



Pennsylvania’s bioscience industry is very large, highly concentrated and growing. From 2014 through 2016, industry firms grew their employment base by 6.1 percent to just over 81,000 state jobs within 2,517 business establishments. This growth rate outpaced that for the nation during this period (4.4 percent). Four of the state’s five industry subsectors contributed to the overall industry job growth. Pennsylvania is 11 percent more concentrated in bioscience employment compared to the national average (location quotient is 1.11). The state has a specialized concentration in two subsectors—drugs and pharmaceuticals and research, testing and medical labs; as well as an above-average concentration in medical device manufacturing. Pennsylvania is among the top tier of states in key measures of the biosciences innovation ecosystem including in academic R&D expenditures; NIH funding to its institutions; venture capital investments; and in patents awarded to state inventors.

Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

Metric	Pennsylvania	United States	Quintile
Bioscience Industry, 2016			
Bioscience Industry Employment	81,035	1,743,639	I
Bioscience Industry Location Quotient	1.11	n/a	II
Bioscience Industry Establishments	2,517	85,702	I
Academic Bioscience R&D Expenditures, FY 2016			
Bioscience R&D (\$ thousands)	\$2,425,134	\$41,972,205	I
Bioscience Share of Total R&D	65%	62%	II
Bioscience R&D Per Capita	\$190	\$130	I
NIH Funding, FY 2017			
Funding (\$ thousands)	\$1,672,905	\$26,150,485	I
Funding Per Capita	\$131	\$80	I
Bioscience Venture Capital Investments, 2014-17 (\$ millions)	\$1,777.80	\$66,168.62	I
Bioscience and Related Patents, 2014-17	7,029	102,862	I

State ranking figures for bioscience performance metrics are calculated as quintiles, where I = top quintile, III = middle quintile, and V = bottom quintile. For source notes, see end of State Profile.

Industry Subsector	Pennsylvania		United States	
	2016	2014-2016 Change	2016	2014-2016 Change
Agricultural Feedstock and Industrial Biosciences				
Establishments	39	-4.9%	1,709	-3.2%
Employment	774	5.1%	68,027	-1.2%
Location Quotient	0.27		n/a	
Direct-Effect Employment Multiplier	4.22			
Total Employment Impact	3,266			
Average Annual Wage	\$62,420	-13.0%	\$80,961	2.7%
Bioscience-Related Distribution				
Establishments	777	-3.1%	39,149	3.8%
Employment	16,549	-0.1%	469,640	3.7%
Location Quotient	0.84		n/a	
Direct-Effect Employment Multiplier	2.29			
Total Employment Impact	37,873			
Average Annual Wage	\$110,372	-13.1%	\$93,677	2.7%
Drugs and Pharmaceuticals				
Establishments	121	9.0%	3,754	13.7%
Employment	17,885	1.8%	299,113	2.0%
Location Quotient	1.43		n/a	
Direct-Effect Employment Multiplier	6.08			
Total Employment Impact	108,743			
Average Annual Wage	\$124,469	0.7%	\$113,815	-3.2%
Medical Devices and Equipment				
Establishments	277	-0.4%	8,083	5.9%
Employment	16,239	2.6%	359,293	2.9%
Location Quotient	1.08		n/a	
Direct-Effect Employment Multiplier	2.79			
Total Employment Impact	45,368			
Average Annual Wage	\$69,337	5.7%	\$84,746	6.5%
Research, Testing and Medical Laboratories				
Establishments	1,303	9.7%	33,007	13.1%
Employment	29,588	15.3%	547,566	8.2%
Location Quotient	1.29		n/a	
Direct-Effect Employment Multiplier	2.53			
Total Employment Impact	74,811			
Average Annual Wage	\$112,310	0.6%	\$106,942	5.5%
Total Bioscience Industry				
Establishments	2,517	4.0%	85,702	7.7%
Employment	81,035	6.1%	1,743,639	4.4%
Location Quotient	1.11		n/a	
Direct-Effect Employment Multiplier	3.33			
Total Employment Impact	270,062			
Average Annual Wage	\$105,509	-2.1%	\$98,961	3.1%
Total Private Sector				
Establishments	340,271	1.9%	9,243,034	3.4%
Employment	5,062,373	2.1%	120,884,570	4.2%
Average Annual Wage	\$52,106	3.6%	\$53,354	4.3%

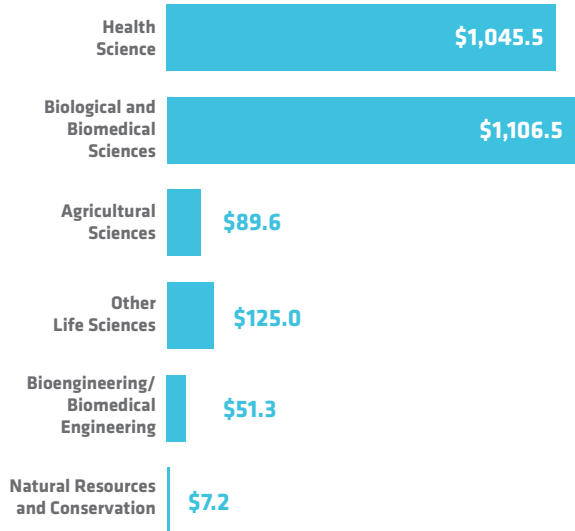
Note: U.S. employment metrics include Puerto Rico.

