



West Virginia’s bioscience industry is growing rapidly and has multiple industry specializations. State bioscience firms grew their employment base by 14 percent from 2014 through 2016, well outpacing national growth (4.4 percent) to reach nearly 8,000 total industry jobs. Job gains were contributed by three of the state’s five major industry subsectors. West Virginia is specialized in two of the five major subsectors, with a location quotient of 2.05 in agricultural feedstock and industrial biosciences, and a location quotient of 1.93 in drugs and pharmaceuticals, the state’s largest subsector. NIH funding to West Virginia research institutions has grown from \$19 million in 2014 to more than \$28 million in 2017.

Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

Metric	West Virginia	United States	Quintile
Bioscience Industry, 2016			
Bioscience Industry Employment	7,834	1,743,639	IV
Bioscience Industry Location Quotient	1.00	n/a	II
Bioscience Industry Establishments	489	85,702	V
Academic Bioscience R&D Expenditures, FY 2016			
Bioscience R&D (\$ thousands)	\$120,869	\$41,972,205	IV
Bioscience Share of Total R&D	64%	62%	III
Bioscience R&D Per Capita	\$66	\$130	V
NIH Funding, FY 2017			
Funding (\$ thousands)	\$28,279	\$26,150,485	V
Funding Per Capita	\$16	\$80	V
Bioscience Venture Capital Investments, 2014-17 (\$ millions)	\$0.20	\$66,168.62	V
Bioscience and Related Patents, 2014-17	179	102,862	V

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	West Virginia		United States	
	2016	2014-2016 Change	2016	2014-2016 Change
Agricultural Feedstock and Industrial Biosciences				
Establishments	3	0.0%	1,709	-3.2%
Employment	632	169.9%	68,027	-1.2%
Location Quotient	2.05		n/a	
Direct-Effect Employment Multiplier	3.16			
Total Employment Impact	1,999			
Average Annual Wage	\$63,109	-22.0%	\$80,961	2.7%
Bioscience-Related Distribution				
Establishments	226	11.7%	39,149	3.8%
Employment	2,021	39.0%	469,640	3.7%
Location Quotient	0.95		n/a	
Direct-Effect Employment Multiplier	1.87			
Total Employment Impact	3,774			
Average Annual Wage	\$89,238	20.1%	\$93,677	2.7%
Drugs and Pharmaceuticals				
Establishments	5	66.7%	3,754	13.7%
Employment	2,617	-4.9%	299,113	2.0%
Location Quotient	1.93		n/a	
Direct-Effect Employment Multiplier	4.41			
Total Employment Impact	11,535			
Average Annual Wage	\$90,895	12.0%	\$113,815	-3.2%
Medical Devices and Equipment				
Establishments	13	18.2%	8,083	5.9%
Employment	874	24.3%	359,293	2.9%
Location Quotient	0.54		n/a	
Direct-Effect Employment Multiplier	2.18			
Total Employment Impact	1,905			
Average Annual Wage	\$51,514	-6.7%	\$84,746	6.5%
Research, Testing and Medical Laboratories				
Establishments	241	10.2%	33,007	13.1%
Employment	1,690	-1.4%	547,566	8.2%
Location Quotient	0.68		n/a	
Direct-Effect Employment Multiplier	1.93			
Total Employment Impact	3,263			
Average Annual Wage	\$52,207	1.0%	\$106,942	5.5%
Total Bioscience Industry				
Establishments	489	11.4%	85,702	7.7%
Employment	7,834	14.2%	1,743,639	4.4%
Location Quotient	0.99		n/a	
Direct-Effect Employment Multiplier	2.87			
Total Employment Impact	22,477			
Average Annual Wage	\$75,485	8.4%	\$98,961	3.1%
Total Private Sector				
Establishments	46,563	1.7%	9,243,034	3.4%
Employment	546,612	-2.9%	120,884,570	4.2%
Average Annual Wage	\$40,745	0.6%	\$53,354	4.3%

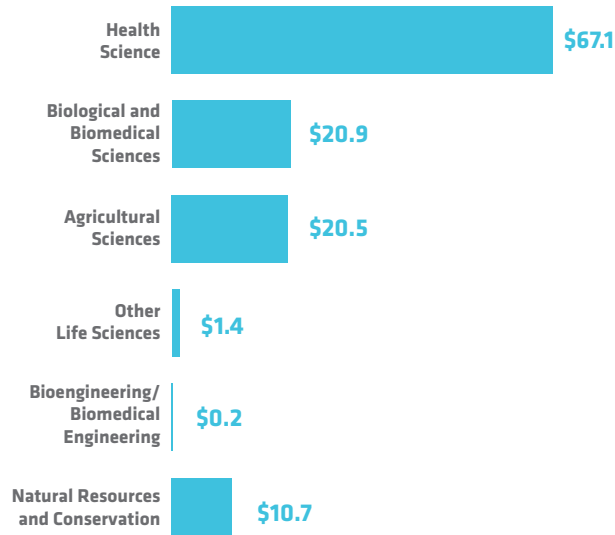
Note: U.S. employment metrics include Puerto Rico.

Bioscience Research in West Virginia

Bioscience Academic R&D Expenditures

\$ Millions

FY 2016



NIH Awards

\$ Millions

FY 2014-2017



Bioscience Venture Capital in West Virginia

Bioscience-Related Venture Capital Investments

\$ Millions

2014-2017



Bioscience-Related Venture Capital Investments by Segment

\$ Millions

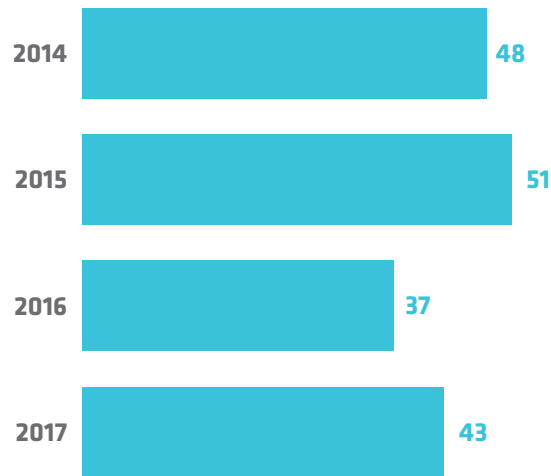
2014-2017



Bioscience Patents in West Virginia

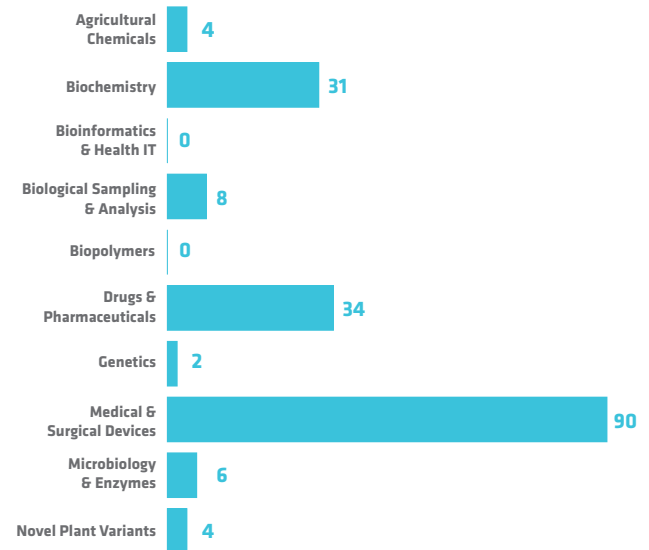
Bioscience-Related U.S. Patents

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.