



Michigan’s sizable bioscience industry had a slight employment increase from 2014 to 2016 to reach more than 40,000 jobs that span 1,772 individual business establishments across the state. Three of the state’s five industry subsectors contributed to the overall job gain. Michigan is 7 percent more concentrated in its employment in medical device and equipment manufacturing compared with the national average (location quotient is 1.07). The state is among the top tier in academic bioscience-related R&D activities, with more than \$1.3 billion in expenditures in 2016. This university research is supported, in part, by federal funding including from NIH where awards to Michigan institutions have been steadily rising in recent years and reached \$707.7 million in FY 2017.

Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

Metric	Michigan	United States	Quintile
Bioscience Industry, 2016			
Bioscience Industry Employment	40,205	1,743,639	II
Bioscience Industry Location Quotient	0.76	n/a	III
Bioscience Industry Establishments	1,772	85,702	II
Academic Bioscience R&D Expenditures, FY 2016			
Bioscience R&D (\$ thousands)	\$1,336,071	\$41,972,205	I
Bioscience Share of Total R&D	58%	62%	III
Bioscience R&D Per Capita	\$135	\$130	II
NIH Funding, FY 2017			
Funding (\$ thousands)	\$707,701	\$26,150,485	II
Funding Per Capita	\$71	\$80	II
Bioscience Venture Capital Investments, 2014-17 (\$ millions)	\$608.63	\$66,168.62	II
Bioscience and Related Patents, 2014-17	2,487	102,862	II

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	Michigan		United States	
	2016	2014-2016 Change	2016	2014-2016 Change
Agricultural Feedstock and Industrial Biosciences				
Establishments	30	-11.8%	1,709	-3.2%
Employment	631	11.1%	68,027	-1.2%
Location Quotient	0.30		n/a	
Direct-Effect Employment Multiplier	6.81			
Total Employment Impact	4,292			
Average Annual Wage	\$71,901	1.1%	\$80,961	2.7%
Bioscience-Related Distribution				
Establishments	823	-10.1%	39,149	3.8%
Employment	11,680	0.7%	469,640	3.7%
Location Quotient	0.82		n/a	
Direct-Effect Employment Multiplier	2.30			
Total Employment Impact	26,866			
Average Annual Wage	\$85,514	2.4%	\$93,677	2.7%
Drugs and Pharmaceuticals				
Establishments	110	13.4%	3,754	13.7%
Employment	8,429	-4.4%	299,113	2.0%
Location Quotient	0.93		n/a	
Direct-Effect Employment Multiplier	5.84			
Total Employment Impact	49,233			
Average Annual Wage	\$82,768	5.5%	\$113,815	-3.2%
Medical Devices and Equipment				
Establishments	299	0.3%	8,083	5.9%
Employment	11,643	-0.8%	359,293	2.9%
Location Quotient	1.07		n/a	
Direct-Effect Employment Multiplier	2.84			
Total Employment Impact	33,070			
Average Annual Wage	\$80,612	11.1%	\$84,746	6.5%
Research, Testing and Medical Laboratories				
Establishments	510	5.3%	33,007	13.1%
Employment	7,822	6.6%	547,566	8.2%
Location Quotient	0.47		n/a	
Direct-Effect Employment Multiplier	2.59			
Total Employment Impact	20,234			
Average Annual Wage	\$85,780	7.8%	\$106,942	5.5%
Total Bioscience Industry				
Establishments	1,772	-3.1%	85,702	7.7%
Employment	40,205	0.4%	1,743,639	4.4%
Location Quotient	0.76		n/a	
Direct-Effect Employment Multiplier	3.33			
Total Employment Impact	133,695			
Average Annual Wage	\$83,357	6.5%	\$98,961	3.1%
Total Private Sector				
Establishments	230,403	2.9%	9,243,034	3.4%
Employment	3,677,398	4.1%	120,884,570	4.2%
Average Annual Wage	\$50,719	5.5%	\$53,354	4.3%

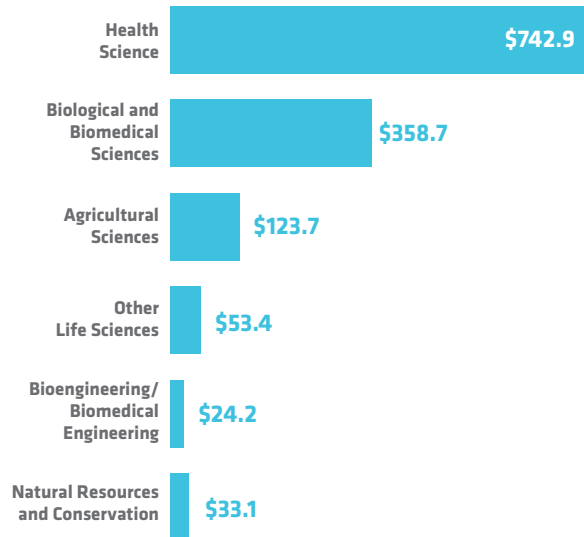
Note: U.S. employment metrics include Puerto Rico.

