

VIRGINIA

Virginia has an employment concentration in agricultural feedstock and chemicals (location quotient of 1.09). In the research, testing, and medical laboratories subsector, employment grew rapidly (39 percent since 2001). Total academic bioscience research expenditures were \$516 million in 2006, led by medical and biological sciences. In the past 6 years, venture capital invested in the biosciences totaled \$193 million, with a peak in 2007. Most went to medical/health information technology, medical/health products, and human biotechnology. The 2,884 bioscience patents issued over the same period were led by surgical and medical instruments, drugs and pharmaceuticals, and biochemistry.

Recent State Initiatives

In the past 2 years, Virginia has made significant investments to strengthen the research capacity of its universities through the **Commonwealth Higher Education Research Initiative (HERI)**. The Commonwealth's 2006–2008 budget included \$200 million in operating support and \$204 million for new research buildings. HERI has funded six new life science research facilities at a cost of \$63.2 million, including a biosafety level 3 laboratory; a new clinical cancer center; and medical science, infectious disease, and critical technology/applied science facilities. Virginia also continues to invest in bioscience research at its universities. In 2006, HERI included an additional \$39.1 million—within the state funding for operating support—specifically for biomedical and biomaterials engineering research. Another \$5 million was added to HERI by the 2007 General Assembly, including \$2.5 million for cancer and stem cell research.

Virginia also is investing in bioenergy research through the **Virginia Coastal Energy Research Consortium**, which was created by the Legislature in 2006. The Consortium received \$1.5 million in state funding in FY 2008 as part of HERI. Initial research is focused in two areas: offshore wind development and algal biodiesel.

Virginia has also increased its commitment to providing seed capital for start-up bioscience companies. Since 2004, Virginia's Center for Innovative Technology (CIT) has made seed-stage investments in life science and technology companies through its Growth Acceleration Program (GAP) Funds. A new fund specifically directed toward life science companies, the **GAP BioLife Fund**, was launched in 2007. The Fund, initially \$500,000 with additional funding anticipated, invests up to \$100,000 in individual Virginia-based life science companies.

For additional information Virginia's bioscience policies and programs, please see <http://www.yesvirginia.org> and <http://www.vabio.org>.

Major Industry Developments and Recent Successes

- **SRI International** is establishing a Center for Advanced Drug Research in the Harrisonburg region. The Center, which will partner with James Madison University and other Virginia universities in its research efforts, will create 100 new jobs.
- **Philip Morris USA** completed construction on a new \$350 million research and technology center in the Virginia BioTechnology Research Park in Richmond in 2007. The state-of-the-art facility includes more than 575,000 square feet of space and houses 600 scientists, engineers, and support staff.
- **Covance, Inc.**, one of the world's largest drug development services companies, announced that it will expand its pharmaceutical research and development laboratory operations in Prince William County, adding 100 new jobs for a total of 550 at its new state-of-the-art facility.

Bioscience Industry Base, 2006

Industry Subsector	Virginia		United States	
	2006	2001-06 Change	2006	2001-06 Change
Agricultural Feedstock & Chemicals				
Establishments	33	2.3%	2,183	3.8%
Employment	3,029	4.9%	105,846	-6.1%
Location Quotient	1.09		n.a.	
Direct-Effect Employment Multiplier	4.86		11.22	
Total Employment Impact	14,720		1,214,709	
Average Annual Wage	\$72,292		\$67,870	
Drugs & Pharmaceuticals				
Establishments	24	-7.7%	2,654	1.9%
Employment	3,535	-4.5%	317,149	4.0%
Location Quotient	0.42		n.a.	
Direct-Effect Employment Multiplier	4.99		9.92	
Total Employment Impact	17,650		2,880,242	
Average Annual Wage	\$74,933		\$86,892	
Medical Devices & Equipment				
Establishments	298	10.8%	15,215	0.3%
Employment	3,608	-14.7%	422,993	-0.9%
Location Quotient	0.33		n.a.	
Direct-Effect Employment Multiplier	2.42		4.85	
Total Employment Impact	8,731		1,980,128	
Average Annual Wage	\$39,613		\$59,441	
Research, Testing, & Medical Laboratories				
Establishments	444	45.6%	22,857	32.7%
Employment	7,907	38.7%	449,991	17.8%
Location Quotient	0.67		n.a.	
Direct-Effect Employment Multiplier	2.33		3.25	
Total Employment Impact	18,408		1,440,500	
Average Annual Wage	\$62,311		\$71,284	
Total Private Sector				
Establishments	209,303	10.2%	8,575,730	10.2%
Employment	2,977,044	5.3%	113,463,842	3.1%
Average Annual Wage	\$43,666		\$42,272	