Bioscience Research in Pennsylvania

Bioscience Academic R&D Expenditures

\$ Millions

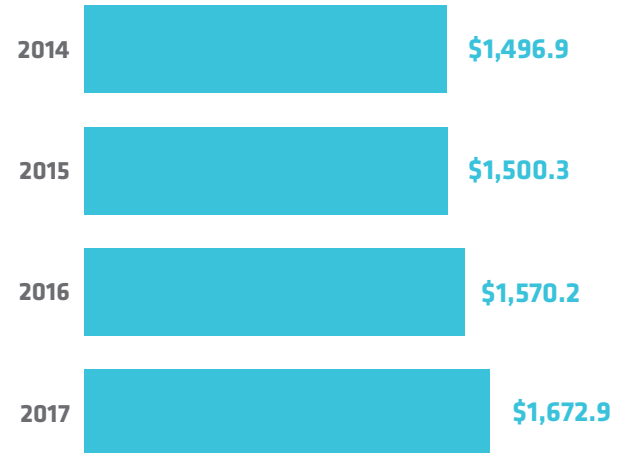
FY 2016



NIH Awards

\$ Millions

FY 2014-2017

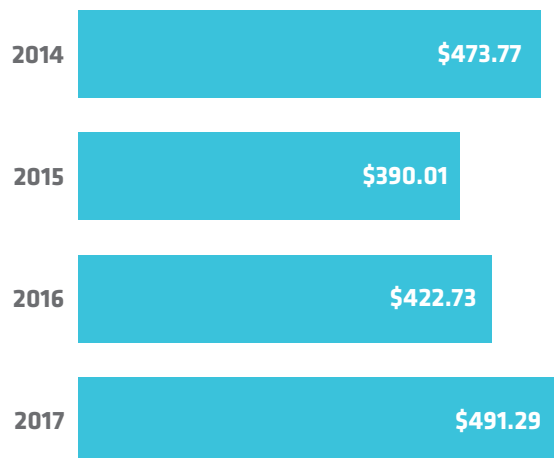


Bioscience Venture Capital in Pennsylvania

Bioscience-Related Venture Capital Investments

\$ Millions

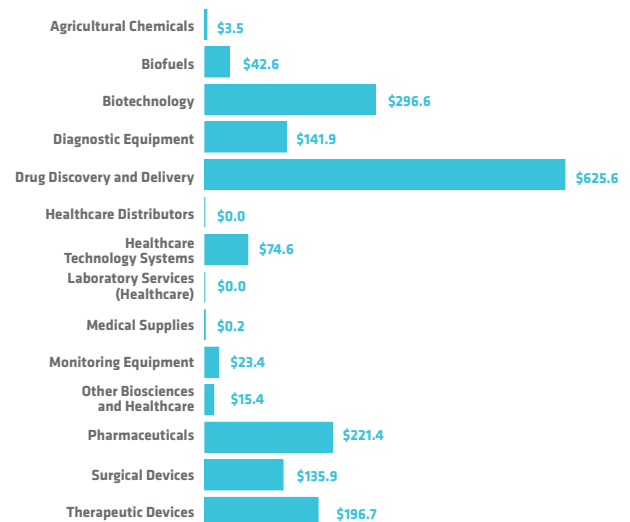
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Bioscience-Related Venture Capital Investments by Segment

\$ Millions

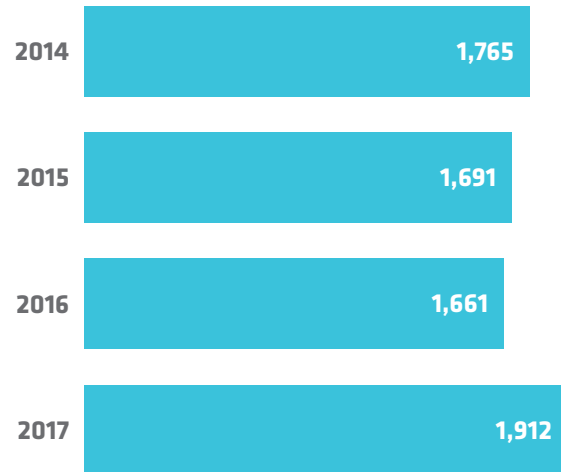
2014-2017



Bioscience Patents in Pennsylvania

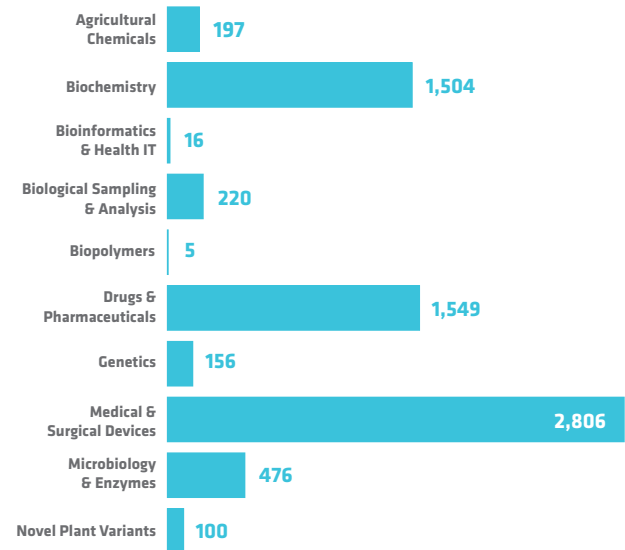
Bioscience-Related U.S. Patents

2014-2017



Bioscience-Related U.S. Patents by Segment

2014-2017



Source Notes

Employment, Establishments and Wages: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), enhanced file from IMPLAN.

Employment Multipliers: IMPLAN state-level Input/Output models.

Academic R&D Expenditures: National Science Foundation (NSF) Higher Education Research and Development (HERD) Survey.

NIH Funding: National Institutes of Health, NIH Awards by Location & Organization (summary information within RePORT database).

Venture Capital: PitchBook Data, Inc.

Patents: U.S. Patent & Trademark Office data from Clarivate Analytics' Derwent Innovation patent analysis database. For a more detailed discussion of the data and methodology used, please see the Appendix to the full national report.