

Iowa has more than 6 percent of national employment, faster growth than the national average, and a very strong specialization in the agricultural feedstock and chemicals subsector (location quotient of 5.7). Two other subsectors (drugs and pharmaceuticals and research, testing, and medical laboratories) also grew faster than the national rate in the 6 years ending in 2006. Academic bioscience research expenditures totaled \$388 million in 2006, heavily in the medical sciences. The 1,343 patents granted in the past 6 years were very heavily concentrated in biotechnology.

Recent State Initiatives

Iowa continues to implement its Bioscience Pathway for Development strategy that was adopted in 2004. The **Grow Iowa Values Fund**, which supports the development of new research facilities, university research, university-industry collaborative research, and commercialization, received \$25 million in FY 2007, a portion of which went to the biosciences. In 2007, legislation was passed creating the **Targeted Industries Development Fund**. Funded at \$2.5 million annually, this Fund promotes the commercialization of new technologies in advanced manufacturing, bioscience, and information technology industries.

Iowa also established two new initiatives designed to attract and retain workers with bioscience skills. Through the **Management Talent Recruitment** effort, Iowa is identifying a pool of management talent that is available to work with bioscience, information technology, and advanced manufacturing businesses in Iowa. The **Iowa Student Internship Program** links college students from Iowa schools to internships in small and medium-sized bioscience, advanced manufacturing, and information technology firms with the goal of transitioning the interns to full-time employment in the state upon graduation. Emphasis is also being placed on workforce training. Iowa's community colleges offer a wide range of certificate and degree programs in all areas of the biosciences, including lab technician training, bioinformatics, biomass operations, biofuels operations, and renewable energy; and new programs continue to be added.

Also new since 2006 is the **Networking Fund**, which supports networking events in order to create new deal flow within the state's targeted industries, including the biosciences. The Fund awards up to \$3,000 to offset the cost of events that bring together representatives of entrepreneurial businesses, established companies, and the university research community to discuss new technologies and innovations that the technologies support.

Legislation passed in 2007 created a \$100 million **Iowa Power Fund**, which will be used to fund clean energy research and development. The Fund supports research, development, commercialization, and deployment of biofuels and other renewable energy technology. Legislation was also passed in 2007 lifting Iowa's ban on cloning of human embryos for stem cell research.

Major Industry Developments and Recent Successes

- **POET** is investing \$200 million to convert its Voyager Ethanol plant from a 50-million-gallon-per-year conventional facility into a 125-million-gallon-per-year commercial-scale biorefinery that will produce ethanol from corn and corn stover—the stalk, leaves, and cobs of the corn plant. The project has received an \$80 million U.S. Department of Energy grant.
- **Tate & Lyle** has begun construction of a \$260 million industrial starch and ethanol plant in Iowa. The plant will produce 100 million gallons of ethanol as a by-product of its primary product, cationic starches.
- In April of 2007, **Archer Daniels Midland** and **Metabolix** announced their joint venture to construct a state-of-the-art bioplastics plant in Iowa that will produce a bioplastic made from corn, sugar cane, switchgrass, or other renewable resources.

For additional information on Iowa's bioscience policies and programs, please see <http://www.iowalifechanging.com/> and <http://www.iowabiotech.com>.

Bioscience Industry Base, 2006

Industry Subsector	Iowa		United States	
	2006	2001-06 Change	2006	2001-06 Change
Agricultural Feedstock & Chemicals				
Establishments	109	8.5%	2,183	3.8%
Employment	6,594	14.4%	105,846	-6.1%
Location Quotient	5.70		n.a.	
Direct-Effect Employment Multiplier	6.96		11.22	
Total Employment Impact	45,927		1,214,709	
Average Annual Wage	\$58,004		\$67,870	
Drugs & Pharmaceuticals				
Establishments	35	-16.7%	2,654	1.9%
Employment	2,679	11.9%	317,149	4.0%
Location Quotient	0.77		n.a.	
Direct-Effect Employment Multiplier	3.96		9.92	
Total Employment Impact	10,596		2,880,242	
Average Annual Wage	\$51,371		\$86,892	
Medical Devices & Equipment				
Establishments	143	4.1%	15,215	0.3%
Employment	1,956	1.7%	422,993	-0.9%
Location Quotient	0.42		n.a.	
Direct-Effect Employment Multiplier	2.34		4.85	
Total Employment Impact	4,585		1,980,128	
Average Annual Wage	\$37,197		\$59,441	
Research, Testing, & Medical Laboratories				
Establishments	191	15.1%	22,857	32.7%
Employment	2,029	46.0%	449,991	17.8%
Location Quotient	0.41		n.a.	
Direct-Effect Employment Multiplier	1.95		3.25	
Total Employment Impact	3,966		1,440,500	
Average Annual Wage	\$49,812		\$71,284	
Total Private Sector				
Establishments	87,157	2.1%	8,575,730	10.2%
Employment	1,240,025	3.2%	113,463,842	3.1%
Average Annual Wage	\$33,878		\$42,272	