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

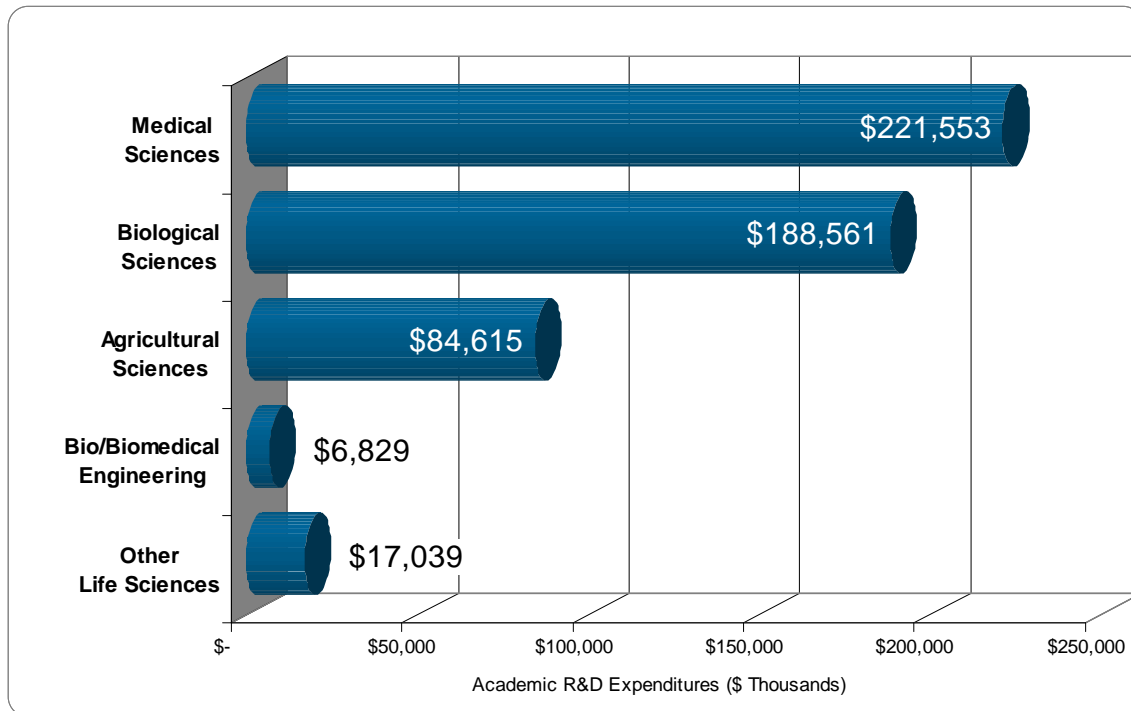
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

	Virginia	United States	Rank
Academic R&D Expenditures, FY 2006			
Total (\$ thousands)	\$946,886	\$47,760,402	15
Bioscience R&D (\$ thousands)	\$518,597	\$29,307,628	17
Bioscience Share of Total R&D	54.8%	61.4%	
Bioscience R&D Per Capita	\$67.88	\$98.10	
Change in Bioscience R&D FY 2002–2006	40.5%	36.9%	
NIH Funding, FY 2007			
Total (\$ thousands)	\$271,271	\$21,066,389	21
Per Capita Funding	\$35.17	\$69.84	
Change in Funding, FY 2002–2007	2.9%	11.2%	
Higher Education Degrees in Bioscience Fields, AY 2006	3,717	143,433	12
Employment in Bioscience-related Occupations, 2006	12,320	588,520	16
Bioscience Venture Capital Investments, 2002-2007 (\$ millions)	\$193.0	\$51,260.9	27
Bioscience and Related Patents, 2002-2007	2,884	121,817	14

