

COLORADO

Colorado's employment in the medical devices and equipment subsector is specialized (location quotient of 1.25); and employment in research, testing, and medical laboratories grew 26 percent over the 6 years ending in 2006, faster than the national rate. Academic bioscience research expenditures totaled \$405 million in 2006, dominated by the medical sciences. Venture capital investments in the biosciences totaled \$1.01 billion in the past 6 years; the largest investment category was human biotechnology, with smaller shares in pharmaceuticals and industrial biotechnology. The largest share of the State's 2,029 patents over the same period was in surgical and medical instruments, followed by biochemistry and drugs and pharmaceuticals.

Major Industry Developments and Recent Successes

- Colorado-based **Myogen Inc.** was acquired by **Gilead Sciences Inc.**, for \$2.6 billion in late 2006. Gilead Sciences is a biopharmaceutical company that discovers, develops, manufactures, and commercializes therapies for viral diseases, infectious diseases, and cancer.
- Multinational pharmaceutical company, **Celgene**, completed a \$2.9 billion offer to **Pharmion**, a Colorado-based drug development company.
- **Covidien**, which acquired Colorado-based **Tyco Healthcare** in 2007, is adding 1,000 employees to its Respiratory and Monitoring Solutions and Energy-based Devices units in Boulder.

Recent State Initiatives

The bioscience industry is one of several technology industries targeted for development in Colorado. Both Governor Bill Ritter and the Legislature have increased support for bioscience investments. In 2006, legislation (HB 06-1360) was enacted that created and funded the **Bioscience Discovery Evaluation Grant Program**. Two million dollars was appropriated in FY 2007 to fund proof-of-concept activities to evaluate new bioscience discoveries of the State's research institutions with the intent of accelerating the development of new bioscience products and services. In 2007, another \$2.5 million was targeted to Small Business Innovation Research/Small Business Technology Transfer Program (SBIR/STTR) recipients and biofuels research as well as life science research. Awards, which are a maximum of \$150,000 for proof-of-concept projects and \$100,000 for SBIR/STTR projects, require a 1-to-1 match.

In April 2008, the Governor signed a 5-year, \$26.5 million package that creates a **Bioscience and Life Science Fund**. The Fund will provide grants to Colorado start-up companies and research institutions seeking to commercialize new biotechnology drugs, biofuels, medical devices, and nanotechnology. The grants are capped at \$15,000 for research institutions and \$250,000 for companies. The funds can be used to support proof-of-concept projects, translational research, and incubators and to provide financing for start-up companies formed to commercialize university-developed technologies.

Colorado also has an active biofuels development program. Legislation was passed in 2007 creating the **Renewable Energy Collaboratory**, a partnership of the University of Colorado at Boulder, the Colorado School of Mines, the Colorado State University, and the National Renewable Energy Laboratory. The Collaboratory, which will receive \$2 million annually in State funding for 3 years beginning in 2007, will conduct world-class research to develop new energy technologies and transfer them to the private sector. The State funding will be used as matching funds to enable the Collaboratory to qualify for federal and private research projects. The first project of the Collaboratory, the **Colorado Center for Biorefining and Biofuels**, will focus on the production of transportation fuels and other products from plants.

For additional information on Colorado's bioscience policies and programs, please see <http://www.cobioscience.com> and <http://www.state.co.us/>.

