

OKLAHOMA

The largest bioscience subsector in Oklahoma is research, testing, and medical laboratories (2,895 jobs). Total academic bioscience research expenditures in 2006 were \$169 million, led by biological sciences (\$68 million) and medical sciences (\$59 million). Of \$29.9 million in bioscience venture capital invested in the past 6 years, nearly all was in medical diagnostics. The largest share of the state's 331 bioscience patents over the same period was in biochemistry, followed by drugs and pharmaceuticals and surgical and medical instruments.

Recent State Initiatives

The State of Oklahoma has long-standing programs that invest in biomedical R&D including the Oklahoma Health Research Program and the Oklahoma Applied Research Support Program. Within the past 2 years, Oklahoma has added a focus on the development of biofuels, with an emphasis on fuels obtained from cellulosic biomass. The 2007 Legislature passed and Governor Brad Henry signed a bill creating the **Oklahoma Bioenergy Center** to coordinate biofuels research at Oklahoma State University, the University of Oklahoma (OU), and the Samuel Roberts Noble Foundation. The Noble Foundation, located in Ardmore, is the largest private foundation conducting plant science and agricultural research in the United States. The focus of the Center, which is proposed to be funded at \$40 million over 4 years with \$10 million appropriated in 2007, is on sustainable economic production of cellulosic ethanol.

Oklahoma also has long standing programs that provide support for entrepreneurs and start-up technology companies. In FY 07, the Legislature provided \$5 million to establish a new **Oklahoma Seed Capital Fund**. The Fund is managed by i2E, a not-for-profit organization that provides support to and invests in technology-based companies. The Seed Fund will make investments in the range of \$250,000 to \$750,000 to support prototype development, marketing studies, and other business operations.

Oklahoma has taken a number of steps designed to ensure that the State has a talent pool to meet the workforce needs of the bioscience industry sector. OU's K20 Center for Education and Community Renewal has created an **Advancing Biotechnology and Climatology (ABC): Educating for Economic Growth in Oklahoma project** that partners education, government and biotechnology research, and industry communities to design and support model secondary schools. ABC, with support from the Presbyterian Health and Inasmuch Foundations and the National Science Foundation, currently involves six schools, impacting 15 science teachers and more than 1,000 students with year-round bioscience professional development opportunities for teachers, authentic and inquiry-based biotechnology lesson integration into current science curriculum, and opportunities for research and industry connections through real and videoconferencing field trips. The Oklahoma Department of Commerce is developing a

Major Industry Developments and Recent Successes

- **Altheus Therapeutics**, based in Oklahoma City, recently secured \$3.6 million in venture capital financing to fund clinical trials testing the efficacy of its therapy for the treatment of inflammatory bowel disease.
- **Martin Bionics, LLD**, a prosthetics research and development company, recently merged with **OrthoCare Innovations**, a nationally recognized leader in biotechnology development, to create a Center for Prosthetics Excellence in Oklahoma City.
- **NanoBioMagnetics, Inc.**, (NBMI) has received a patent for technology that uses magnetically responsive nanoparticles implanted in the organs of the middle ear to drive tissue vibrations in the amplification of sound. NBMI's technology was developed in part through collaborations with the University of Oklahoma and Massachusetts Eye and Ear Infirmary, an affiliate of Harvard Medical School.

workforce recruitment program targeted at high-skilled workers, including those with experience in the biosciences, with previous ties to Oklahoma.

For additional information on Oklahoma's policies and programs, please see <http://www.ocast.state.ok.us> and <http://www.okbio.org>.

Bioscience Industry Base, 2006

Industry Subsector	Oklahoma		United States	
	2006	2001-06 Change	2006	2001-06 Change
Agricultural Feedstock & Chemicals				
Establishments	21	6.8%	2,183	3.8%
Employment	594	-39.3%	105,846	-6.1%
Location Quotient	0.53		n.a.	
Direct-Effect Employment Multiplier	7.13		11.22	
Total Employment Impact	4,232		1,214,709	
Average Annual Wage	\$53,283		\$67,870	
Drugs & Pharmaceuticals				
Establishments	22	-4.3%	2,654	1.9%
Employment	210	-54.5%	317,149	4.0%
Location Quotient	0.06		n.a.	
Direct-Effect Employment Multiplier	4.44		9.92	
Total Employment Impact	932		2,880,242	
Average Annual Wage	\$67,705		\$86,892	
Medical Devices & Equipment				
Establishments	188	19.2%	15,215	0.3%
Employment	1,477	-3.1%	422,993	-0.9%
Location Quotient	0.33		n.a.	
Direct-Effect Employment Multiplier	2.57		4.85	
Total Employment Impact	3,803		1,980,128	
Average Annual Wage	\$40,603		\$59,441	
Research, Testing, & Medical Laboratories				
Establishments	273	53.8%	22,857	32.7%
Employment	2,895	1.7%	449,991	17.8%
Location Quotient	0.61		n.a.	
Direct-Effect Employment Multiplier	2.26		3.25	
Total Employment Impact	6,539		1,440,500	
Average Annual Wage	\$50,921		\$71,284	
Total Private Sector				
Establishments	91,294	7.1%	8,575,730	10.2%
Employment	1,192,696	1.9%	113,463,842	3.1%
Average Annual Wage	\$34,125		\$42,272	

