

KENTUCKY

In Kentucky, the bioscience subsector with the largest employment is research, testing, and medical laboratories (2,819 jobs); and the subsector that grew fastest was drugs and pharmaceuticals (27 percent over the 6 years ending in 2006). Academic bioscience research totaled \$354 million in 2006, of which more than half was in medical sciences. Both total academic research and funding from the National Institutes of Health grew faster than nationally. Of the 440 bioscience patents issued in the State during the past 6 years, 120 each were in drugs and pharmaceuticals and surgical and medical instruments.

Major Industry Developments and Recent Successes

- **Coldstream Laboratories Inc.** has begun manufacturing current Good Manufacturing Practice (cGMP) small-batch sterile drug products. Coldstream Laboratories is a newly privatized company, created from the former Center for Pharmaceutical Science and Technology at the University of Kentucky.

Recent State Initiatives

The **Kentucky BioAlliance** was created in 2006 to facilitate increased collaboration and knowledge exchange among bioscience industry leaders, entrepreneurs, investors, and institutions across the Commonwealth. The BioAlliance is an initiative of the Department of Commercialization and Innovation within the Kentucky Cabinet for Economic Development and serves as Kentucky's BIO affiliate.

Since 2001, the **Kentucky Enterprise Fund** has administered a number of pre-seed and seed funds to meet the capital needs of technology-based programs. In addition to its ICC Concept Pool Fund, the Rural Innovation Fund, and the R&D Voucher Fund, the Enterprise Fund now offers a **Gap Fund** that can provide up to \$400,000 as part of a \$1 million round of financing to be used for executive talent and business development. Previous recipients of Kentucky Enterprise Fund awards are eligible to apply for Gap funding. The Commonwealth announced the formation of **Kentucky New Energy Ventures** in March 2008. This \$5 million Fund will provide grants of up to \$30,000 or investments of up to \$750,000 to support the development and commercialization of alternative fuel and renewable energy products, processes, and services in Kentucky. Areas of focus include transportation fuels produced from biomass, biodiesel, ethanol produced from food crops, and cellulosic ethanol, among other areas.

Since 2007, the Kentucky SBIR/STTR Matching Funds program has awarded 40 grants totaling approximately \$7 million to Kentucky-based firms (or firms willing to relocate to Kentucky) that receive Phase I and Phase II SBIR/STTR awards. The state will match up to \$100,000 for a Phase I federal award or up to \$500,000 per year for up to two years for a Phase II federal award. Thus, a single company that receives both a Phase I and II award can receive up to \$1.1 million.

For additional information on Kentucky's bioscience policies and programs, please see <http://www.thinkkentucky.com> and <http://www.KentuckyBioAlliance.org>.

Bioscience Industry Base, 2006

Industry Subsector	Kentucky		United States	
	2006	2001-06 Change	2006	2001-06 Change
Agricultural Feedstock & Chemicals				
Establishments	29	17.7%	2,183	3.8%
Employment	1,302	2.4%	105,846	-6.1%
Location Quotient	0.94		n.a.	
Direct-Effect Employment Multiplier	7.34		11.22	
Total Employment Impact	9,555		1,214,709	
Average Annual Wage	\$67,698		\$67,870	
Drugs & Pharmaceuticals				
Establishments	16	14.3%	2,654	1.9%
Employment	1,230	26.8%	317,149	4.0%
Location Quotient	0.30		n.a.	
Direct-Effect Employment Multiplier	4.77		9.92	
Total Employment Impact	5,871		2,880,242	
Average Annual Wage	\$62,163		\$86,892	
Medical Devices & Equipment				
Establishments	134	1.5%	15,215	0.3%
Employment	2,386	-5.6%	422,993	-0.9%
Location Quotient	0.43		n.a.	
Direct-Effect Employment Multiplier	2.58		4.85	
Total Employment Impact	6,158		1,980,128	
Average Annual Wage	\$43,351		\$59,441	
Research, Testing, & Medical Laboratories				
Establishments	262	52.7%	22,857	32.7%
Employment	2,819	14.1%	449,991	17.8%
Location Quotient	0.48		n.a.	
Direct-Effect Employment Multiplier	2.08		3.25	
Total Employment Impact	5,851		1,440,500	
Average Annual Wage	\$48,935		\$71,284	
Total Private Sector				
Establishments	104,947	2.5%	8,575,730	10.2%
Employment	1,482,890	2.4%	113,463,842	3.1%
Average Annual Wage	\$34,922		\$42,272	