Bioscience Industry Base, 2006

| Industry Subsector | Colorado | | United States | |
|--|-----------|----------------|---------------|----------------|
| | 2006 | 2001-06 Change | 2006 | 2001-06 Change |
| Agricultural Feedstock & Chemicals | | | | |
| Establishments | 26 | 15.4% | 2,183 | 3.8% |
| Employment | 308 | -28.0% | 105,846 | -6.1% |
| Location Quotient | 0.17 | | n.a. | |
| Direct-Effect Employment Multiplier | 4.68 | | 11.22 | |
| Total Employment Impact | 1,443 | | 1,214,709 | |
| Average Annual Wage | \$47,980 | | \$67,870 | |
| Drugs & Pharmaceuticals | | | | |
| Establishments | 56 | 3.7% | 2,654 | 1.9% |
| Employment | 2,816 | -4.4% | 317,149 | 4.0% |
| Location Quotient | 0.53 | | n.a. | |
| Direct-Effect Employment Multiplier | 5.98 | | 9.92 | |
| Total Employment Impact | 16,831 | | 2,880,242 | |
| Average Annual Wage | \$74,707 | | \$86,892 | |
| Medical Devices & Equipment | | | | |
| Establishments | 342 | 3.9% | 15,215 | 0.3% |
| Employment | 8,782 | -0.3% | 422,993 | -0.9% |
| Location Quotient | 1.25 | | n.a. | |
| Direct-Effect Employment Multiplier | 3.27 | | 4.85 | |
| Total Employment Impact | 28,700 | | 1,980,128 | |
| Average Annual Wage | \$60,615 | | \$59,441 | |
| Research, Testing, & Medical Laboratories | | | | |
| Establishments | 496 | 58.3% | 22,857 | 32.7% |
| Employment | 5,949 | 25.6% | 449,991 | 17.8% |
| Location Quotient | 0.79 | | n.a. | |
| Direct-Effect Employment Multiplier | 2.66 | | 3.25 | |
| Total Employment Impact | 15,841 | | 1,440,500 | |
| Average Annual Wage | \$74,722 | | \$71,284 | |
| Total Private Sector | | | | |
| Establishments | 171,781 | 13.7% | 8,575,730 | 10.2% |
| Employment | 1,890,670 | 1.0% | 113,463,842 | 3.1% |
| Average Annual Wage | \$43,664 | | \$42,272 | |

Note: n.a. = metric is not applicable.

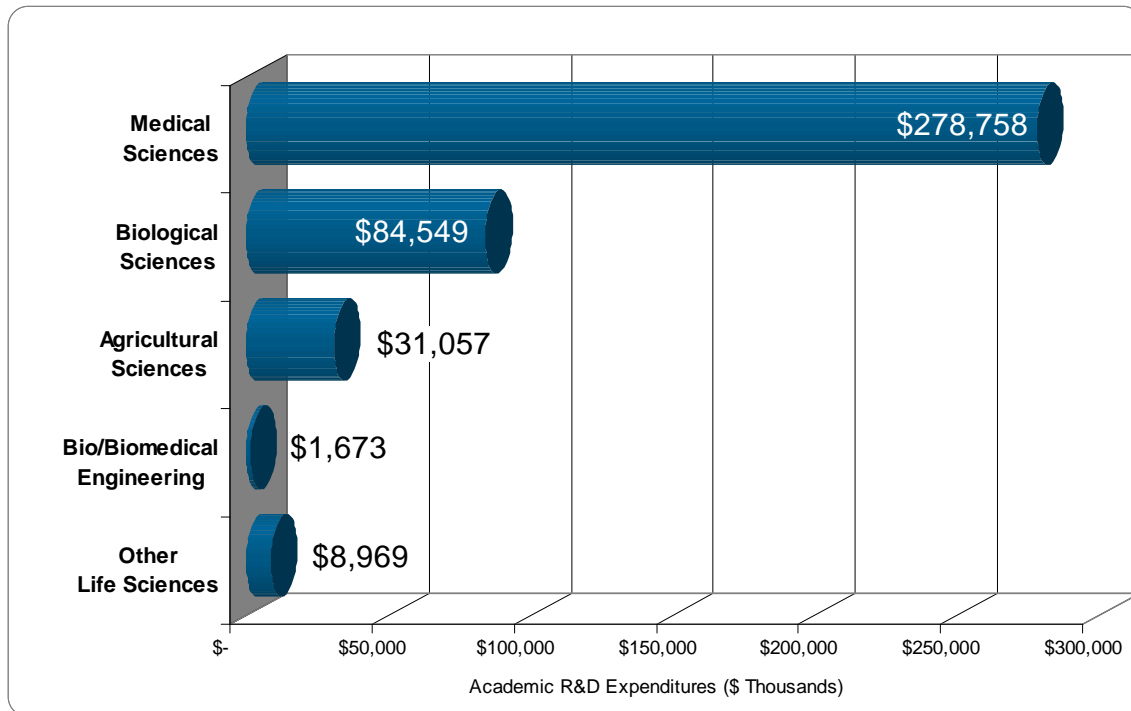
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

