises both a new surgical technique and an anatomic-based, knee implant system.	Boulder	IPAX www.ipaxinc.com Assembles and packs medical products.	Englewood
Ideatrics www.ideatrics.com Develops hand-held manually-operated mechanical instruments and provides consulting services to organizations involved in the design, manufacture and distribution of medical devices.	Boulder	Isonics www.isonics.com Develops, commercializes, and markets materials which have been sub-atomically engineered to enhance performance. These ultra-pure materials have applications in several areas including medical diagnostics, imaging and therapy, and drug development.	Golden
InDevR www.indevr.net Working toward revolutionary advancements in influenza diagnosis and surveillance as well as significant improvements in influenza vaccine production and the development of new antiviral agents.	Boulder	JMST Systems www.jmstsystems.com Manufactures high performance chemical analysis instruments. Offers instruments for most applications of optical monitoring, liquid delivery, robotic sampling, and liquid fraction collection.	Colorado Springs
Infinity Photo-Optical www.infinity-usa.com Manufactures long-distance microscopes, continuously focusable microscopes, macro systems, video inspection lenses, and internal-focusing devices for industrial inspection, process/product monitoring, machine vision, QC, advanced imaging, noncontact gauging/inspection, and laser/biomedical research.	Boulder	Jorgensen Laboratories www.jorvet.com Designs and manufactures instruments which are used regularly in the animal health field.	Loveland
Innovative BioDevices 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.	Berthoud	Kestrel Labs www.kestellabs.com Researches and develops projects, provides consulting, and contract development of innovative, patient monitoring concepts and other medical technologies.	Boulder
Instec, Inc. www.instec.com Manufactures precision temperature controllers and microscope hot stage systems for temperature cycling, food sciences, materials characterization, forensics, polymers and liquid crystals and microbiology.	Boulder	Kimble Precision www.kimble-precision.com Detailed services in general machining, shortrun production of existing products, prototyping of new products, as well as fixturing and tooling.	Loveland
Inverness Medical, Point of Care Diagnostics www.biostar.com Supplies analytical laboratory instruments. The diagnostics business unit develops highly sensitive and specific patient diagnostic tests for rapid detection of respiratory, gastrointestinal and sexually transmitted diseases.	Louisville	Küschall www.kuschallna.com Manufactures home medical products such as wheelchairs, accessories, and spare parts.	Longmont
		Laser Neurotherapy Development www.laserneurotherapy.com Develops high energy lasing photomedicine that deposits significant energy to tissue in a short period of time - up to 200 Joules in a 20 second treatment.	Colorado Springs

LeBac Systemswww.labaconline.com

Designs and builds high quality, innovative quadriplegic seating systems.

Denver

Lenox MacLaren Surgical Instrumentswww.lenoxmaclaren.com

Manufactures custom surgical instruments.

Louisville

Lexicor Research Centerwww.lexicor.com

Manufactures an EEG data acquisition medical device called the Digital Cortical Scan. The company also offers quantitative EEG data analysis through its DataLex Reporting Service.

Boulder

LogiSenswww.logisens.com

Develops an innovative, patented sensor and software technology, enabling a significant breakthrough in real-time measurement and reduction of stress.

Fort Collins

Magnelab Corporationwww.magnelab.com

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

Longmont

McKinley Medicalwww.mckinleymed.com

Provides infusion therapy for post-operative pain management for general and orthopedic surgery.

Wheat Ridge

Medegen Medical Productswww.medegen.com

Develops, manufactures and markets disposable medical products. Manufactures three product lines: patient utensils, laboratory disposables and procedure kits.

Northglenn

Medical Modelingwww.medicalmodeling.com

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

Golden

Medivancewww.medivance.com

Works in the field of therapeutic temperature management with the development and introduction of its first product platform - the patented Arctic Sun Temperature Management System.

Louisville

MedShape Solutions, Inc.www.medshapesolutions.com

Developed a device, built using shape memory polymers, that fixes a graft in place when activated by body temperature. Also, developed bioabsorbable shape memory polymers and shape memory alloys for fixation and fracture repairs.

Denver

Medtronic Navigationwww.medtronic.com

Offers products, therapies and services to treat conditions such as diabetes, heart disease, neurological disorders, and vascular illnesses.

Broomfield

Meinhard Glass Productswww.meinhard.com

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

Golden

Mesa Laboratorieswww.mesalabs.com

Acquires, develops, manufactures and markets high-quality, computer based electronic measurement instruments. Products are used in niche markets in industrial, pharmaceutical and medical applications.

Lakewood

Metafluidicswww.metafluidics.com

Focuses on a chip-top microfluidic device capable of automating the processes involved in therapeutic screening of cellular suspensions within a single high-throughput, disposable device.

Golden

Metamatrixwww.zorbent.com

Manufactures an all-purpose absorbent called Zorbent.

Boulder

MicroPhagewww.micro-phage.com

Produces high-speed bacteria detection technologies to commercialize in markets including: food safety, water safety, clinical and veterinary diagnostics and detection applications. Specific pathogens that may be addressed include: escherichia coli, listeria monocytogenes and salmonella.

Longmont

Mikron Assembly Technologywww.mikron.com

Supplies transfer machining systems for complex parts, up to one cubic decimeter in size with extremely high requirements in terms of precision and output, as well as cutting tools with high performance standards.

Aurora



Progress: It's in our blood

At **Gambro BCT, Gambro Renal Products** and **Navigant Biotechnologies** we bring together the right people and products to meet the complex needs of our markets—which include blood and cell based therapies, renal and intensive care and pathogen reduction.

Founded almost 40 years ago, we have grown to become a global

leader in developing innovative approaches for patients and donors by improving processes and developing cutting-edge products. For our patients, this means better outcomes and an improved quality of life.

For more information about Gambro, visit us at www.gambro.com.



Molecular C*Chem
www.cchem.com

Provides chemical technologies for the purification of breathable air and the production of high-purity gases.

Lafayette

Nanogen
www.nanogen.com

Provides instrumentation for multiplexed detection in genetic and infectious disease testing. The NanoChip® 400, an electronic microarray platform, automates highly complex assays.

Fort Collins

NanoProducts Corporation
www.nanoproducts.com

Provides performance-oriented product engineering, followed by manufacturing and delivering nanoscale materials, dispersions and related products.

Longmont

NanoThread Inc.

Develops a unique process for manufacturing continuous single- and multiple-walled carbon nanotubes (CNTs). The process will produce CNTs with no theoretical limit on growth length and requiring minimal cleanup after primary manufacture.

Arvada

Nervonix
www.nervonix.com

Invented, patented, and prototyped a break-through nerve imaging technology that operates non-invasively at the skin surface to accurately locate and image peripheral nerves.

Longmont

Nexxion
www.nexxioncorp.com

Improves the quality of medical devices through creative surface engineering techniques utilizing their proprietary Ionic Plasma Deposition (IPD) process.