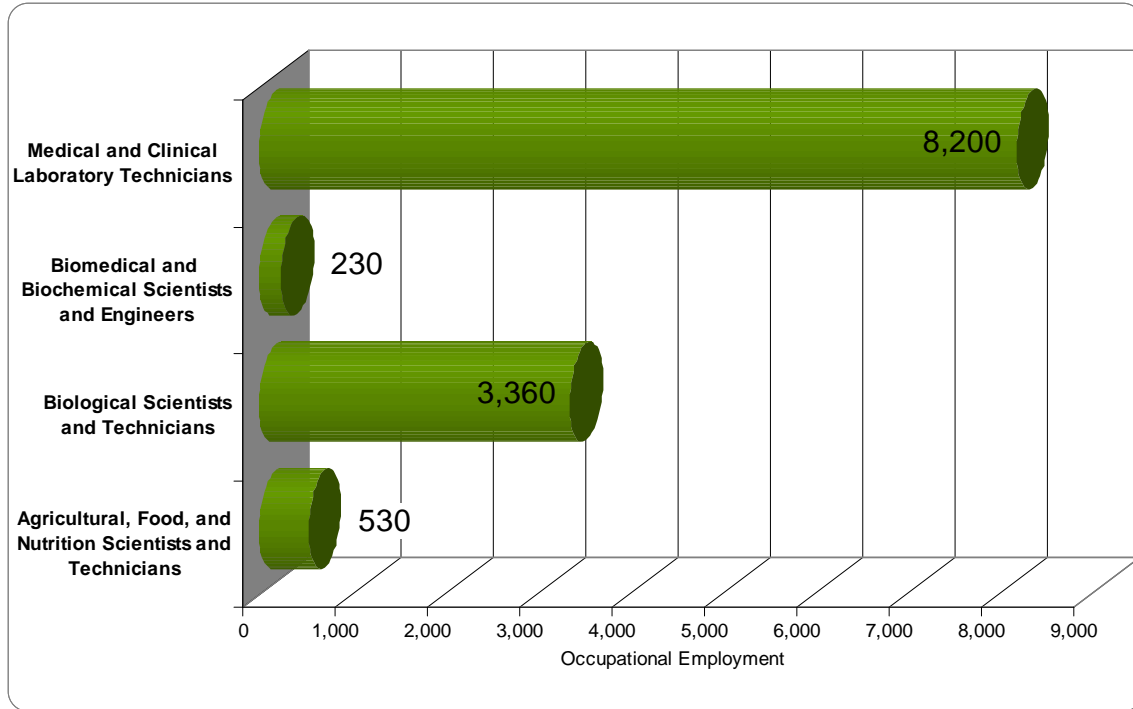
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Virginia, FY 2006