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

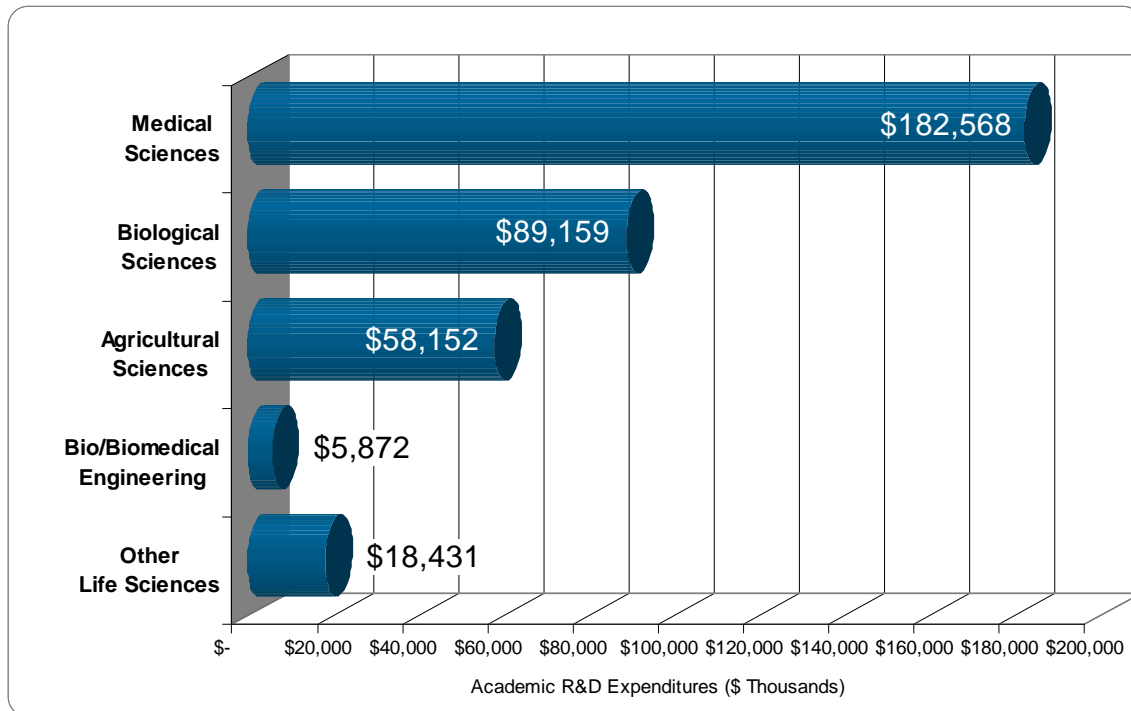
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

	Kentucky	United States	Rank
Academic R&D Expenditures, FY 2006			
Total (\$ thousands)	\$479,282	\$47,760,402	29
Bioscience R&D (\$ thousands)	\$354,182	\$29,307,628	27
Bioscience Share of Total R&D	73.9%	61.4%	
Bioscience R&D Per Capita	\$84.24	\$98.10	
Change in Bioscience R&D FY 2002–2006	54.3%	36.9%	
NIH Funding, FY 2007			
Total (\$ thousands)	\$139,725	\$21,066,389	29
Per Capita Funding	\$32.94	\$69.84	
Change in Funding, FY 2002–2007	26.1%	11.2%	
Higher Education Degrees in Bioscience Fields, AY 2006	1,824	143,433	28
Employment in Bioscience-related Occupations, 2006	5,620	588,520	31
Bioscience Venture Capital Investments, 2002-2007 (\$ millions)	\$250.0	\$51,260.9	23
Bioscience and Related Patents, 2002-2007	440	121,817	37