Bioscience Research in Michigan

Bioscience Academic R&D Expenditures

\$ Millions

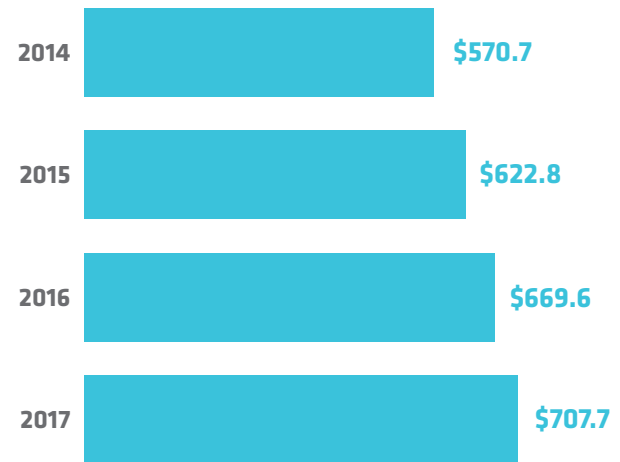
FY 2016



NIH Awards

\$ Millions

FY 2014-2017

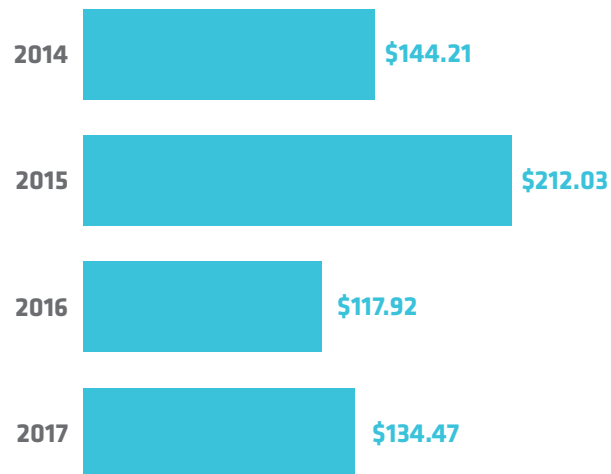


Bioscience Venture Capital in Michigan

Bioscience-Related Venture Capital Investments

\$ Millions

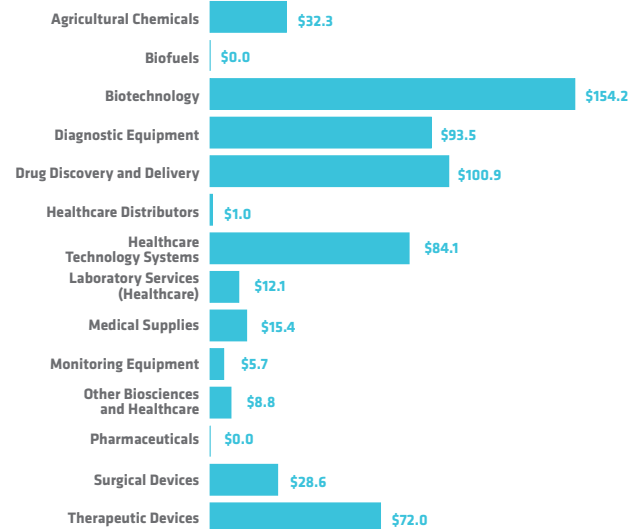
2014-2017



Bioscience-Related Venture Capital Investments by Segment

\$ Millions

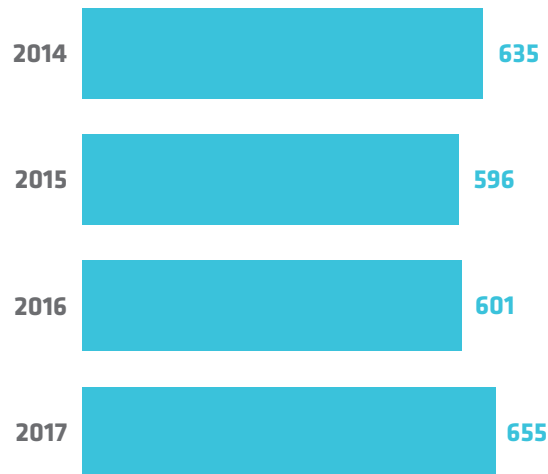
2014-2017



Bioscience Patents in Michigan

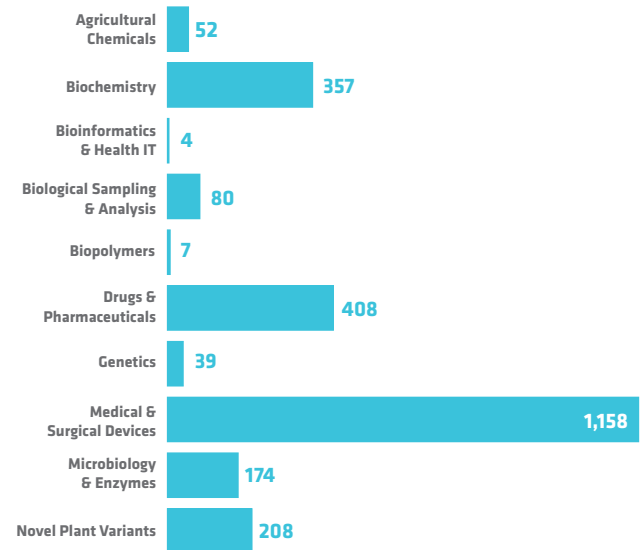
Bioscience-Related U.S. Patents

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.