| | Colorado | United States | Rank |
|---|-----------|---------------|------|
| Academic R&D Expenditures, FY 2006 | | | |
| Total (\$ thousands) | \$820,565 | \$47,760,402 | 19 |
| Bioscience R&D (\$ thousands) | \$405,006 | \$29,307,628 | 23 |
| Bioscience Share of Total R&D | 49.4% | 61.4% | |
| Bioscience R&D Per Capita | \$84.97 | \$98.10 | |
| Change in Bioscience R&D FY 2002–2006 | 38.6% | 36.9% | |
| NIH Funding, FY 2007 | | | |
| Total (\$ thousands) | \$316,628 | \$21,066,389 | 19 |
| Per Capita Funding | \$65.13 | \$69.84 | |
| Change in Funding, FY 2002–2007 | 7.6% | 11.2% | |
| Higher Education Degrees in Bioscience Fields, AY 2006 | 2,401 | 143,433 | 21 |
| Employment in Bioscience-related Occupations, 2006 | 8,880 | 588,520 | 22 |
| Bioscience Venture Capital Investments, 2002-2007 (\$ millions) | \$1,014.9 | \$51,260.9 | 11 |
| Bioscience and Related Patents, 2002-2007 | 2,029 | 121,817 | 23 |

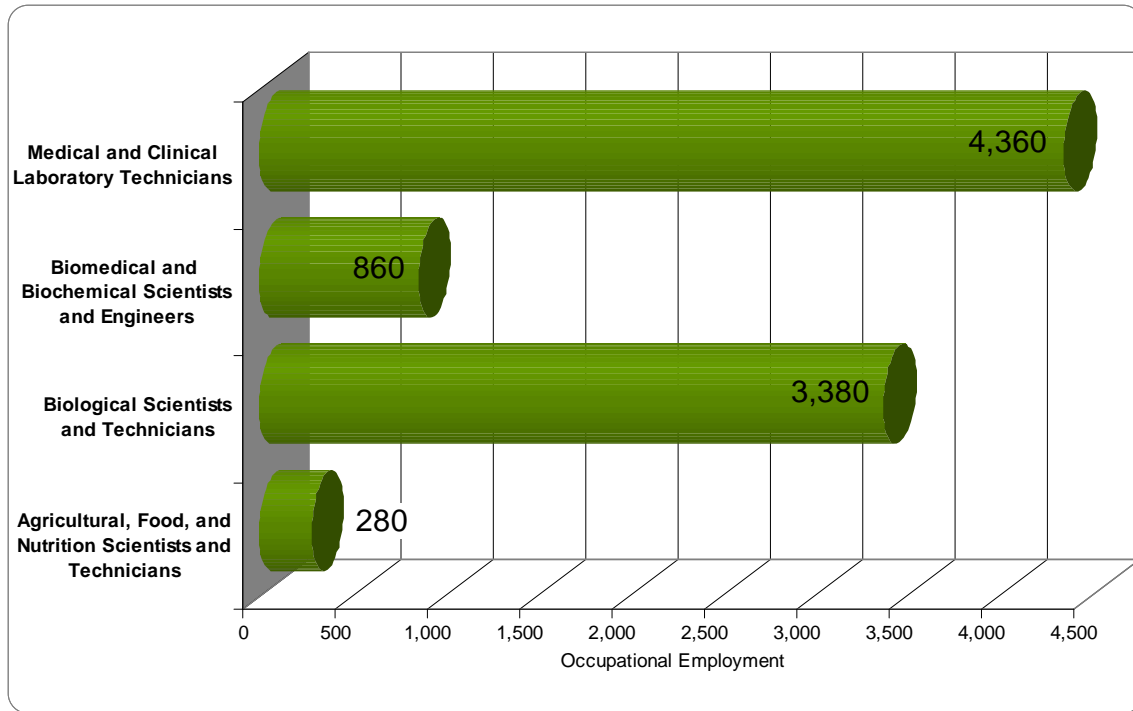
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Colorado, FY 2006