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

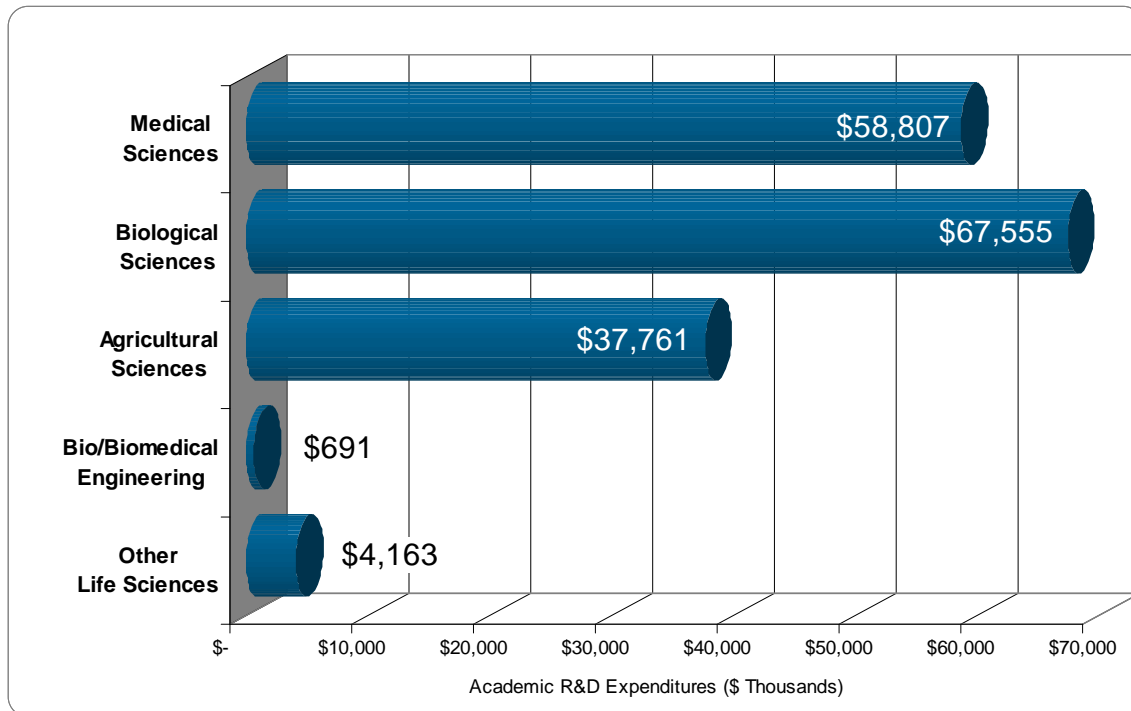
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

	Oklahoma	United States	Rank
Academic R&D Expenditures, FY 2006			
Total (\$ thousands)	\$298,175	\$47,760,402	36
Bioscience R&D (\$ thousands)	\$168,977	\$29,307,628	36
Bioscience Share of Total R&D	56.7%	61.4%	
Bioscience R&D Per Capita	\$47.23	\$98.10	
Change in Bioscience R&D FY 2002–2006	28.7%	36.9%	
NIH Funding, FY 2007			
Total (\$ thousands)	\$76,923	\$21,066,389	36
Per Capita Funding	\$21.27	\$69.84	
Change in Funding, FY 2002–2007	16.1%	11.2%	
Higher Education Degrees in Bioscience Fields, AY 2006	1,867	143,433	27
Employment in Bioscience-related Occupations, 2006	5,720	588,520	30
Bioscience Venture Capital Investments, 2002-2007 (\$ millions)	\$29.9	\$51,260.9	37
Bioscience and Related Patents, 2002-2007	331	121,817	39