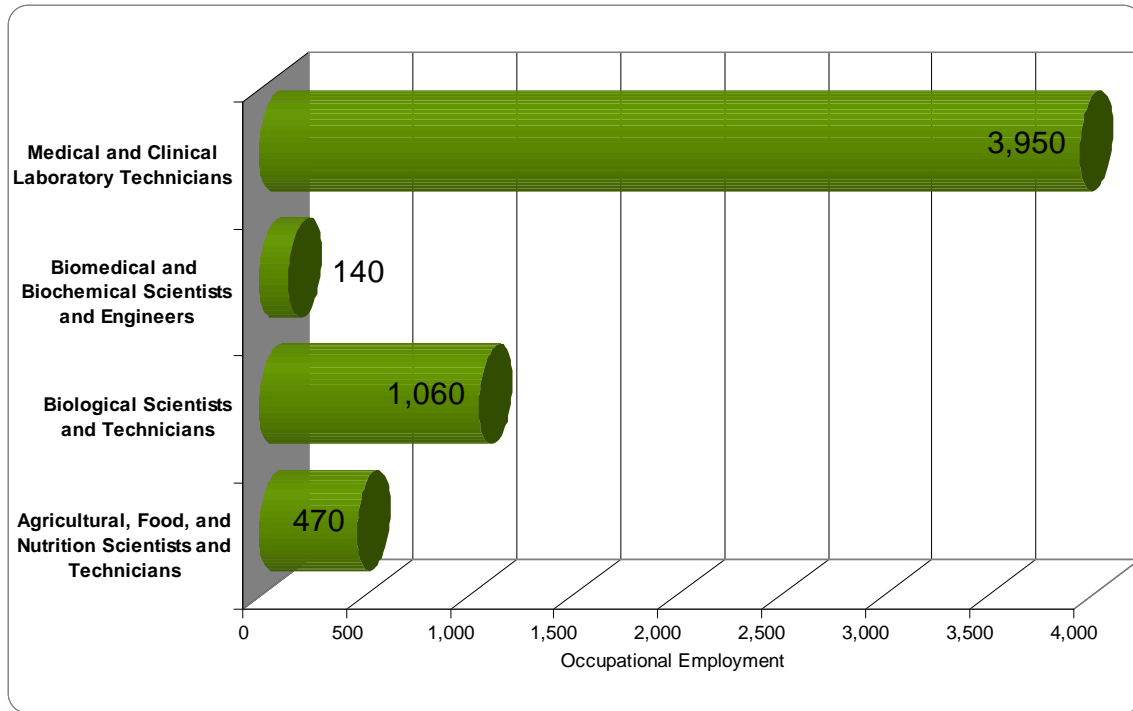
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Kentucky, FY 2006