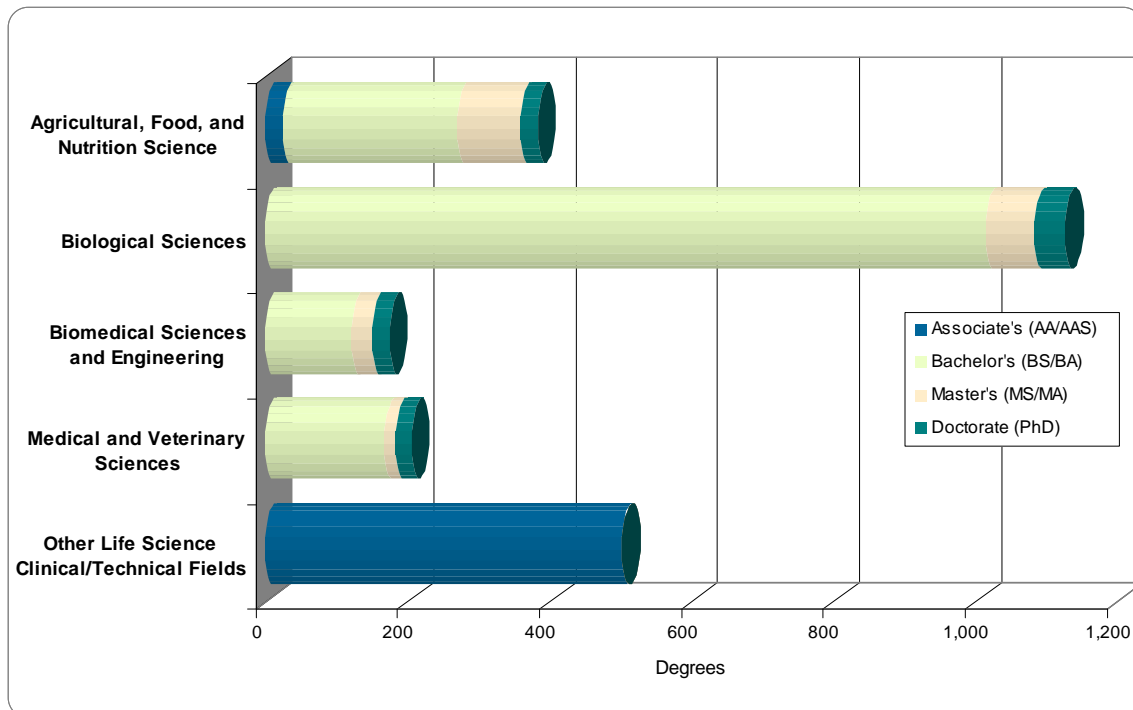


Bioscience Talent Base

Bioscience-related Occupational Employment in Colorado, 2006

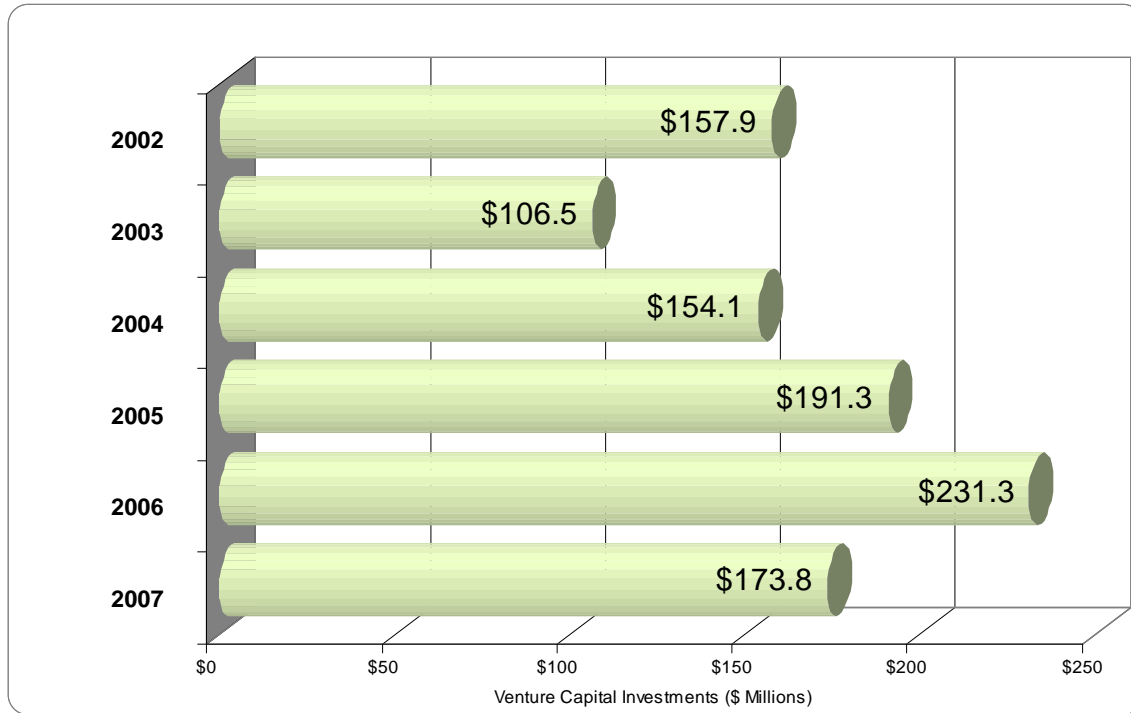


Bioscience-related Degrees in Colorado, AY 2006

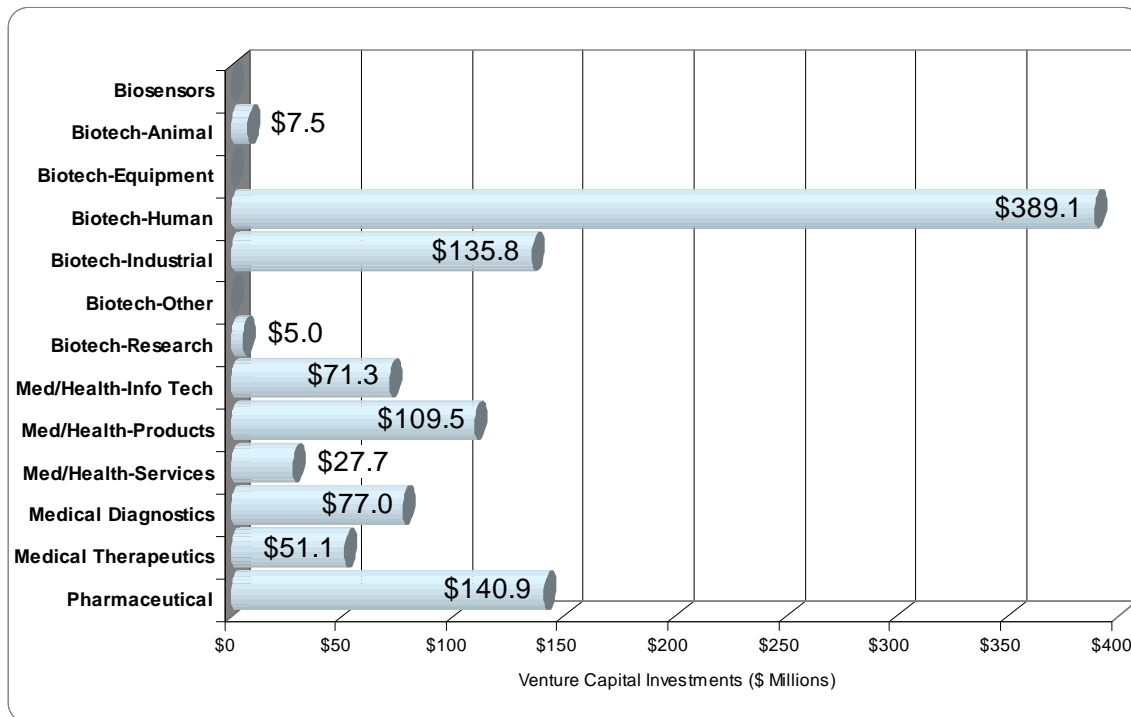


Bioscience Venture Capital

Bioscience-related Venture Capital Investments in Colorado, 2002–2007

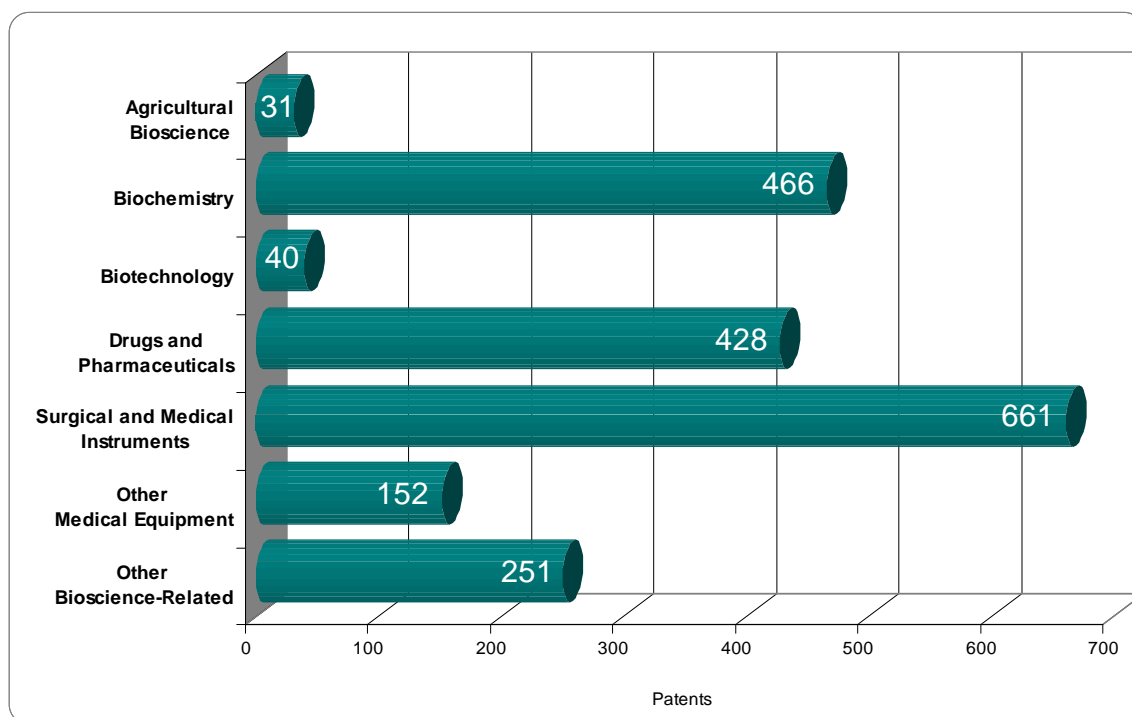


Bioscience-related Venture Capital Investments in Colorado by Segment, 2002–2007



Bioscience Patents

Bioscience-related Patents by Classification Group in Colorado, 2002–2007



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Source Notes:

Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) industry data provided by the Minnesota IMPLAN Group, 2001 and 2006.

Employment Multipliers: U.S. Bureau of Economic Analysis RIMS II Employment Multipliers, 2005 (most currently available).

Academic R&D Expenditures: National Science Foundation (NSF) Survey of Research and Development Expenditures at Universities and Colleges, 2002 and 2006.

NIH Funding: National Institutes of Health – Office of Extramural Research, Award Trends – Dollars Awarded by State, 2002 and 2007.

Higher Education Degrees: National Center for Educational Statistics, Integrated Postsecondary Education Data System (IPEDS), 2006.

Occupational Employment: U.S. Bureau of Labor Statistics, Occupational Employment Statistics (OES) survey data, 2006.

Venture Capital: Thomson Reuters VentureExpert Database, 2002–2007, as of May 1, 2008.

Patents: U.S. Patent & Trademark Office data as available from the Thomson Reuters' Delphion Patent Analysis Database, 2002–2007, as of May 1, 2008.

For a more detailed discussion of the data and methodology used please see the Appendix to the full national report.