Longmont

Optibrand
www.optibrand.com

Provides livestock producers with a fraud-resistant inexpensive system to positively identify individual animals from birth and throughout the food processing chain. The Secure Identity Preservation system helps assure food safety and control the spread of animal disease.

Fort Collins

Otologics
www.otologics.com

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

Boulder

Oval Window Audio
www.ovalwindowaudio.com

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

Nederland

Pare Surgical
www.paresurgical.com

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

Englewood

Parker Medical Englewood
www.parkermedical.com
 Improves the technology for tracheal intubations in the hospital and pre-hospital setting with their intubation products and technology.

Particle Measuring Systems Boulder
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.

Peak Robotics Colorado Springs
www.peakrobotics.com
 Manufactures robots, special equipment, and turnkey automated systems for a variety of industries including: biotech, electronics, medical, semiconductor, etc.

Pernicka Fort Collins
www.pernicka.com
 Manufactures products, parts or prototypes to the customer's specifications. Products include Ion Lasers used for eye surgery and Excimer Lasers used in heart surgery.

PharmaJet, Inc. Golden
www.pharmajet.com
 Created an FDA cleared 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.

Physiodynamics Englewood
www.therastim.net
 Created TheraStim®; a unique, wall plug-in and battery powered electrical neuromuscular stimulation modality for the treatment of soft tissue rehabilitation.

Piko Healthcare Products Louisville
www.pikohealthcare.com
 Designs and develops low-cost, intelligent, electronic medical devices to service the needs of the global homecare market.

Point Technologies Boulder
www.pointtech.com
 Specializes in precision manufacture of critical biomedical metal subcomponents. Core technologies include electrochemical pointing, plating, burr-free cutting and micro-machining of small diameter wire and tubing.

Precision Glassblowing Centennial
www.precisionglassblowing.com
 Provides custom and OEM scientific glass.

Preferred Medical Products Englewood
www.pmpcolorado.com
 Specializes in the manufacture of stainless steel medical components for hypodermic needles and lancet type products.

Probetronix Colorado Springs
www.probetronix.net
 Manufactures oscilloscope probes.

Products Group International Lyons
www.productsgroup.com
 Researches, develops and engineers ultrasound medical and veterinarian equipment.

Progressive Gaitways Telluride
www.theratogs.com
 Produces a product, TheraTogs™, that is an orthotic undergarment and strapping system that gives clients with sensorimotor impairment a new modality for improving postural alignment and stability, movement skill and precision, and joint stability.

Pro-Safe Products Grand Junction
www.prosafeproducts.com
 Customizes existing products, creates new products/prototyping; provides custom packaging and labeling; contract design and manufacturing; fulfillment services and design and engineering.

Protogenic, Inc. Westminster
www.protogenic.com
 Provides rapid prototyping services that involve the use of stereolithography (SLA), EOS Laser-Sintering (LS) technology, and silicone tools. Products include dimensionally accurate SLA and LS Nylon 12 models, custom-cast prototypes with Shore A and D hardness's, and low-volume-production polyurethane parts.

Protomed Arvada
www.protomed.net
 Uses the latest imaging software and laser drawn technology to create accurate anatomical models from CT scans.

Quest Product Development Evergreen
www.quest-corp.com
 Provides full service engineering and product development services for the medical device industry.

Radiological Imaging Technology

Colorado Springs

www.radimage.com

Provides clinical and research physicists with a high precision automated QA tool for advanced radiation therapies. Received FDA clearance on RIT113 radiation therapy film dosimetry.

Rand-Scot

Fort Collins

www.easypivot.com

Designs and manufactures the EasyPivot lift which is a streamlined "transfer machine" designed for safe and efficient patient transfers.

RapidPro Manufacturing

Longmont

www.rapidpro.com

Offers product development including R&D, engineering and design, consultation, reverse engineering, SLA, SLS, low volume prototype and replacement parts, metal parts, machining, die casting, investment casting, cast urethane, silicone and epoxy parts, custom finishing and decorating, injection mold tooling and molding.

Reynolds Polymer Technology

Grand Junction

www.reynoldspolymer.com

Manufactures cast acrylic cylinders for hyperbaric chamber manufacturers.

RJD Machining

Parker

www.rjdmachining.com

Provides components to medical equipment, aerospace, electronic components, optical, measuring devices, pumping and electro-magnetic companies.

Rocky Mountain Biosystems

Golden

Combines physical science and biotechnology to design products that make people look and feel better. RMBI's proprietary high frequency energy conversion systems temporarily or permanently modify tissues for transdermal and deposition drug delivery, and for cosmetic skin resurfacing.

Now what?

You have a great idea brewing for a new business. Now you have two choices. You can sit there and let your coffee – and your idea – cool down, or you can grind that jolt of genius into a hot commodity. The Denver Office of Economic Development has the resources you need to brew your caffeinated creation into a booming business. We help the entrepreneurs of Denver navigate through loans and logistics, permits and processing, and we even provide fresh coffee along the way.



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www.milehigh.com



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|--|-----------------|--|------------------|
| <p>Rocky Mountain Instrument Co.
 www.rmico.com
 Designs and manufactures optics and coatings (UV through Far IR) for a wide range of vertical industries, including telecommunications, medical, military, and manufacturing.</p> | Lafayette | <p>Sonora Medical Systems
 www.4sonora.com
 Provides high quality products and services to the diagnostic ultrasound and MRI markets. ISO-9000 certified and FDA registered.</p> | Longmont |
| <p>Rocky Mountain Orthodontics
 www.rmortho.com
 Developed the first set of prefabricated orthodontic appliances. Introduced the first preformed bands, attachments, stainless steel wire and welder.</p> | Denver | <p>Sontec Instruments
 www.sontecinstruments.com
 Offers in-house repair service and custom instrument manufacturing in addition to a broad line of surgical instruments.</p> | Englewood |
| <p>Sandhill Scientific
 www.sandhillsci.com
 Manufactures medical instrumentation for gastroenterologists and endoscope surgeons.</p> | Highlands Ranch | <p>Sound Surgical Technologies
 www.vaser.com
 Creates the VASER® System and the LipoSelectionSM procedure, focused on ultrasonic technologies and related techniques for aesthetic surgery.</p> | Golden |
| <p>Sciencetech
 www.sciencetech-inc.com
 Manufactures semi-micro balances, analytical balances, semi-analytical balances, and toploading balances.</p> | Boulder | <p>Spectranetics
 www.spectranetics.com
 Develops, manufactures and markets the "cool" ultraviolet excimer laser technology for multiple cardiovascular procedures to physicians and hospitals worldwide. This technology removes arterial blockages and ablates the scar tissue holding problematic pacemaker and ICD cardiac leads in place.</p> | Colorado Springs |
| <p>SealCon
 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.</p> | Centennial | <p>Strategy 3
 www.samsondesign.com
 Provides full service product development ranging from concept to production specifications for the health care industry. The design focus is on the human relationship with the product, including how people will use, handle, and service the product.</p> | Boulder |
| <p>Shippert Medical Technologies
 www.shippertmedical.com
 Manufactures and distributes medical disposable products and instruments. Serves the ear, nose and throat, plastic surgery, emergency/trauma care, family practice, pediatric, and dermatology fields.</p> | Centennial | <p>StrionAir, Inc.
 www.strionair.com
 Manufactures and markets a low cost air-filtration technology that renders existing air-filtration solutions technically inferior and cost ineffective.</p> | Louisville |
| <p>Sienco
 www.sienco.com
 Provides tools for hemostasis monitoring and viscoelastic evaluations.</p> | Arvada | <p>Summa Design
 www.summa-design.com
 Contract design and development company focused on the medical device market.</p> | Montrose |
| <p>Silverglide Surgical Technologies
 www.silverglidesurgical.com
 Manufactures and distributes electrosurgical instruments for stopping bleeding in the brain, spine and other delicate surgical fields. All instruments incorporate the SILVERGlide® non-stick technology.</p> | Boulder | <p>Summit Doppler Systems
 www.summitdoppler.com
 Manufacturer of ultrasound Doppler systems used to detect fetal heartbeat and to monitor peripheral arterial and venous blood flow.</p> | Golden |
| <p>Soft Imaging System Corp
 www.soft-imaging.de
 Produces, markets, and sells image acquisition and processing software and hardware for all areas of microscopy.</p> | Lakewood | <p>Sunrise Medical Colorado Division
 www.sunrisemedical.com
 Provides home healthcare products including wheelchairs, respiratory and speech augmentation.</p> | Longmont |