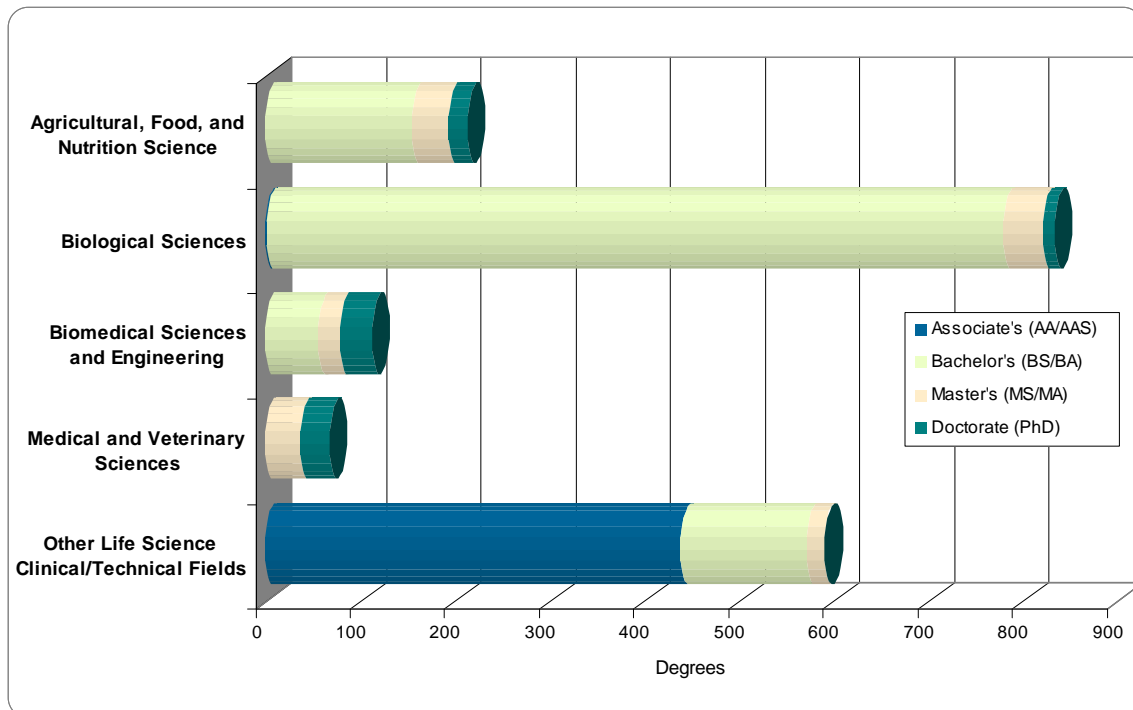


Bioscience Talent Base

Bioscience-related Occupational Employment in Kentucky, 2006

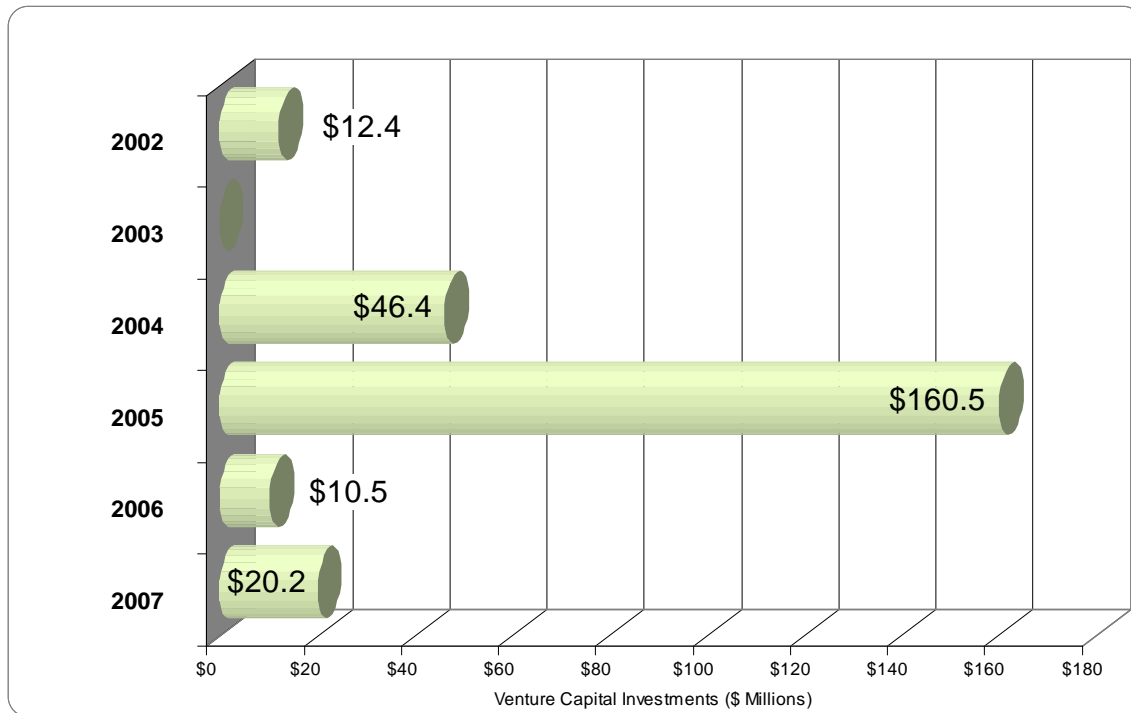


Bioscience-related Degrees in Kentucky, AY 2006

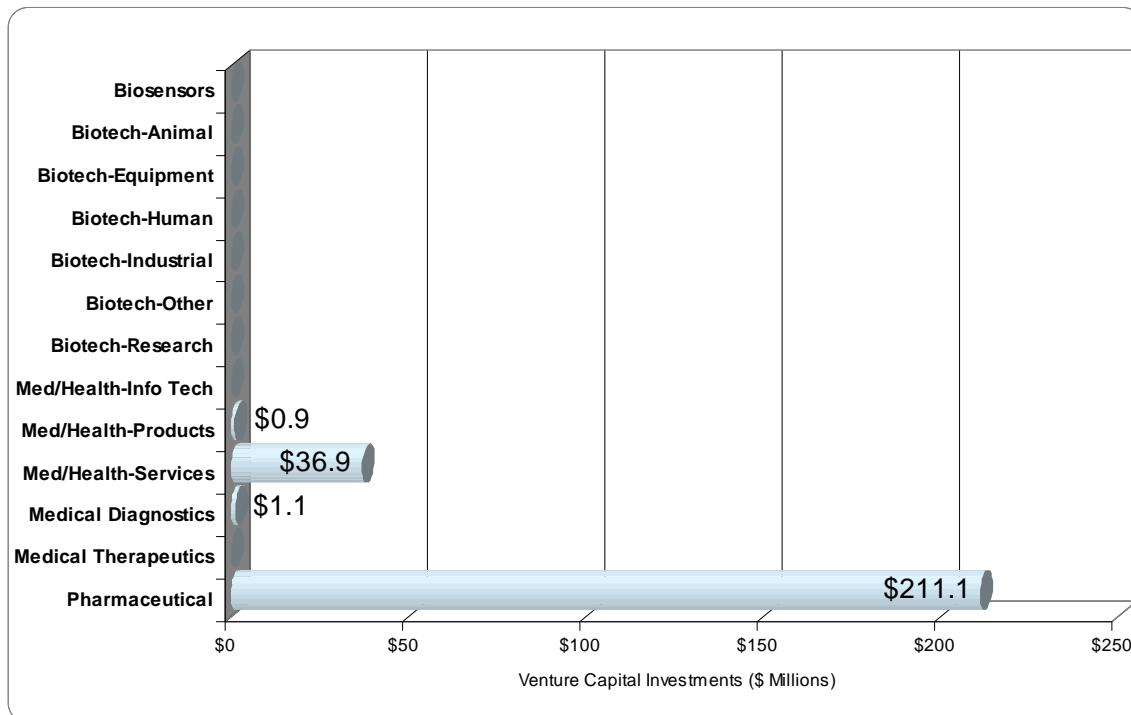


Bioscience Venture Capital

