

OHIO

Ohio has an employment specialization in the agricultural feedstock and chemicals subsector (location quotient of 1.46). The research, testing, and medical laboratories subsector grew faster than the national rate. Academic bioscience research expenditures, which grew at nearly twice the national rate, reached \$1.05 billion in 2006, with the majority in the medical sciences (\$652 million). During the past 6 years, a total of \$347 million of bioscience venture capital was invested, with strong growth toward the end of the period. The largest sums went to medical therapeutics and human biotechnology. Surgical and medical instruments dominated the 2,474 bioscience patents issued in the same period.

Major Industry Developments and Recent Successes

- **Amylin Pharmaceuticals** made a \$400 million investment in a manufacturing facility in southwestern Ohio. The company received a \$1.5 million Targeted Industry Attraction Program grant from the Third Frontier.
- A number of Ohio bioscience companies raised significant amounts of capital in 2007. **Eurand**, a specialty pharmaceutical company whose North American operation is located in Dayton, raised \$128 million in capital; and **Athersys Inc.**, a Cleveland biopharmaceutical company, completed a private placement that raised \$65 million.

Recent State Initiatives

Ohio continues to implement the **Ohio Third Frontier**, which was initiated in 2002 to accelerate the growth of Ohio's economy through globally competitive research and innovation. The Third Frontier includes programs that support world-class research, industry-university collaboration, commercialization, new company formation, and education and training. Through the end of FY 2008, the Third Frontier will have committed nearly \$300 million to bioscience projects with a concentration in cardiovascular care, medical imaging, and neurological disorders.

Since 2006, Ohio has created a Wright Mega-Center of Innovation focused on the biosciences. This is in addition to four Wright Centers of Innovation in the biosciences created previously. The **Global Cardiovascular Innovation Center** was established at the Cleveland Clinic with a \$60 million award from the state and total commitments of \$2.5 billion.

To encourage greater commercialization and support new and emerging companies, Ohio initiated its **Entrepreneurial Signature Program (ESP)** in 2006. Through this initiative, the State of Ohio provided up to \$15 million to each of six regional nonprofit organizations to provide pre-seed funding and support services to entrepreneurs and start-up companies. With cost share, the organizations have over \$127 million to provide assistance statewide. The funding is being used to help companies address strategic planning, capital formation and fund raising, and talent and staffing needs. When formed, the six regional ESP offices were asked to select signature technologies as areas for focused activity; three regions, Central (Columbus), Northeast (Cleveland), and Southwest (Cincinnati) chose the biosciences. Entrepreneurs-In-Residence (EIR) at each location bring experience in starting and growing companies to coach, mentor, and assist technology entrepreneurs. Many of the EIR personnel come from biotech and medical device organizations, allowing each of the six ESPs to incorporate elements of the biosciences in their strategic commercial plan.

In addition to encouraging the start-up of new companies around technologies developed in Ohio, the State has also embarked on an effort to attract bioscience firms. In late 2006, BioOhio received a 3-year, \$1.5 million grant from the Third Frontier to recruit cutting-edge bioscience companies from around the world.

A new initiative in 2008 is the **Ohio Research Scholars Program (ORSP)**, which will provide grants up to \$50 million to strengthen and increase the number of clusters of research excellence. Grants

from the \$150 million program will be led by Ohio's academic institutions that effectively support regional economic priorities.

Pending proposals

Ohio's Governor Ted Strickland and the State Legislature are crafting a \$1.57 billion **Bipartisan Jobs Stimulus Plan** that includes \$300 million for biobased products, biomedical research, and advanced and renewable energy. The second portion of the Stimulus Plan provides \$1.02 billion for building infrastructure, and an additional \$250 million will focus on developing Ohio's workforce and talent. All facets of the plan, to varying degrees, will enhance the State's bioscience industry.

For additional information on Ohio's bioscience policies and programs, please see <http://www.thirdfrontier.com> and <http://www.bioohio.com>.