Surgical Pioneering, Inc.

Lafayette

Develops instrumentation and methods to improve surgery with an emphasis on cardiac surgery.

Synthes USA

Monument

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.

T.R.S.

Boulder

www.oandp.com/products/trs

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

Takeshiba Technologies

Pueblo

Develops and manufactures a hand-held device that uses ultrasound technology to measure how much urine is in the bladder.

Tapeless Wound Care Products

Englewood

www.tapelesswoundcare.com

Manufactures and distributes a system of patented secondary wound dressing retention devices, offering an alternative to traditional secondary wound dressings, including tape, gauze, elastic wraps and elastic netting.

Tartan Orthopedics

Northglenn

www.tartanortho.com

Manufactures a line of orthopedic products including 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

Wheat Ridge

www.tda.com

Develops and commercializes a variety of components and devices, including single-use devices, life support equipment, fuel systems and MEMS-based devices.

Tech-X Corporation

Boulder

www.txcorp.com

Provides technical solutions through collaboration and product development. The business consists of grant funded scientific R&D projects and scientific software products.

Tensegrity Prosthetics, Inc.

Louisville

Manufactures and designs a prosthetic foot, the Liberator, which is designed to behave more biomechanically like a human foot.

TMJ Implants

Golden

www.tmj.com

Designs and manufactures alloplastic implants for the treatment of temporomandibular joint disorders and injuries. The company manufactures both stock and custom devices for partial and total TMJ joint replacement.

Toltec International, Inc.

Lakewood

www.toltec.biz

Helps companies succeed in developing and maintaining medical devices in full compliance with international regulatory standards.

Touch of Life Technologies

Aurora

www.toltech.net

Commercializes scientific applications based on advances in human anatomy simulation.

Transtracheal Systems

Englewood

www.transtracheal.com

Manufactures and markets respiratory therapy products including the SCOOP transtracheal oxygen therapy system.

Trelleborg America Variseal Corp.

Broomfield

www.trelleborg.com

Develops high-performance solutions that damp, seal and protect in demanding industrial environments. Provides solutions based on leading polymer technology.

Valleylab

Boulder

www.valleylab.com

Designs, manufactures and markets advanced electrosurgery systems and accessories worldwide.

Value Plastics

Fort Collins

www.valueplastics.com

Designs and manufactures plastic tubing components including Luers, Luer Accessories, Large Bore, Tube-to-Tube, Threaded, Panel Mount, Blood Pressure and Bondable Fittings.

WestMed

Englewood

www.westmedinc.com

Designs, manufacturers and markets leading quality medical devices for anesthesia and respiratory professionals.

Westone Laboratories

Colorado Springs

www.westone.com

Designs and manufactures custom ear molds for hearing healthcare and other applications.

Wi, Inc. Englewood
www.wiinc.net
 Focuses on the design of electro-mechanical and disposable medical products.

Ximedix Colorado Springs
www.ximedix.com
 Manufactures and sells single patient use medical products for the anesthesia, respiratory care, critical care and emergency medicine applications.

Yamato Corporation Colorado Springs
www.yamatocorp.com
 Manufactures and sells scales and other measurement instruments.

Zetek Aurora
www.zetek.net
 Manufactures the Cue family of fertility monitoring products.

Zynex Medical, Inc. Littleton
www.zynexmed.com
 Offers a wide range of electrotherapy products for home use, utilizing various methods of non-invasive muscle stimulation and electromyography technology, Interferential Current (IFC) and Transcutaneous Electrical Nerve Stimulation (TENS).



What's in your Lab ? From specialty, medical, and industrial gases – in high-pressure cylinders, liquid cylinders, and MicroBulk services – to refrigerators, freezers, gas generators, regulators, manifolds, purifiers, and more... you'll find it with Airgas.

Airgas is the official packaged gas supplier for the BIO Business Solutions group purchasing service. Rely on Airgas to reduce the cost of purchasing gases, as well as the headaches and hassles of gas ordering and inventorying. Take advantage of our experience serving customers in all phases of the life sciences, from biotechnology start-ups to large pharmaceutical companies.

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 Airgas Intermountain, 4810 Vasquez Blvd.
 Denver, CO 80216-3008 Phone: (303) 370-7800