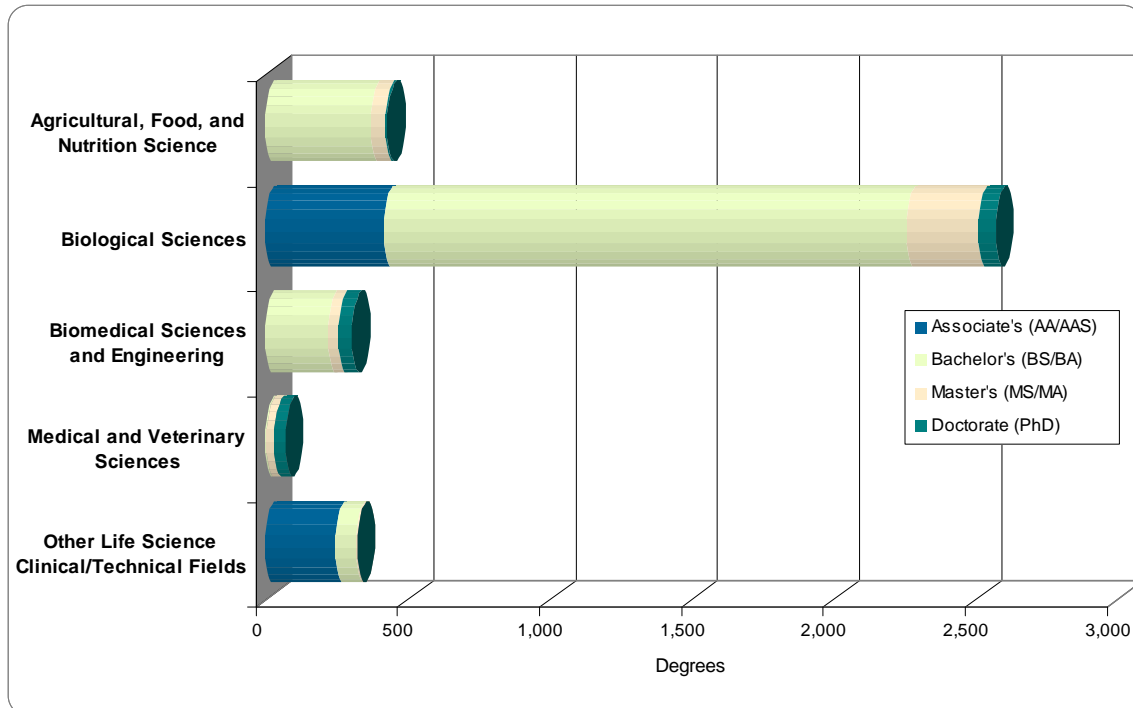


Bioscience Talent Base

Bioscience-related Occupational Employment in Virginia, 2006

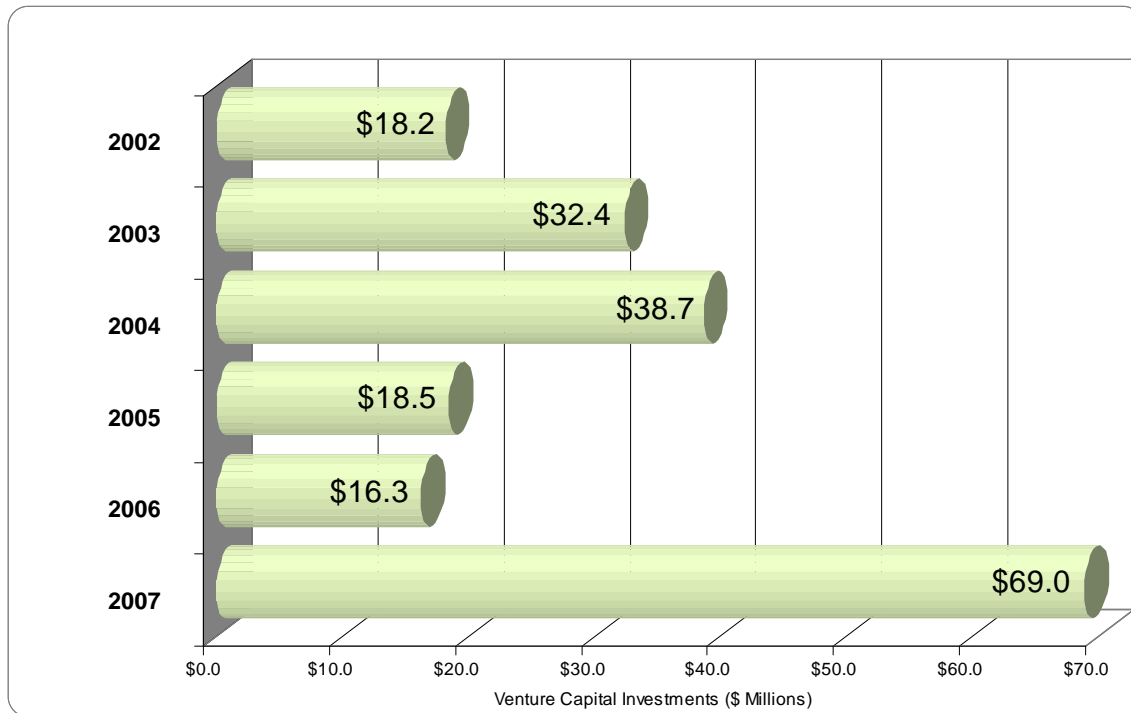


Bioscience-related Degrees in Virginia, AY 2006

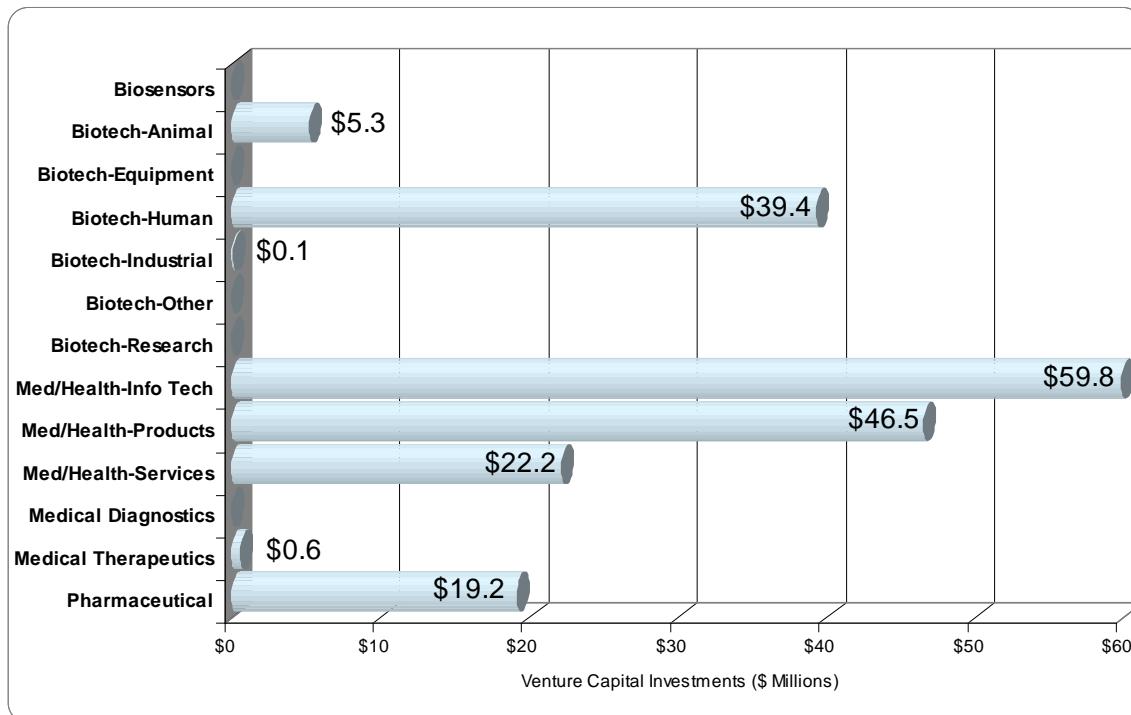


Bioscience Venture Capital