Bioscience Industry Base, 2006

Industry Subsector	Ohio		United States	
	2006	2001-06 Change	2006	2001-06 Change
Agricultural Feedstock & Chemicals				
Establishments	83	7.8%	2,183	3.8%
Employment	6,197	-11.2%	105,846	-6.1%
Location Quotient	1.46		n.a.	
Direct-Effect Employment Multiplier	8.31		11.22	
Total Employment Impact	51,495		1,214,709	
Average Annual Wage	\$78,114		\$67,870	
Drugs & Pharmaceuticals				
Establishments	47	-13.0%	2,654	1.9%
Employment	5,333	21.7%	317,149	4.0%
Location Quotient	0.42		n.a.	
Direct-Effect Employment Multiplier	5.21		9.92	
Total Employment Impact	27,764		2,880,242	
Average Annual Wage	\$63,528		\$86,892	
Medical Devices & Equipment				
Establishments	489	-5.8%	15,215	0.3%
Employment	12,054	-11.7%	422,993	-0.9%
Location Quotient	0.71		n.a.	
Direct-Effect Employment Multiplier	3.19		4.85	
Total Employment Impact	38,435		1,980,128	
Average Annual Wage	\$44,150		\$59,441	
Research, Testing, & Medical Laboratories				
Establishments	785	47.9%	22,857	32.7%
Employment	9,427	40.6%	449,991	17.8%
Location Quotient	0.52		n.a.	
Direct-Effect Employment Multiplier	2.28		3.25	
Total Employment Impact	21,490		1,440,500	
Average Annual Wage	\$49,003		\$71,284	
Total Private Sector				
Establishments	276,109	1.2%	8,575,730	10.2%
Employment	4,562,949	-2.6%	113,463,842	3.1%
Average Annual Wage	\$38,105		\$42,272	

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

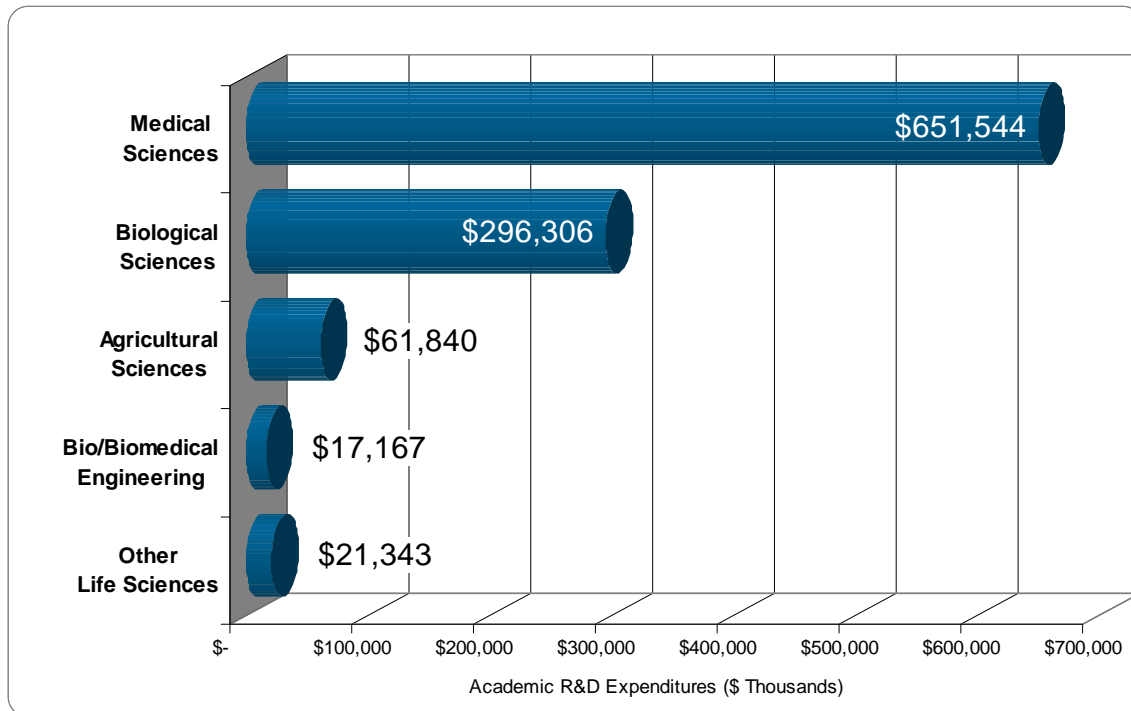
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