BIOSCIENCE COLORADO MAGAZINE COMPANY DIRECTORY

Biotechnology, Pharmaceutical and Related Companies

- Accera** Broomfield
www.accerapharma.com
 Develops novel therapies that target metabolic defects in Alzheimer's disease (AD) and may lead to new treatments for this devastating disease. These treatments are designed to increase energy to neuronal cells and provide raw materials for cholesterol and acetylcholine synthesis.
- Aeronic International** Berthoud
www.aeronic.com
 Supplies bio-pharming, biotechnology, and consulting services and is funded by NASA SBIR.
- Affinity Bioreagents** Golden
www.bioreagents.com
 Provides over 2,300 antibody reagents for over 33 research areas.
- Agripro Wheat** Berthoud
www.agriprowheat.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.
- Allos Therapeutics** Westminster
www.allos.com
 Develops and commercializes small molecule therapeutics for the treatment of cancer.
- Alpharma Animal Health** Longmont
www.alpharma.com
 Manufactures generic liquid and topical pharmaceuticals.
- American Allied Biochemical** Aurora
www.aablabs.com
 Specializes in the purification and distribution of restriction endonucleases.
- Amgen** Longmont
www.amgen.com
 Discovers, develops, manufactures and markets human therapeutics based on advances in cellular and molecular biology. Amgen Colorado is one of the company's key operations centers, providing medicines that are changing people's lives, including EPOGENR (Epoetin alfa), AranespR (darbepoetin alfa), and Kepivance(tm) (palifermin).
- Analytical Development Corporation** Colorado Springs
www.analyticaldevelopment.com
 Specializing in bioanalytical and metabolism research studies for the pharmaceutical and biotechnology, animal health, and agricultural industries.
- ApoLogic Pharmaceuticals, Inc.** Aurora
 Focuses on the discovery, development and commercialization of therapeutic products that target unique apoptotic cell death pathways found in tumor cells and proliferating lymphocytes.
- Aquatic BioSystems** Fort Collins
www.aquaticbiosystems.com
 Specializes in the production and distribution of freshwater and marine organisms for aquatic toxicology, biomonitoring and other research activities.
- ARCA Discovery** Aurora
 Specializes in enhancement of biopharmaceutical drug development and in basic and clinical research in the field of heart failure.
- Agro Management Group** Colorado Springs
www.agromgt.com
 Markets bio-based engine lubricants under the Sterling Grade™ brand name throughout North America with Sterling Bio-Technologies Corporation.
- Array BioPharma** Boulder
www.arraybiopharma.com
 Focused on the discovery, development and commercialization of orally active drugs to address unmet medical needs. The drug development pipeline is primarily focused on the treatment of cancer and inflammatory disease and includes several small molecule drug candidates that are designed to regulate targets in therapeutically important biologic pathways.
- AspenBio** Castle Rock
www.aspenbioinc.com
 Develops products to the point of introduction and seeks the best potential partner to penetrate the market. Current products include human and animal proteins, as well as, human and animal hormones.

- Aspire Biotech** Colorado Springs
www.aspirebiotech.com
 Provides contract services for all phases of product development from concept to launch.
- AstraZeneca Pharmaceuticals** Arvada
www.astrazeneca.com
 Focused on turning good ideas into innovative, effective medicines that make a difference in important areas of healthcare.
- Aurogen** Fort Collins
www.aurogen.com
 Produces a newly patented pharmaceutical treatment for diabetic neuropathy. A second invention shows that neurotrophic hormones can act across the blood-brain barrier (BBB) to treat various brain disorders.
- Avidity** Denver
www.avidity.com
 Holds rights to the patented biotin-accepting peptides (AviTag) technology. AviTag technology exploits the tight interaction of avidin or streptavidin with biotin for immobilizing, purifying and visualizing proteins.
- Barofold** Aurora
www.barofold.com
 Offers a product line of instruments, disposables and reagents designed to assist researchers in obtaining the optimal protein solubilization and refolding quickly.
- Bayer Crop Science** Kansas City, MO
www.bayercropscienceus.com
 Provides crop solutions, products and services, and has leading positions in the key segments of the worldwide agrochemical markets: crop protection, plant biotechnology, seeds and environmental science.
- Biophorix** Aurora
www.biophorix.com
 Researches and develops intelligent design of life saving drugs.
- Biological Systems Corporation** Denver
 Uses engineering and computational science methods to integrate information and lab results to accelerate drug discovery. BSC is developing products both in informatics and in pharmaceuticals.
- BioLogix** Denver
 Breeds insects for pest control.
- Bionovo** Aurora
www.bionovo.com
 Focuses on discovering and developing drugs for women's health and cancer.
- BioResponse** Boulder
www.bioresponse.com
 Researches, develops and commercializes unique dietary supplements and functional foods. Awarded a patent for its delivery system for highly-absorbable ("bioavailable") Diindolylmethane.
- BioServe Space Technologies** Boulder
www.colorado.edu/engineering/BioServe
 Develops new or improved products through space life science research in partnership with industry, academia and government.
- BioVision Technologies, LLC** Golden
www.biovisiontech.com
 Provides innovative imaging solutions to medical OEMs that will enable better patient care.
- Bioxel International** Lafayette
www.bioxelpharma.com
 Produces and develops new molecules, formulations and delivery approaches for pharmaceutical ingredients. A division of Bioxel Pharmaceutical.
- Bolder BioTechnology** Wheat Ridge
www.bolderbio.com
 Uses advanced protein engineering technologies to create proprietary human protein pharmaceuticals with enhanced therapeutic properties.
- Boulder Scientific** Mead
www.boulderscientific.com
 Manufactures advanced organometallic catalysts, ligands, and co-catalysts.
- Brotica** Bellvue
www.brotica.com
 Produces Interval33, a termite attractant which works by producing the precise level of CO₂ that has been shown to attract termites.
- CaP Biotechnology** Golden
www.capbio.com
 Produces calcium phosphate hollow microspheres and custom shaped calcium phosphate materials used at tissue banks, corporate research, and other institutions.

Cardinal Health Boulderwww.cardinal.com/pts

Offers oral, topical, inhalation, biopharmaceutical and sterile product support. Provides individual and integrated solutions; development services ranging from discovery to clinical packaging; and capabilities for virtually every dosage form.

Cargill Research Fort Collinswww.cargill.com

Develops, processes and markets science-based, health promoting ingredients for food and dietary supplement industries worldwide.

Cell>Point Englewoodwww.cellpointweb.com

Developing 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 diseases and metabolic diseases.

Ceragenix Pharmaceuticals Denverwww.ceragenix.com

Engages in the discovery, development and commercialization of a portfolio of innovative products for dermatology, oncology and infectious disease applications.

Cevan International Longmontwww.cevan.com

Delivers top quality, scientifically verifiable natural products with particular emphasis on the international market.

CHATA Fort Collinswww.chatasolutions.com

Produces hundreds of standard and custom HPLC mobile phases, dissolution media, buffers and other related reagents.

Chemins Company Colorado Springswww.chemins.com

Produces a wide range of dietary supplements including caplets, tablets, shaped tablets, chewable wafers, two-piece capsules and powdered products.

ClinImmune Labs Aurorawww.clinimmune.com

Provides clinical HLA typing and cross matching in support of kidney, bone marrow, heart, lung and pancreas transplant programs.

Colorado Genetics Lovelandwww.coloradogenetics.com

Provides livestock embryo-transfer research, artificial insemination, embryo collection, freezing and transfer, and international import and export services.

Colorado Histo-Prep Fort Collinswww.histoprep.com

Produces high quality slides, clinical chemistry and hematology data and fully integrated and detailed seamless pathology reports.

Colorado Serum Denverwww.colorado-serum.com

Supplies veterinary biological, instruments, laboratory reagents and serums for the veterinary industry.