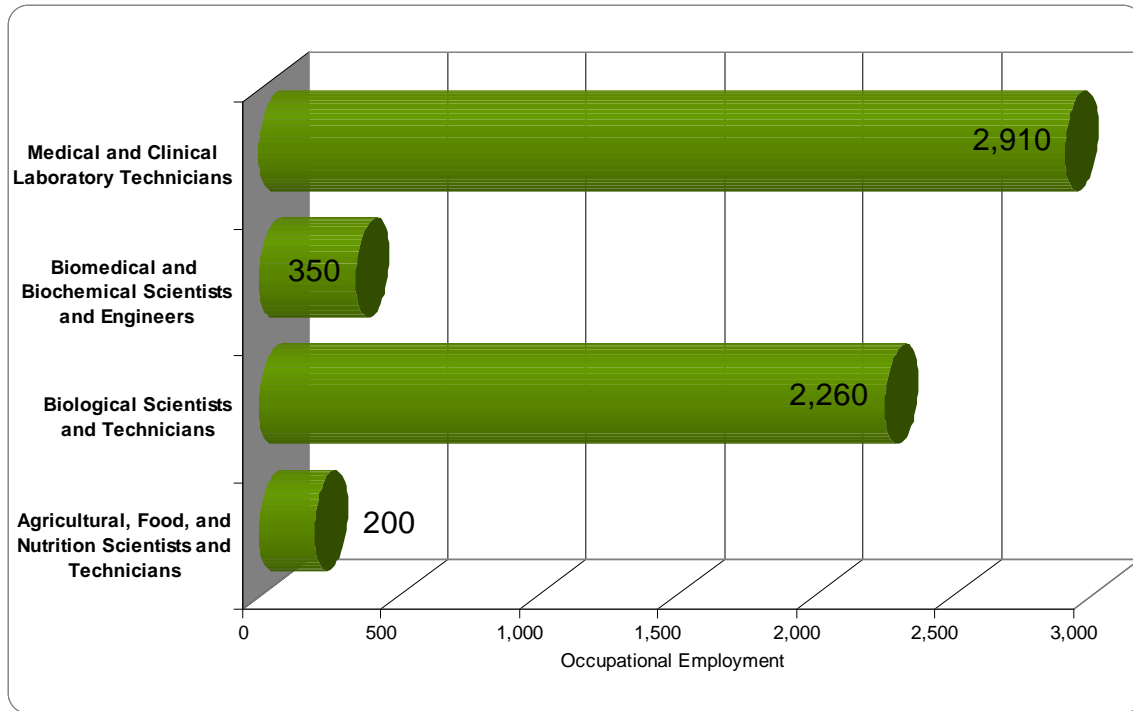
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Oklahoma, FY 2006