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

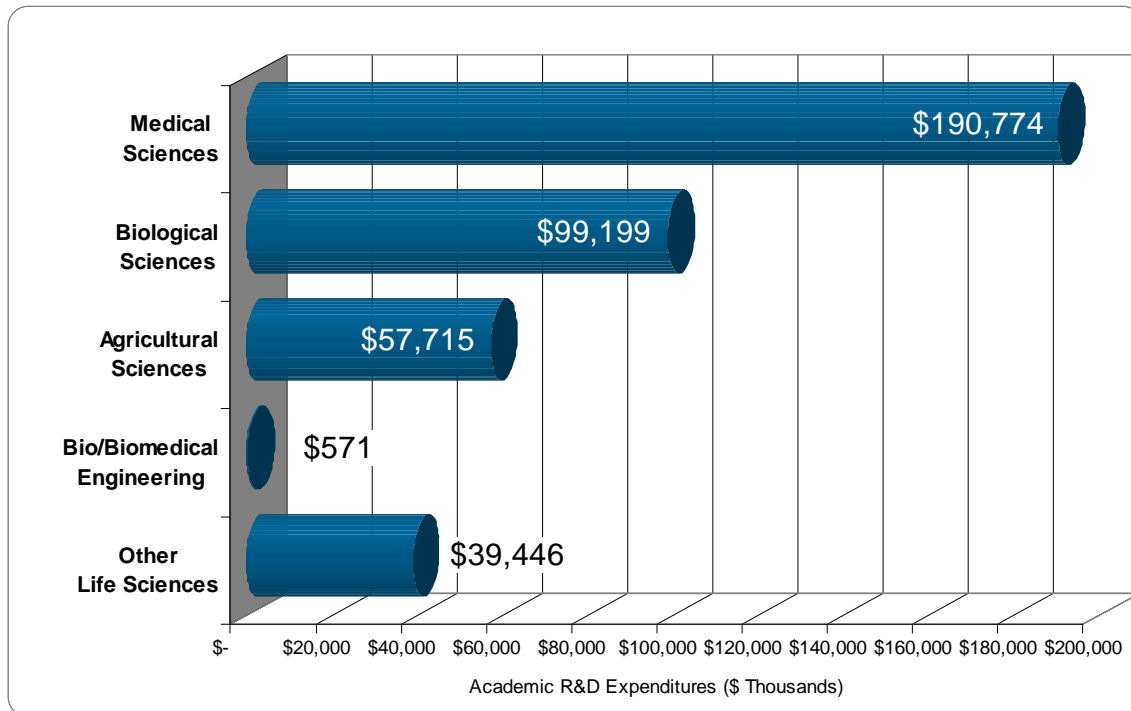
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

	Iowa	United States	Rank
Academic R&D Expenditures, FY 2006			
Total (\$ thousands)	\$572,623	\$47,760,402	25
Bioscience R&D (\$ thousands)	\$387,705	\$29,307,628	25
Bioscience Share of Total R&D	67.7%	61.4%	
Bioscience R&D Per Capita	\$130.43	\$98.10	
Change in Bioscience R&D FY 2002–2006	18.7%	36.9%	
NIH Funding, FY 2007			
Total (\$ thousands)	\$194,632	\$21,066,389	26
Per Capita Funding	\$65.14	\$69.84	
Change in Funding, FY 2002–2007	7.5%	11.2%	
Higher Education Degrees in Bioscience Fields, AY 2006	1,886	143,433	26
Employment in Bioscience-related Occupations, 2006	6,070	588,520	26
Bioscience Venture Capital Investments, 2002-2007 (\$ millions)	\$2.0	\$51,260.9	46
Bioscience and Related Patents, 2002-2007	1,343	121,817	26