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- Cytomation GTX, Inc.** Fort Collins
www.cytomationgtx.com
 Develops a sensitive and rapid genotoxicity assay in mammalian cells using flow cytometry.
- Cytoskeleton** Denver
www.cytoskeleton.com
 Manufactures and supplies biochemicals, reagents and proteins.
- Dermik Laboratories** Littleton
www.dermik.com
 Develops, markets, and distributes innovative prescription pharmaceutical products.
- Dharmacon** Lafayette
www.dharmacon.com
 Develops 2'-ACE RNA technology as the standard for RNA synthesis and to advance RNA oligo-dependent applications and technologies. Provides RNA oligos to the research community.
- Discovery Partners International** Boulder
www.discoverypartners.com
 Participates in drug discovery collaborations. Offers services, products, and systems that span the drug discovery continuum, including target characterization, targeted and screening-library design and synthesis, high throughput and high content screening, lead generation and optimization, gene expression analysis, and protein crystallization.
- DMI BioSciences** Aurora
www.dmibio.com
 Discovers and develops small molecule and peptide-based pharmaceuticals and biomarkers for acute and chronic inflammation.
- DoveTail Technologies** Aurora
www.dovetailtech.org
 Researches, develops and commercializes patented, immuno-therapeutic technologies with broad applications.
- Dystonia Therapeutics** Grand Junction
 Streamlines and expedites the development of new treatments for the dystonias. Acts as a bridge between basic academic/governmental research and corporate drug discovery and development.
- Efficas** Boulder
www.efficas.com
 Markets bioactives in products that promote wellness and nutrition that support management of health conditions, including obesity, diabetes, allergies, bone health and inflammation.
- ELISA Tech** Aurora
www.elisatech.com
 Supplies immunoassays for the measurement of cytokines, growth factors, and lipid inflammatory mediators such as prostaglandins and leukotrienes. Specializes in making custom assays for compounds for which no commercial assays exist.
- Emergent Genetics (Monsanto)** Boulder
www.emergentgenetics.com
 Focuses on cotton, rice, wheat and vegetable production.
- eTexx Biopharmaceuticals** Boulder
www.etexxbio.com
 Established a new paradigm for drug development, which enables fast and cost efficient introduction of new therapeutics for the treatment of cardiac disease.
- Eurogentec** Fort Collins
www.eurogentec.com
 Supplies genomic and proteomic research, offers integrated solutions with DNA, antibodies, peptides or proteins as research tools. Offers research and development services for the biopharmaceutical industry.
- Evolutionary Genomics** Aurora
www.evolgen.com
 Develops technology to identify commercially valuable gene targets. Fully operational, patented, gene discovery technology platform, the Adapted Traits Platform, which screens for gene patterns indicative of adaptation to a strong selection pressure as a powerful data filter to find key genes.
- GE Healthcare** Englewood
www.gehealthcare.com
 Offers a broad range of services to improve productivity in healthcare and enable healthcare providers to better diagnose, treat, and manage patients with conditions such as cancer, Alzheimer's, and cardiovascular diseases.
- Gene Check** Fort Collins
www.genecheck.com
 Produces and markets reagents and kits for research and development and offers veterinary genotyping tests for sheep.

Genesis Laboratories Wellington
www.genesislabs.com

Provides services, such as development of new products, primarily for FIFRA (EPA) registrations, or quality improvement of existing products to clients in the agrochemical and pharmaceutical industries.

Gene Thera Wheat Ridge
www.genethera.net

Provides genetics-based diagnostic and vaccine solutions for the veterinary industry and agriculture and healthcare industries.

Genetic Technologies Limited Australia
www.gtg.com.au

Specializes in the fields of genetics and genomics. The company's key business streams include genetic testing, licensing and supporting research programs around the world using "noncoding" DNA.

GlaxoSmithKline Denver
www.gsk.com

Maintains a combination of skills and resources that provides a platform for delivering strong growth in today's rapidly changing healthcare environment.

Global Peptide Services Fort Collins
www.globalpeptide.com

Offers custom research-grade peptides and antibodies.

GlobeImmune Louisville
www.globeimmune.com

Developed an immunotherapy platform technology and is currently developing products targeted to HIV, hepatitis C, and a number of cancers.

Gonex Fort Collins
www.gonex.com

Dedicated to the research, development and commercialization of hormonal based health care strategies with applications for both the human and companion animal markets.

Hauser Laboratories, Division of Microbac Boulder
www.hauserlabs.com

Provides research, development, testing, and expert witness services to the following industries: pharmaceutical, natural products, dietary supplement, medical device, legal and insurance, and consumer and industrial products.

Hauser Pharmaceutical Services Denver
www.inbhauser.com

Provides research, process development, analytical services, manufacturing, compliance services and consulting to produce compounds from natural and synthetic materials for the pharmaceutical, dietary supplement and fine chemical industries.

HemoGenix Colorado Springs
www.hemogenix.com

Focused on stem cell hemotoxicity contract research and the development and production of clinical diagnostic tools.

Heska Corporation Fort Collins
www.heska.com

Develops research-driven solutions that impact the quality of pet care. Offerings include advanced diagnostics and specialty products for veterinary practices that focus on companion animals.

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IHCtech Histopathology Services

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www.ihctech.net

Offers custom histopathology services, specializing in immunohistochemistry. Test antibodies, molecular probes and biosensors in tissue and cells.

Imu-Tek Animal Health, Inc.

Fort Collins

www.imutek.com

Develops and manufactures colostrums for veterinary supplements.

InB: Paxis Pharmaceuticals, Inc.

Boulder

www.paxispharma.com

Manufactures and markets the generic active pharmaceutical ingredient (API) Paclitaxel.

Insmmed Therapeutic Proteins

Boulder

www.insmed.com

Focused on the development of drug candidates for the treatment of metabolic diseases and endocrine disorders with unmet medical needs. The protein manufacturing operation, called Insmmed Therapeutic Proteins (ITP), is commissioned for manufacture of the company's proprietary products.

Institute for Therapeutic Biology

Denver

www.therapeuticbiology.org

A non-profit research institute for drug discovery in the field of immunology.

International Approvals Laboratories (IAL)

Boulder

www.ialabs.com

An accredited regulatory compliance testing and certification laboratory for industries including medical.

InViragen

Fort Collins

Focused on the development of vaccines for emerging infectious diseases. Constructing novel vaccines that protect against plague.

Isogenis

Denver

www.isogenis.com

Develops therapies for organ transplantation and genetic disease. The "Transplantation Tree" technology is administered in a cell-specific manner.

Johnson & Johnson

Denver

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.

Keen Ingredients

Fort Collins

www.keenfoods.com

Manufactures ingredients from an alternative and nutritious crop based upon technology developed in the Department of Food Science and Human Nutrition at Colorado State University.

Keeton Industries

Fort Collins

www.keetonaqua.com

Researches and develops biological water treatment, aeration, ozone aeration, solids removal, biofiltration and other new technologies.

Keystone Biomedical

Westminster

www.keystonebio.com

Develops two families of proprietary chemical compounds designed to treat cardiovascular diseases, stroke, complications of organ transplantation, and cancer.

Kimball Genetics Inc.

Denver

www.kimballgenetics.com

Specializes in DNA analysis for common genetic disorders.

Laboratories at Bonfils

Denver

www.labsatbonfils.com

Focus on performing highly complex, esoteric assays employing the most appropriate, modern technology—whether it be classical method or highly-automated.