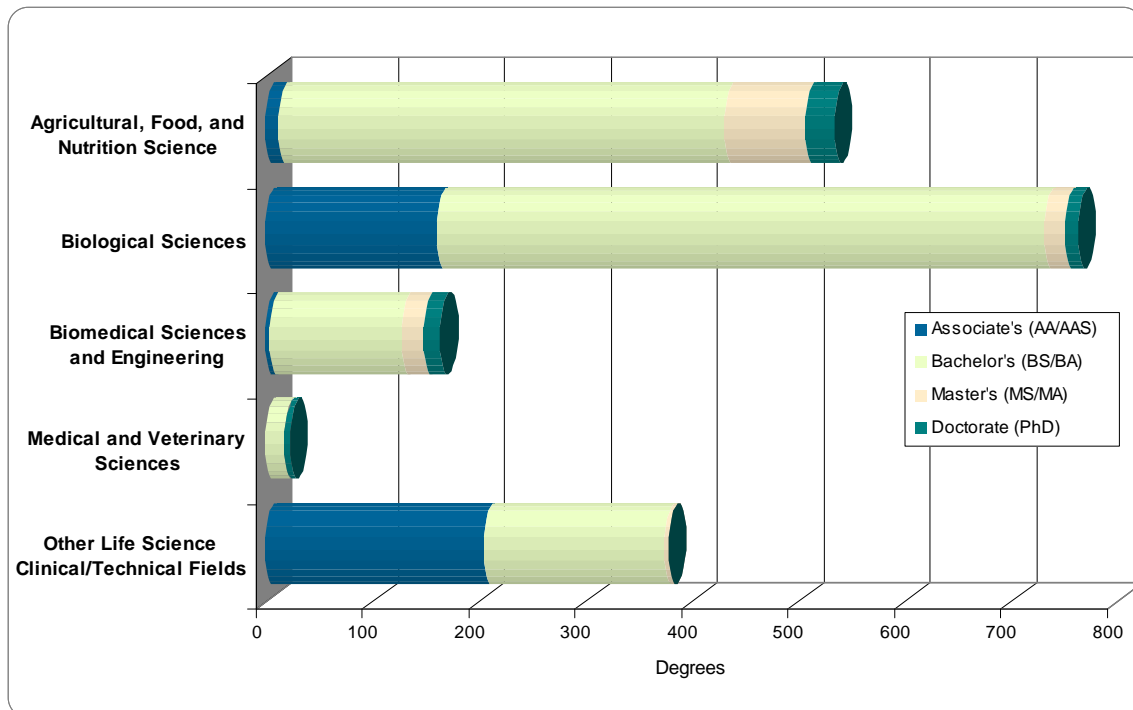


Bioscience Talent Base

Bioscience-related Occupational Employment in Oklahoma, 2006

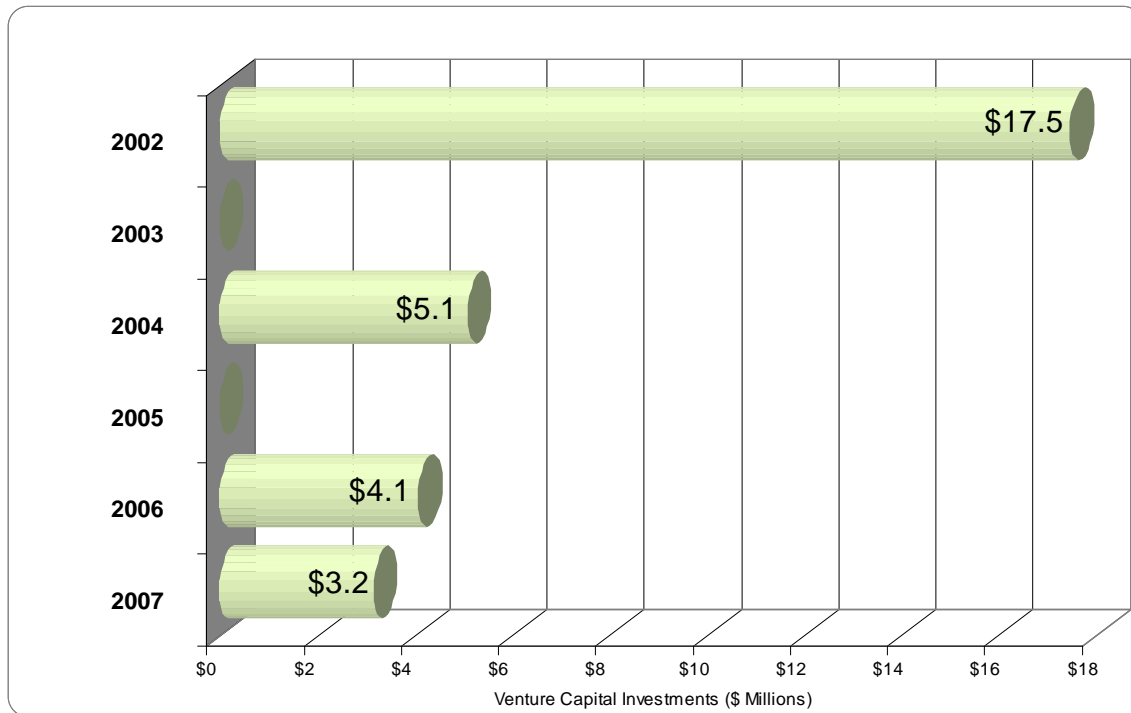


Bioscience-related Degrees in Oklahoma, AY 2006

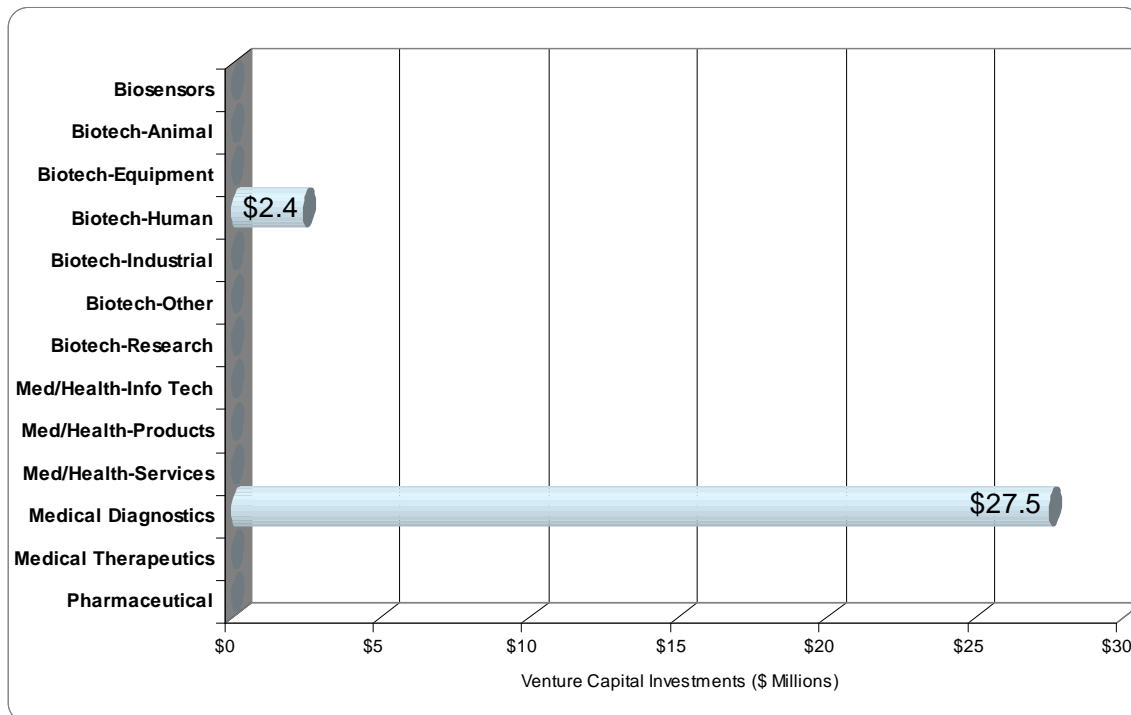


Bioscience Venture Capital

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