	Ohio	United States	Rank
Academic R&D Expenditures, FY 2006			
Total (\$ thousands)	\$1,636,473	\$47,760,402	9
Bioscience R&D (\$ thousands)	\$1,048,200	\$29,307,628	9
Bioscience Share of Total R&D	64.1%	61.4%	
Bioscience R&D Per Capita	\$91.44	\$98.10	
Change in Bioscience R&D FY 2002–2006	68.0%	36.9%	
NIH Funding, FY 2007			
Total (\$ thousands)	\$628,294	\$21,066,389	10
Per Capita Funding	\$54.79	\$69.84	
Change in Funding, FY 2002–2007	7.7%	11.2%	
Higher Education Degrees in Bioscience Fields, AY 2006	5,351	143,433	7
Employment in Bioscience-related Occupations, 2006	18,460	588,520	10
Bioscience Venture Capital Investments, 2002-2007 (\$ millions)	\$346.9	\$51,260.9	17
Bioscience and Related Patents, 2002-2007	2,474	121,817	17

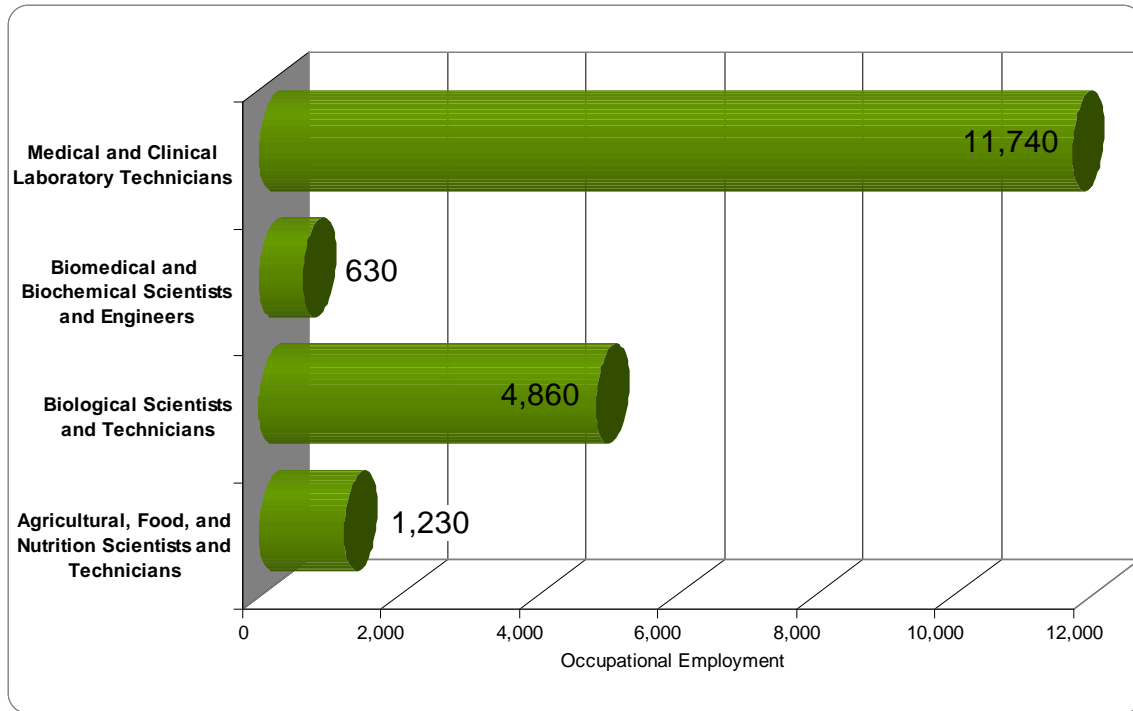
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Ohio, FY 2006