Lifeline Therapeutics

Englewood

www.lifelinetherapeutics.com

Dedicated to developing nutraceuticals to address the pervasive problem of oxidative stress.

Lohocla Research Corporation

Aurora

Uses genomic, proteomic, and gene array technology together with rational drug design to develop diagnostic and therapeutic products in the area of chronic pain, mental and addictive disorders. The company's proprietary gene, mRNA and protein diagnostic markers differentially ascertain depression, anxiety, manic depressive disorders and addictive disorders.

MacLeod Pharmaceuticals

Fort Collins

www.macleodpharma.com

Develops and manufactures anti-bacterial pharmaceuticals for the veterinary industry.

Mantic Biotech

Loveland

www.manticbiotech.com

Develops proprietary technology and software to accurately represent and model protein conformations as discrete structures.

Martek Biosciences

www.martekbio.com

Develops, manufactures and sells products from microalgae. Products include oils for infant formula that aid in the development of the eyes and central nervous system in newborns and nutritional supplements and food ingredients which play a role in promoting mental and cardiovascular health.

Boulder

Molecular BioSciences

www.molbio.com

Applies a highly integrated, multidisciplinary approach to drug discovery and has developed proprietary drug design technologies which have yielded several lead compounds.

Boulder

Mayne Pharma

www.us.maynepharma.com

Supplies multi-source injectable pharmaceuticals. The Colorado site specializes in the supply of active pharmaceutical ingredients for both internal and external markets.

Boulder

Monsanto

www.monsanto.com

Provides agricultural products and integrated solutions for farmers globally.

Englewood

MycoLogics

www.mycologics.com

Specializes in the development of therapeutic and prophylactic vaccines against fungal and parasitic pathogens.

Aurora

MBC Pharma, Inc.

www.mbcpharma.com

Focused on discovering and developing drugs for bone diseases such as cancer and osteoporosis. The technology enables the highly efficient and specific delivery of drugs to bone.

Boulder

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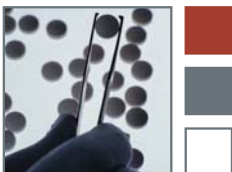
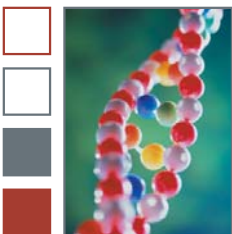
In the rapidly evolving life sciences industry, companies face a broad spectrum of complex legal issues. To address these demands, Hogan & Hartson has built an integrated life sciences practice that extends beyond the traditional capabilities offered by most other firms. Our comprehensive industry knowledge, extensive global reach, and cross-disciplinary experience allow us to provide our clients with seamless legal services across multiple borders.

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Mycos Research

Loveland

www.mycosresearch.com

Provides mycobacterial derived biochemicals to the research community, contract research, animal models for tuberculosis and other BSL3 organisms, and novel monitoring or vaccine products in the area of mycobacterial infection.

Myogen

Westminster

www.myogen.com

Focuses on the discovery, development and commercialization of therapeutics for the treatment of cardiovascular disorders. Myogen, in collaboration with Novartis, also conducts a cardiovascular focused research program.

Navigant Biotechnologies

Lakewood

www.navigantbiotech.com

Develops techniques to improve the safety of the blood supply by reducing the pathogens found in donated blood. The Mirasol Pathogen Reduction Technology (PRT), applies light and riboflavin to alter the nucleic acids and proteins of pathogens rendering them inactive.

Newellink

Colorado Springs

Develops and markets the patent-pending bioenergetics platform technologies. Bioenergetics is the study of how cellular metabolism governs the interactions between cells.

Novartis Pharmaceuticals Corporation

Littleton

www.novartis.com

Discovery, development, manufacturing, and marketing of prescription medicine.

Novus Biologicals

Littleton

www.novusbio.com

Develops, tests and markets antibodies for research of human diseases such as cancer, cardiovascular and neurological disorders.

Nutraceutix

Lafayette

www.nutraceutix.net

Develops custom blends and made-to-order formulations in bulk tablet, bottled and other forms for private labels and brands.

OncoLight

Denver

www.luxteres.com

Develops an instant biopsy device using light to detect cancer combining life science and physical science expertise.

OSI Pharmaceuticals

Boulder

www.osip.com

Focuses on the discovery, development and commercialization of high quality pharmaceutical products that extend life or improve the quality-of-life for cancer and diabetes patients worldwide.

Pambec Laboratories

Loveland

www.pambec.com

Researches drug discoveries in the field of AIDS. The company's drug, AIDFAREL™, inhibits both the replication and transcription of the integrated viral DNA known as a provirus by using the drug technology termed Binary Molecular DNA Clamp (BMC).

Paradocs Biomedical

Conifer

www.paradocsbiomedical.com

Researches and develops integration of advanced molecular techniques into preclinical and clinical research for both small molecule and peptide-based drug development.

Peak Analytical

Golden

www.peaklab.net

Specializes in materials & chemical analysis. Performs a variety of molecular and atomic level spectroscopic techniques to identify failures and defects.

Pfizer

Centennial

www.pfizer.com

Discovers, develops, manufactures, and markets prescription medicines for humans and animals.

Phaelix

Castle Rock

www.phaelix.com

Conducts custom research projects for the medical industry and specializes in emerging medical technologies and startups, with current focus on imaging, nanobiotechnology, tissue engineering and telemedicine.

Pharmion

Boulder

www.pharmion.com

Identifies and develops products for global hematology and oncology markets.

PhosphoSolutions

Denver

www.phosphosolutions.com

Designs and produces phosphoproteomic solutions using phosphor-specific antibodies.