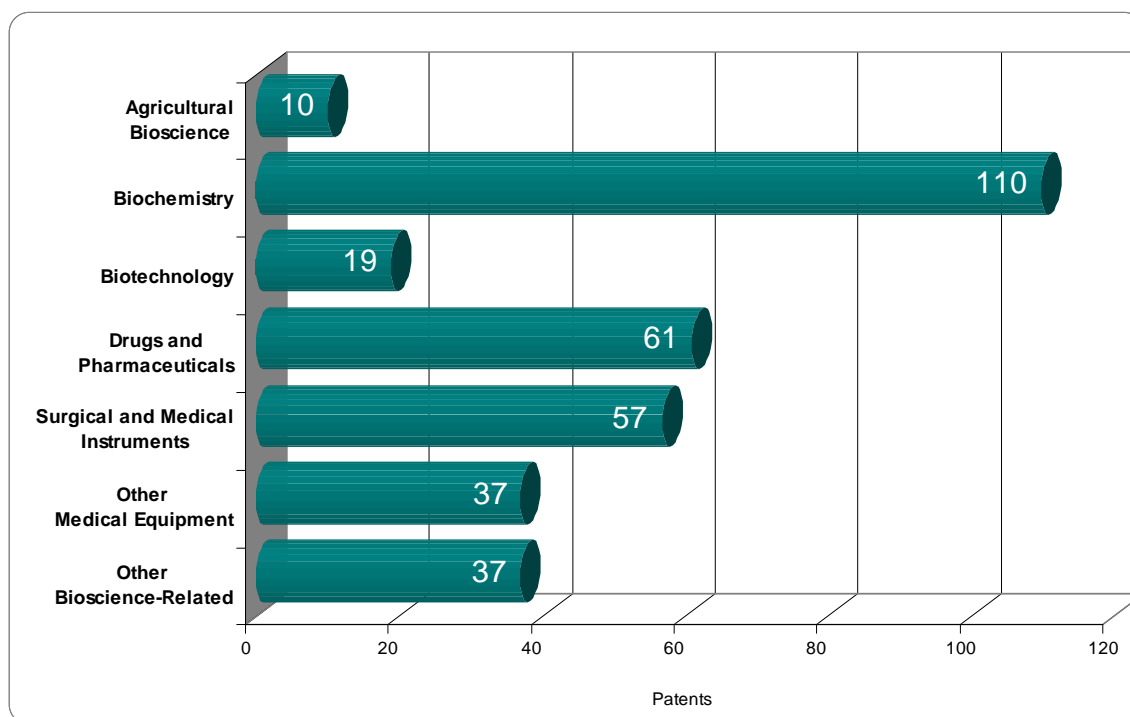


Bioscience-related Venture Capital Investments in Oklahoma by Segment, 2002–2007



Bioscience Patents

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



State Bioscience Contacts

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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.