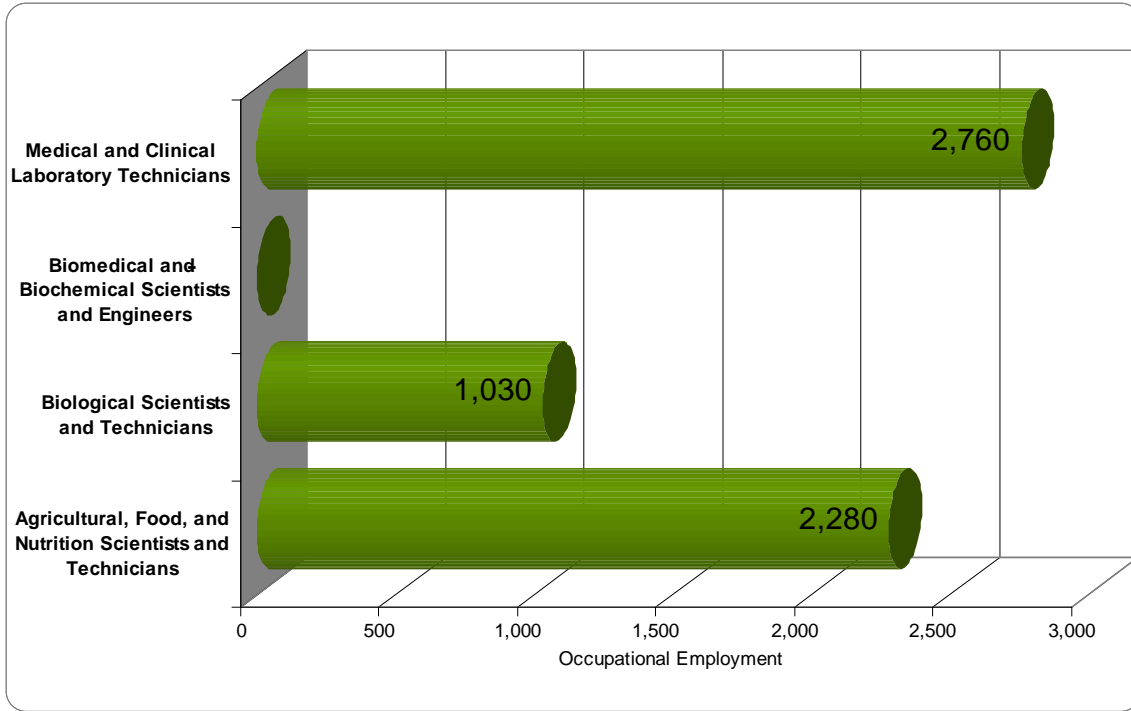
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Iowa, FY 2006