- Photomera** Boulder
Pursues long-held interests in developing aptamer technology for therapeutic nanotechnology-based applications.
- Pisces Molecular** Boulder
Focuses on applying molecular biology to problems in the aquatic environment.
- PR Pharmaceuticals** Fort Collins
www.prpharm.com
Creates innovative drug delivery technologies to improve human and animal health. The company is focused on developing, manufacturing and commercializing pharmaceutical products using controlled-release technology.
- Premier Laboratory** Boulder
www.premierlab.com
Supplies histology and pharmacology needs for mission-critical research. Focused on process control and improvement to ensure the delivery of relevant, consistent and reproducible histopathology and pharmacology data.
- Proligo** Boulder
www.proligo.com
Offers DNA and RNA synthesis reagents for superior oligonucleotide synthesis: DNA phosphoramidites and CPG, liquid reagents, RNA and 2'O Methyl phosphoramidites and modifications and linkers.
- Proneuron Biotechnologies** Englewood
www.proneuron.com
Develops therapies for neurological disorders, including spinal cord injury. Procord is an experimental cell therapy that is being developed for the treatment of patients with a recent spinal cord injury.
- Proteome Resources** Aurora
www.proteomerresources.com
Manufactures and provides biochemistry tools and services or drug discovery and basic research. Company supplies 98% pure ubiquitin enzymes and apoptotic nucleases, as well as custom protein cloning and expression services, to researchers engaged in Ubiquitin Proteasome Pathway apoptosis and other areas of study.
- Provident Pharmaceuticals, LLC** Colorado Springs
www.providentpharma.com
Manufactures prescription and OTC pharmaceuticals. Provides product development, manufacturing and packaging, and laboratory services for the pharmaceutical industry.
- PureVision Technology** Fort Lupton
www.purevisiontechnology.com
Develops proprietary biotechnology processes that can manufacture fiber, ethanol and other high value industrial chemicals from biomass such as agricultural and wood residues.
- Pyxant Labs, Inc** Colorado Springs
www.pyxant.com
Specializing in GLP bioanalytical chemistry development support for life sciences clients.
- QLT-USA** Fort Collins
www.qltinc.com
Specializes in developing treatments for cancer, eye diseases and dermatological and urological conditions. Discovers, develops, commercializes and manufactures innovative drug therapies with their unique technology platforms to create products such as Visudyne® and Eligard®.
- Replidyne** Louisville
www.replidyne.com
Focused on identifying and developing drugs to treat serious infectious diseases. Discovering and developing novel antibacterial drugs that act by directly inhibiting bacterial DNA replication.
- RMC Biosciences** Fort Collins
www.rmcbiosciences.com
Offers molecular modeling, computer aided drug design, protein-ligand docking models, drug bioavailability models, drug bioactivity models and high performance computing.
- Roche Colorado Corp** Boulder
www.rochecolorado.com
Develops manufacturing processes for complex pharmaceutical compounds in the Colorado manufacturing facility that has the flexibility to handle sophisticated manufacturing techniques.
- Rocky Mountain Biodiesel** Berthoud
www.biodieselindustries.com
A corporation committed to advancing the technology and principles needed to establish biodiesel as a practical and affordable alternative fuel.
- Rocky Mountain Diagnostics** Colorado Springs
www.rmdiagnosics.com
Supplies specialty in-vitro diagnostic test systems and of other innovative technologies to the clinical and research laboratory markets.

Rocky Mountain Instrumental Laboratories Fort Collins
www.rockylab.com

Develops stability-indicating assays for the pharmaceutical industry. Also provides contract chromatographic and mass spectrometric analysis (HPLC/MS) of pharmaceuticals, veterinary and human endocrinology, and forensic toxicology, including fentanyl, THC, tryptamines, and other forensic testing and testimony.

Rocky Mountain Reagents Denver
www.rmreagents.com

Manufactures stains, culture media and chemistry solutions for the medical industry, titration reagents, indicators, acids, bases, and a variety of chemicals for industrial uses.

RxKinetix Louisville
www.rxkinetix.com

Uses proprietary drug delivery technologies to develop new medicinal products. The company's technology platforms have produced a lead product candidate for the prevention and treatment of oral mucositis, RK-0202.

Sandoz Broomfield
www.us.sandoz.com

Supplies high-quality generic pharmaceuticals.

Sciona Boulder
www.sciona.com

Researches and develops DNA screens for common gene variants that affect an individual's response to food, medications and the environment.

Seedex, Inc. Longmont
www.seedexseed.com

Develop, produce, process and market sugar beet seed.

Sentigen Biosciences Aspen
www.sentigen.com

Focused on applying proprietary technologies to internal drug discovery and development initiatives targeting the largest class of receptors in the body, G Protein-Coupled Receptors (GPCRs).

Sentry Biosciences Greenwood Village
 Discovers and develops compounds that regulate the process of programmed cell death (apoptosis).

Serendipity Pharmaceuticals Denver
 Expects to develop therapy options for the treatment of solid tumors based on Doxoform, a patented chemotherapeutic drug related to doxorubicin.

Sirna Therapeutics Boulder
www.sirna.com

Develops therapeutics based on RNA interference (RNAi) technology. Leverages proprietary technology and expertise in nucleic acids to develop RNAi-based drugs that selectively target disease-causing genes and viruses.

SomaLogic Boulder
www.somallogic.com

Develops proteomics tools for research and clinical diagnostics based on its proprietary aptamer technology. SomaLogic's microarrays (aptamer chips) will allow the simultaneous quantitative measurement of tens of proteins and can be used to rapidly develop novel assays for individual proteins.

Source MDx Boulder
www.sourcemedicine.com

Uses a patented molecular diagnostic system to monitor an individual's health, disease status and response to therapy at the molecular level based on RNA from whole blood or tissue samples.

STA Laboratories Longmont
www.stalabs.com

Provides diagnostic services to agricultural biotechnology. STA Genomics features high through-put molecular marker technology. STA Seed Quality provides seed analysis, seed health and IEF electrophoresis hybrid purity services.

Sterling Bio-Technologies Corporation Sterling
www.sterlinggrade.com

Engaged in commercialization of renewable, bio-based products.

Summit Plant Laboratories Fort Collins
www.plantlabs.com

Applies laboratory plant cloning and greenhouse technologies to produce planting stocks for breeders, greenhouses, and field crop producers.

SunSource Industries Inc. Boulder
www.zapintheworks.com

Developed technology to economically produce feedstock needed in the production of biodiesel.

Syngenta Seeds Longmont
www.syngenta-us.com

Committed to sustainable agriculture through innovative research and technology. The company is in crop protection and the high-value commercial seeds market.

Taligen Therapeutics Employs innovative technologies to manipulate complement proteins of the immune system to inhibit inflammation and to target inhibitors of the inflammation to specific sites of tissue injury.	Aurora	Vitrolife www.vitrolife.com Develops, produces and markets a range of products and systems for the preparation, cultivation, preservation and support of cells, tissues and organs for certain applications.	Englewood
Tapestry Pharmaceuticals www.tapestrypharma.com Focused on proprietary therapies for the treatment of cancer. Also actively engaged in evaluating new therapeutic agents and related technologies for in-licensing.	Boulder	Warren Analytical Laboratories www.warrenlab.com Specializes in food microbiology, molecular biology, food chemistry, residue chemistry and nutritional labeling.	Greeley
Theravance www.theravance.com Discovers and develops medicines in large markets. Drug discovery efforts are based on their multivalency.	Denver	Wildlife Pharmaceuticals www.wildpharm.com Dedicated to providing pharmaceuticals and remote drug-delivery equipment for the safe and humane care of non-domestic and exotic wildlife species.	Fort Collins
Thinc Pharmaceuticals www.thincpharmaceuticals.com Developes iron-chelating therapies with applications in oncology, hematology, and gastro-intestinal disorders and drugs and drug therapies for the treatment of neurodegenerative diseases.	Aurora	Windom Peak Pharmaceuticals www.windompeak.com Develops novel antibiotics to treat infectious diseases.	Denver
U.S. Pharmcal www.uspharmcal.com Researches, develops and sells topical pharmaceuticals for the senior community.	Erie	XenoPur Systems Utilizes University of Colorado technology to remove heavy metals from industrial process wastewater.	Denver
Upsher-Smith www.upsher-smith.com Develops, manufactures and markets a vast range of prescription and over-the-counter products.	Denver	XY, Inc. www.xyinc.com Researches, develops and commercializes sex selection technologies and services in non-human mammals, including cattle, horses, pigs, sheep and endangered species.	Fort Collins
Verdant BioSciences www.verdantbio.com Verdant BioSciences is developing a new generation of plant biochemical regulators that provide superior plant performance and unlock more of the productive power of plants in markets from floriculture to industrial agriculture.	Denver		
Vitro Diagnostics www.vitrodiag.com Launched a product line, VITROCELL™, consisting of novel Human Cell Lines for research and development in diabetes, pancreatic cancer and endocrinology of the pituitary gland.	Aurora		

Research and Education Institutions

Aims Community College Greeley, Loveland, Fort Lupton
www.aims.edu

Aims Community College is one of the largest and most comprehensive two-year colleges in Colorado. Since 1967 Aims has established four campuses, constructed 18 buildings, expanded curriculum to 2,000 day, evening and weekend courses and taught more than 300,000 students.