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

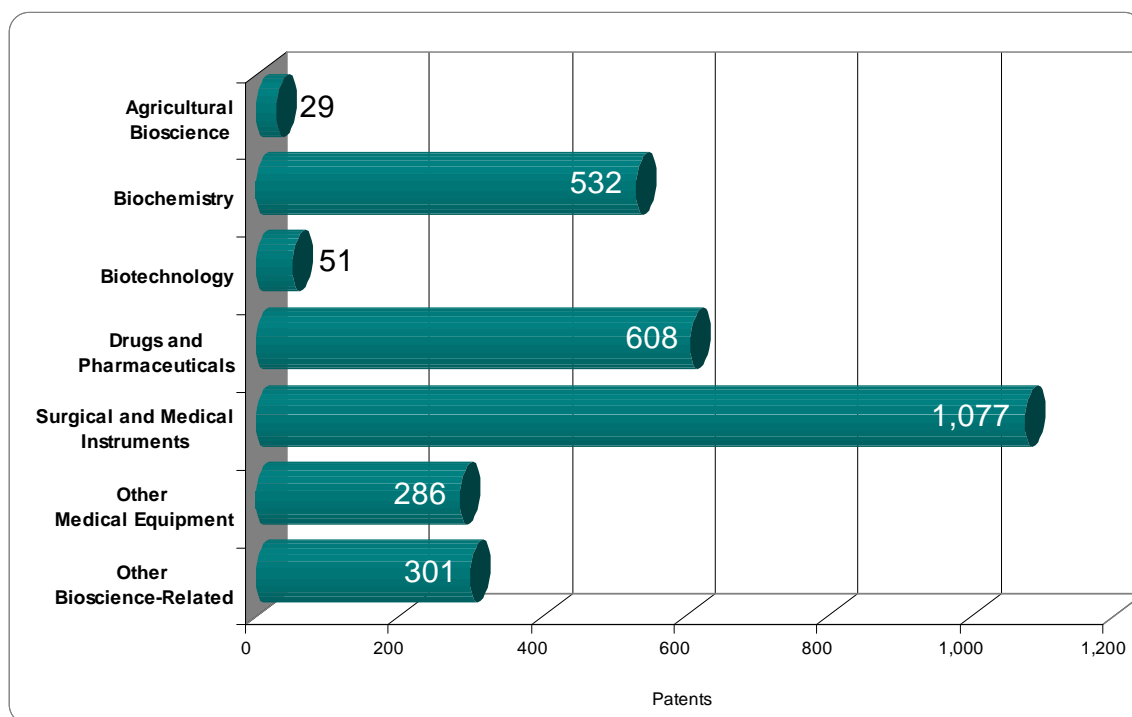


Bioscience-related Venture Capital Investments in Virginia by Segment, 2002–2007



Bioscience Patents

Bioscience-related Patents by Classification Group in Virginia, 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.