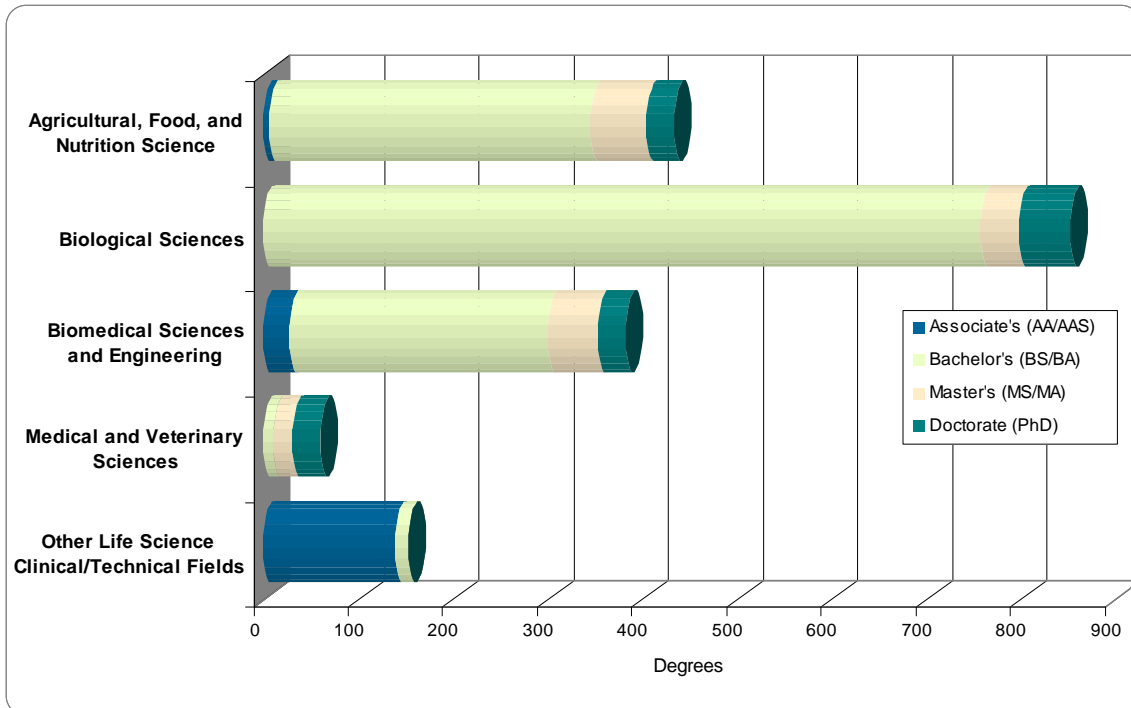


Bioscience Talent Base

Bioscience-related Occupational Employment in Iowa, 2006

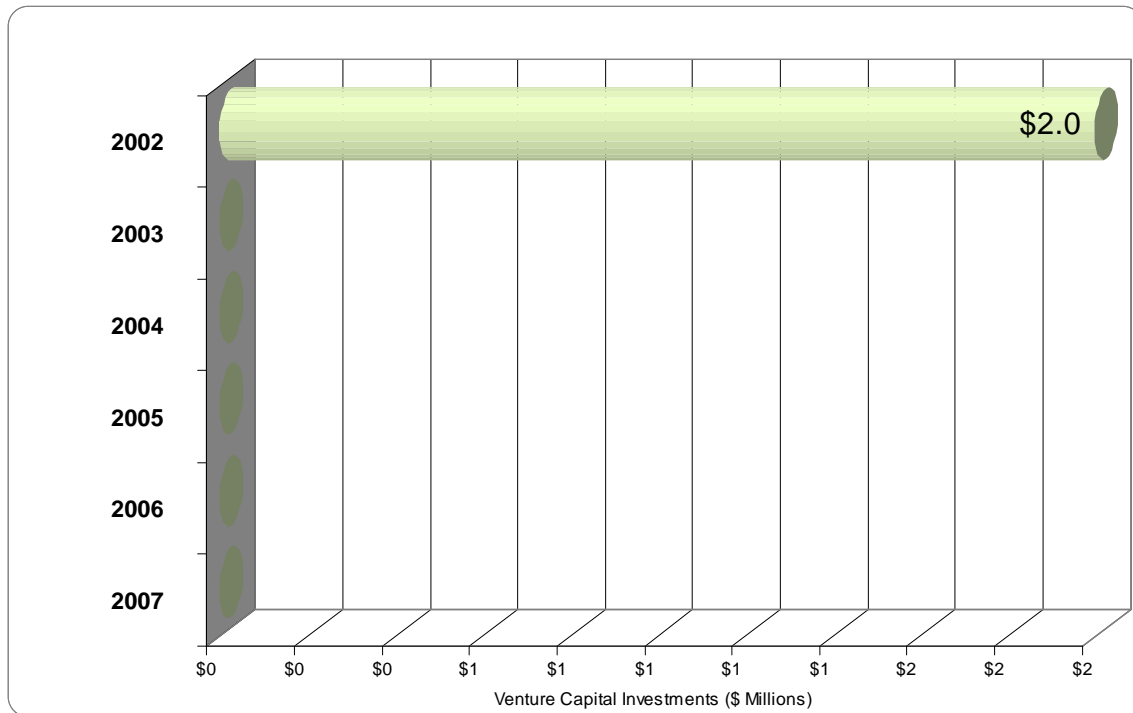


Bioscience-related Degrees in Iowa, AY 2006

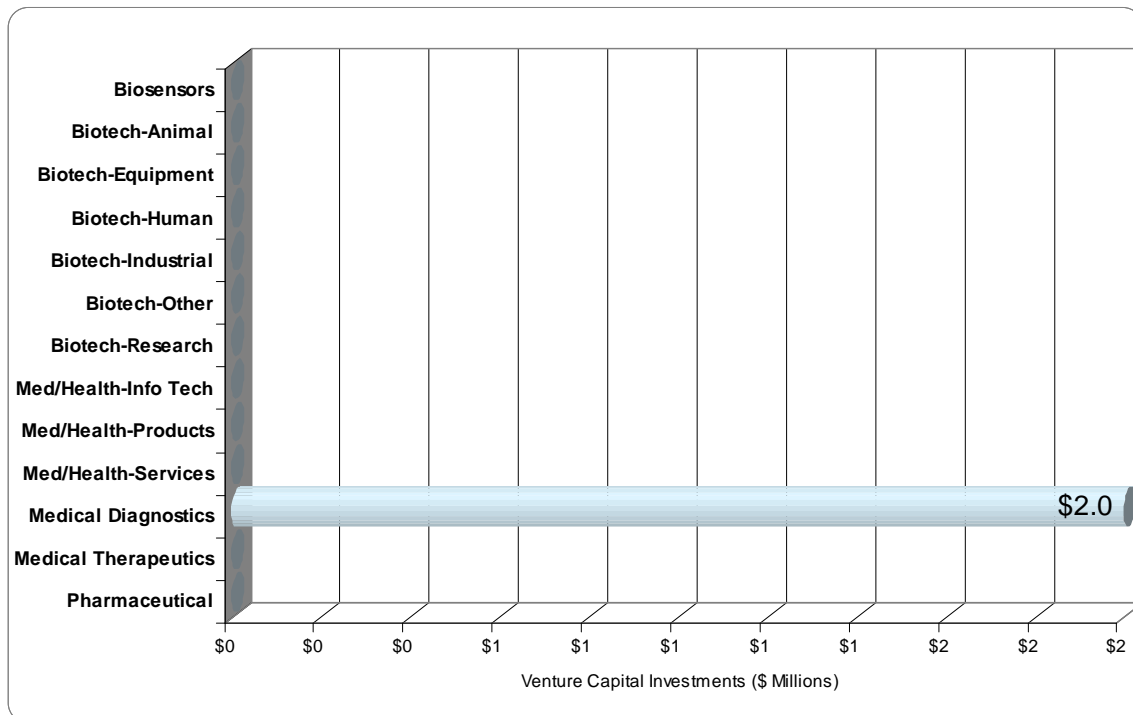


Bioscience Venture Capital

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