AMC Cancer Research Center Aurora
www.amc.org

AMC is a national, not for profit research institute dedicated to the prevention and control of cancer and other chronic diseases. AMC is conducting innovative and important research in the areas of cancer causation and prevention, behavioral research, nutrition, clinical and community studies and health communication.

Bonfils Blood Center Denver Metro
www.bonfils.org

Bonfils Blood Center is 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.

The Children's Hospital Research Institute Denver
www.uchsc.edu/peds/research/ri/

The Children's Hospital Research Institute (TCHRI) consistently rates as one of the country's top ten percent federally funded pediatric research programs. TCHRI has achieved many firsts, including performing pediatric liver transplants, identifying causes of toxic shock syndrome and using nitric oxide for pulmonary hypertension. Children's also has only one of six pediatric general clinical research centers in the nation.

Colorado School of Mines Golden
www.mines.edu

Colorado School of Mines (CSM) is 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
www.colostate.edu

Colorado State University (CSU) is designated by the Carnegie Foundation as being in the highest level of research classification: "Doctoral / Research Universities – Extensive." CSU boasts strong programs in veterinary medicine, biotechnology, engineering, agriculture, and natural resources. The CSU Center for Advanced Technology provides a physical location for companies and fosters relationships between CSU's research programs and private industry. The Center is home to the Natural Resources Research Center campus where nearly 1,000 federal employees work. The James L. Voss Veterinary Teaching Hospital is adjacent to the Center.

Community College of Aurora Aurora
www.ccaurora.edu

The Community College of Aurora (CCA) provides lifelong educational opportunities, prepares the current and future workforce, and promotes excellence in teaching, learning and service to our diverse community. CCA offers a unique Biotechnology Technician Research and Development Certificate designed to train highly skilled lab personnel for the biotech industry.

Denver School of Science and Technology Denver
www.scienceandtech.org

The Denver School of Science and Technology is dedicated to providing a diverse student body with an outstanding liberal arts high school education with a science and technology focus. By creating a powerful learning community centered on core values and a shared commitment to academic excellence, DSST will increase the number of underrepresented students (women, minorities and economically disadvantaged) who attain college science and liberal arts degrees. DSST graduates will be responsible, engaged citizens who are prepared to be leaders of the future.

Denver Veterans Administration Medical Center Denver
The Denver Veterans Administration Medical Center (VAMC) is nationally and internationally recognized for its long and productive record of conducting high quality basic science and clinical research. Over forty Denver VAMC physicians and Ph.D. scientists annually conduct more than 450 research studies with total research expenditures at over \$17 million.

DeVry University Westminster
www.devryschools.com

DeVry University is one of America's premier institutions of higher learning, providing career-focused undergraduate and graduate degree programs in technology, business and management. For over 70 years, DeVry has worked with industry leaders to define emerging requirements, develop curriculum and deliver education that is relevant for both personal and corporate workforce development. DeVry supports the workforce requirements of the bioscience industries with specialized degrees in Biomedical Informatics and Biomedical Engineering Technology, as well as programs in business and management. Many programs can be adapted and delivered on-site for companies needing specialized corporate training for their current employees.

Centers for Disease Control Division of Vector-Borne Infectious Diseases Fort Collins
www.cdc.gov/ncidod/dvbid/

The Division of Vector-Borne Infectious Diseases (DVBID) 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. DVBID 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. DVBID 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.

Eleanor Roosevelt Institute at the University of Denver Denver
www.nsm.du.edu/eri/

The Eleanor Roosevelt Institute (ERI) was founded on the belief that biomedical and genetic research is the most effective, long-term approach to the eventual conquest of human disease. ERI has been at the center of genetic research since 1961. ERI's research accomplishments continue with the sequencing of chromosome 21, developing the sensitive environmental agent

toxicity test, determining the lethal levels of x-rays for human cells and participating in the discovery of genes related to colon cancer, Lou Gehrig's disease, leukemia, heart disease and Alzheimer's disease.

National Institute of Standards and Technology Boulder
www.nist.gov

The National Institute of Standards and Technology (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.

Question: What do the following nine companies have in common: ARCA Discovery Inc., BaroFold Inc., Dharmacon Inc., GlobeImmune Inc., Myogen Inc., Replidyne Inc., RxKinetics Inc., SomaLogic Inc., and Taligen Therapeutics, Inc.?

Answer: All were started based on intellectual property created at the University of Colorado, all received venture capital funding and all have operations in Colorado.

Question: How can I learn more about early-stage bioscience commercial opportunities?

Answer: become involved with the CU Technology Transfer Office. For additional information visit www.cu.edu/techtransfer or to start the process of accessing opportunity e-mail techtransfer@CU.edu

Contact: David Allen
303-735-3711 • david.allen@cu.edu



National Jewish Medical and Research Center Denver
www.njc.org

National Jewish Medical and Research Center (NJC), the number one respiratory hospital in the U.S., 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. NJC 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. NJC manages a technology portfolio of more than 100 investors.

**National Renewable Energy Laboratory –
 National Bioenergy Center** Golden
www.nrel.gov/biomass/

The National Bioenergy Center, housed at the National Renewable Energy Laboratory (NREL), maintains world-famous research facilities to develop biological, chemical, and thermochemical technologies that produce economic and environmentally sensitive transportation fuels, chemicals, fibers and plastics from organic materials and other renewable biomass resources. The Center maintains laboratory, mini-pilot plant and pilot plant facilities that are available to private industry, federal and state agencies, and Department of Energy laboratories to develop profitable “biorefinery” business models based on these new technologies.

**United States Geological Survey –
 Center for Biological Informatics** Denver
<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,
www.cu.edu Colorado Springs

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.

University of Colorado Hospital Denver
www.uch.edu

As the flagship teaching and research hospital in the Rocky Mountain Region, the University of Colorado Hospital advances health knowledge through research and patient care. Strong research programs in immunology, cancer, neurosciences, drug and alcohol addiction and in all areas of biomedical science are evidenced by over 3,000 approved clinical trials.

University of Denver Denver
www.du.edu

The University of Denver 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

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.

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