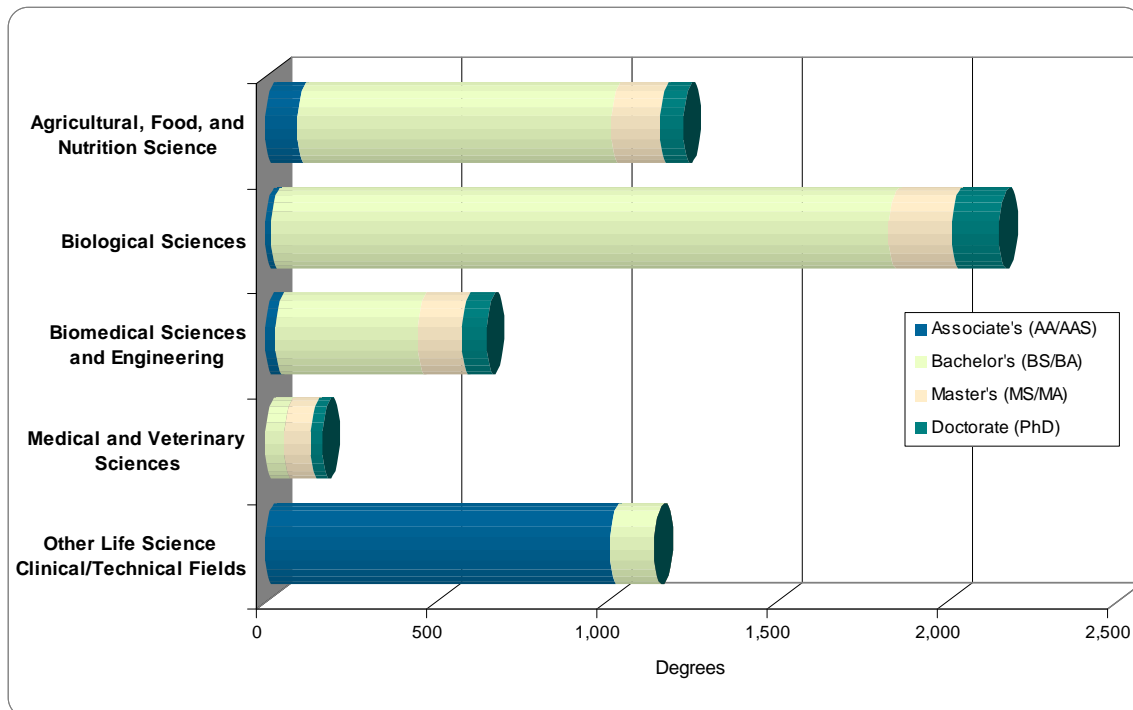


Bioscience Talent Base

Bioscience-related Occupational Employment in Ohio, 2006

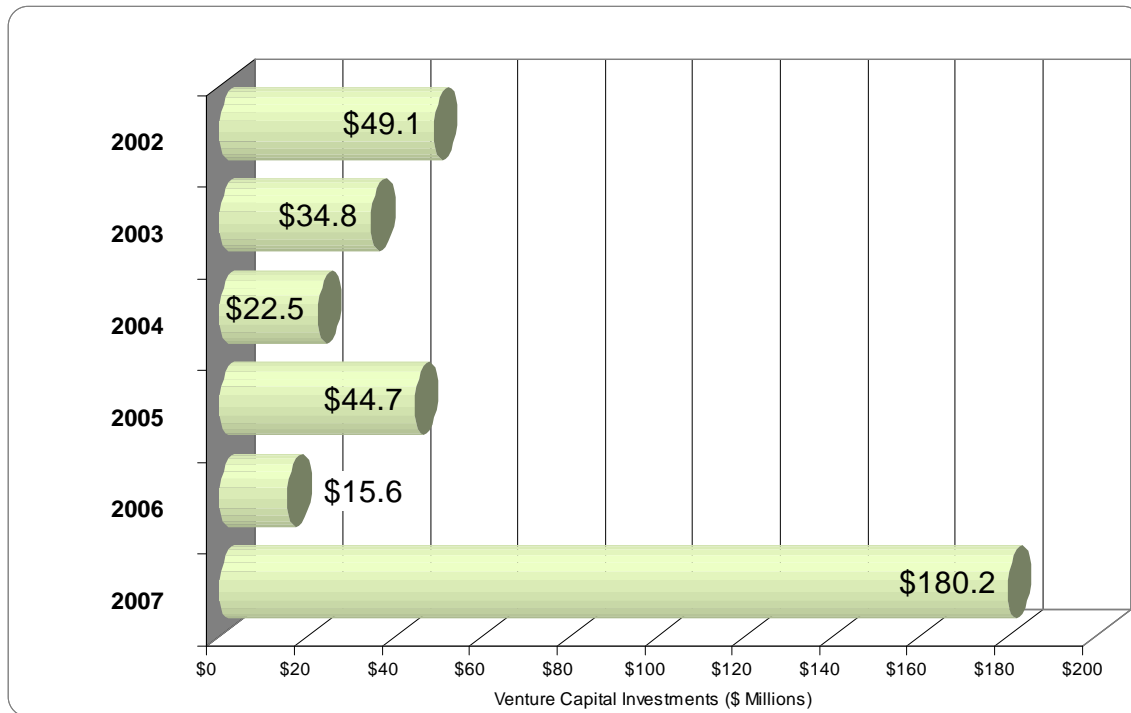


Bioscience-related Degrees in Ohio, AY 2006