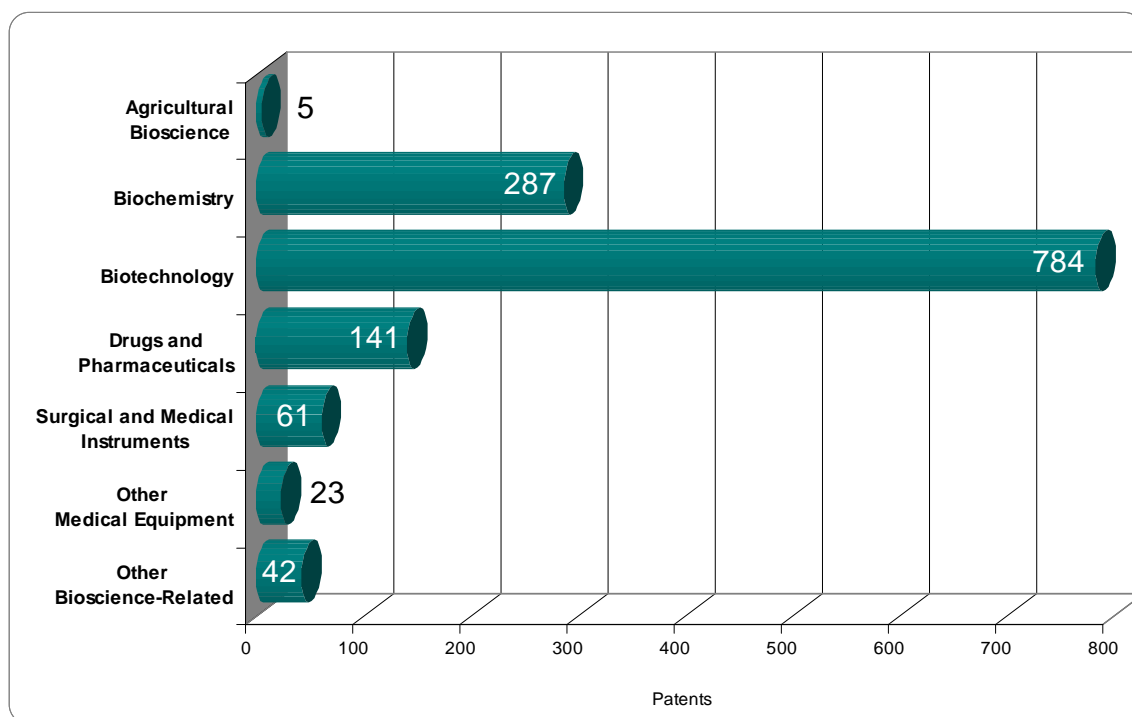


Bioscience-related Venture Capital Investments in Iowa by Segment, 2002–2007



Bioscience Patents

Bioscience-related Patents by Classification Group in Iowa, 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 VentureXpert 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.