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

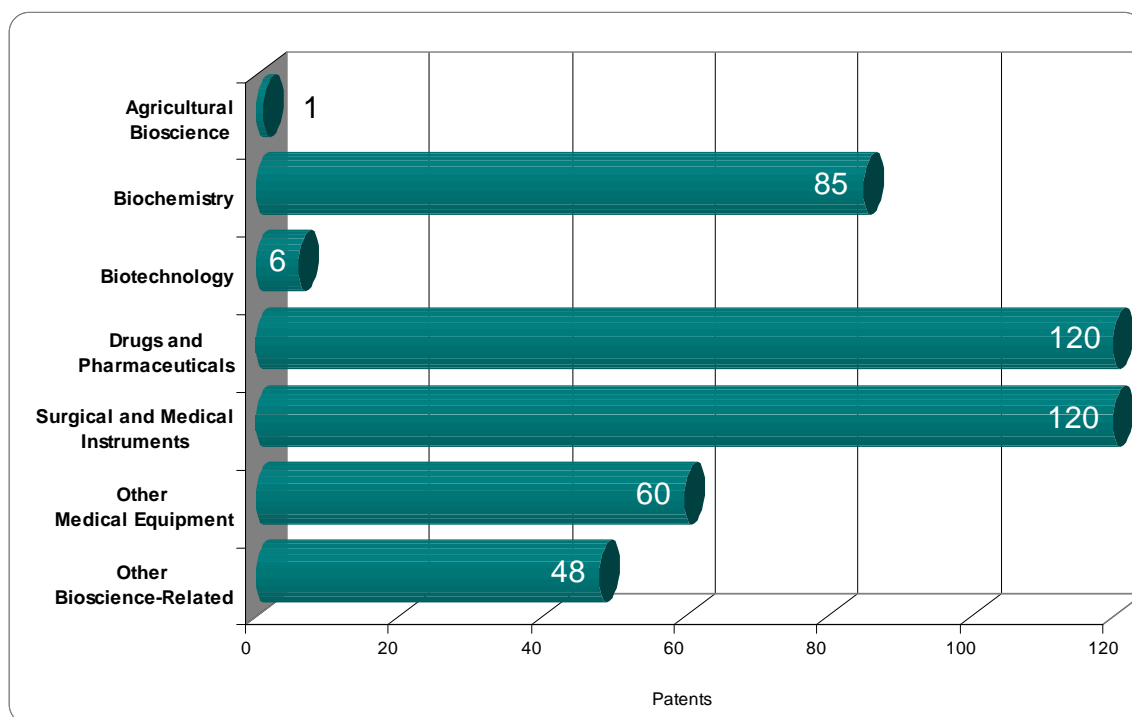


Bioscience-related Venture Capital Investments in Kentucky by Segment, 2002–2007



Bioscience Patents

Bioscience-related Patents by Classification Group in Kentucky, 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.