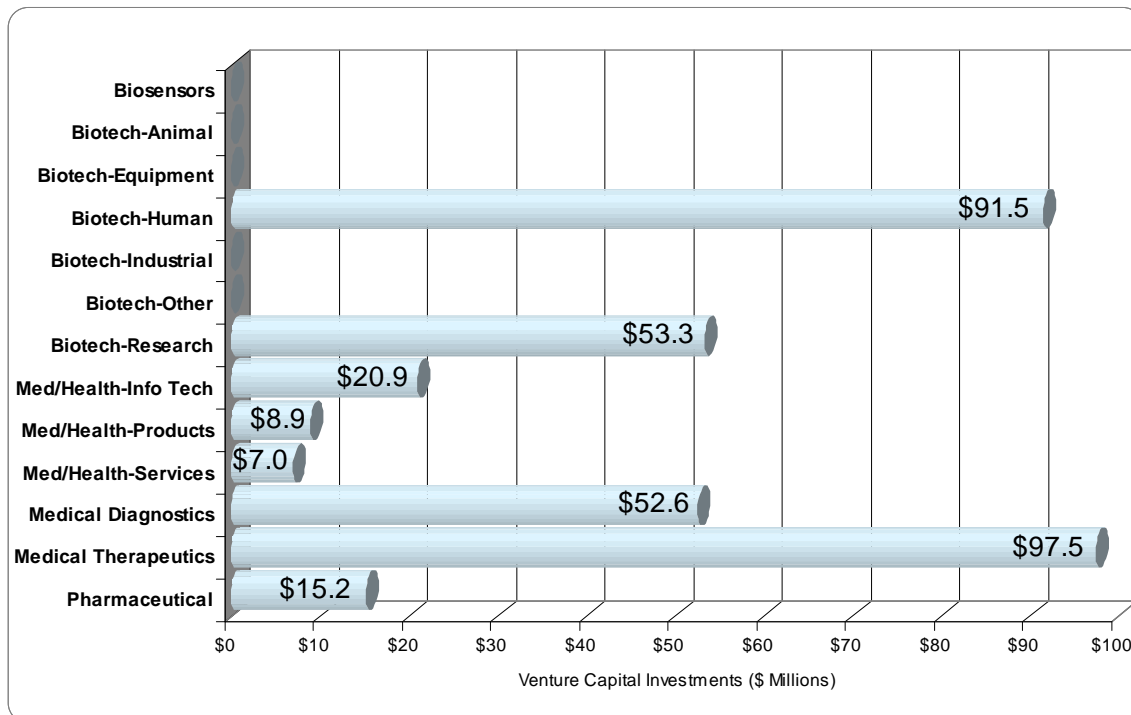


Bioscience Venture Capital

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

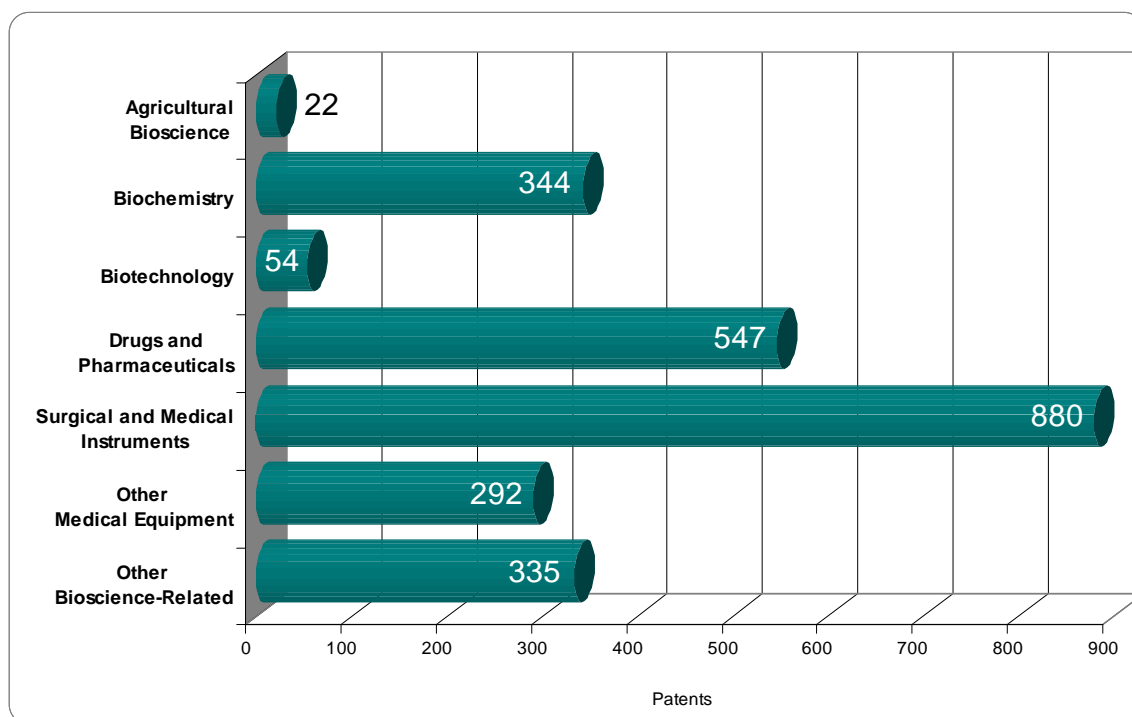


Bioscience-related Venture Capital Investments in Ohio by Segment, 2002–2007



Bioscience Patents

Bioscience-related Patents by Classification Group in Ohio, 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.