



TEconomy/BIO

The Value of Bioscience Innovation in Growing Jobs and Improving Quality of Life 2016

# Kentucky

Kentucky's bioscience industry employment has grown by nearly 6 percent since 2012 with job gains contributed by three of its five major subsectors. By 2014, state bioscience employment totaled more than 12,000 in 1,090 state business establishments. The state's two largest subsectors—bioscience-related distribution and research, testing, and medical labs, each had employment gains during the 2-year period to 2014, increasing by 7 percent and nearly 13 percent, respectively. Kentucky's research universities are heavily focused in the biosciences with their nearly \$383 million in bioscience academic R&D in 2014 accounting for 76 percent of all academic research compared with 61 percent for the national average. Venture capital invested in state bioscience companies totaled \$78.7 million from 2012 through 2015 with investments focused in human biotechnology, health information technology, and medical diagnostics companies.

## Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

Metric	Kentucky	United States	Quintile
<b>Bioscience Industry, 2014</b>			
Bioscience Industry Employment	12,064	1,655,680	III
Bioscience Industry Location Quotient	0.56	n/a	IV
Bioscience Industry Establishments	1,090	77,283	III
<b>Academic Bioscience R&amp;D Expenditures, FY 2014</b>			
Bioscience R&D (\$ thousands)	\$382,905	\$38,873,926	III
Bioscience Share of Total R&D	76%	61%	I
Bioscience R&D Per Capita	\$87	\$122	IV
<b>NIH Funding, FY 2015</b>			
Funding (\$ thousands)	\$160,663	\$22,869,746	III
Funding Per Capita	\$36	\$71	III
<b>Bioscience Venture Capital Investments, 2012–15 (\$ millions)</b>	\$78.7	\$48,742.10	III
<b>Bioscience and Related Patents, 2012–15</b>	719	101,026	III

State ranking figures for bioscience performance metrics are calculated as quintiles, where:

top quintile – I II III IV V – bottom quintile

For source notes, see end of State Profile.



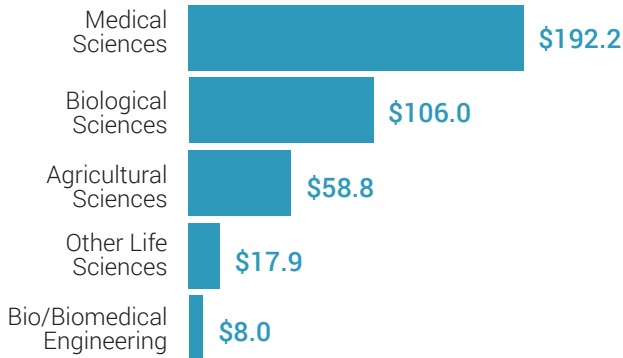
Industry Subsector	Kentucky		United States	
	2014	2012–2014 Change	2014	2012–2014 Change
<b>Agricultural Feedstock and Chemicals</b>				
Establishments	21	-4.5%	1,811	2.2%
Employment	422	-12.3%	77,545	1.5%
Location Quotient	0.42		n/a	
Direct-Effect Employment Multiplier	18.4		18.4	
Total Employment Impact	7,761		1,432,125	
Average Annual Wage	\$58,734	13.6%	\$80,640	6.3%
<b>Bioscience-Related Distribution</b>				
Establishments	664	7.8%	37,833	2.8%
Employment	6,332	7.0%	452,325	2.3%
Location Quotient	1.08		n/a	
Direct-Effect Employment Multiplier	2.8		3.0	
Total Employment Impact	17,919		1,358,820	
Average Annual Wage	\$78,666	6.7%	\$90,458	6.2%
<b>Drugs and Pharmaceuticals</b>				
Establishments	22	22.2%	3,301	8.0%
Employment	1,289	2.1%	293,353	3.2%
Location Quotient	0.34		n/a	
Direct-Effect Employment Multiplier	8.9		11.0	
Total Employment Impact	11,475		3,242,627	
Average Annual Wage	\$73,435	4.7%	\$117,524	10.3%
<b>Medical Devices and Equipment</b>				
Establishments	73	23.7%	7,636	5.5%
Employment	1,214	-3.1%	349,045	-0.1%
Location Quotient	0.27		n/a	
Direct-Effect Employment Multiplier	4.1		4.6	
Total Employment Impact	4,943		1,596,802	
Average Annual Wage	\$47,515	3.3%	\$79,537	5.1%
<b>Research, Testing, and Medical Laboratories</b>				
Establishments	310	20.5%	26,702	10.2%
Employment	2,806	12.6%	483,412	3.4%
Location Quotient	0.45		n/a	
Direct-Effect Employment Multiplier	2.7		3.1	
Total Employment Impact	7,526		1,554,719	
Average Annual Wage	\$55,618	5.3%	\$97,485	6.8%
<b>Total Bioscience Industry</b>				
Establishments	1,090	12.1%	77,283	5.7%
Employment	12,064	5.8%	1,655,680	2.2%
Location Quotient	0.56		n/a	
Direct-Effect Employment Multiplier	4.6		5.5	
Total Employment Impact	55,716		9,185,094	
Average Annual Wage	\$68,914	6.4%	\$94,543	7.2%
<b>Total Private Sector</b>				
Establishments	114,545	9.3%	8,937,672	2.7%
Employment	1,507,167	3.5%	116,018,300	4.4%
Average Annual Wage	\$41,778	3.9%	\$51,148	4.3%

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

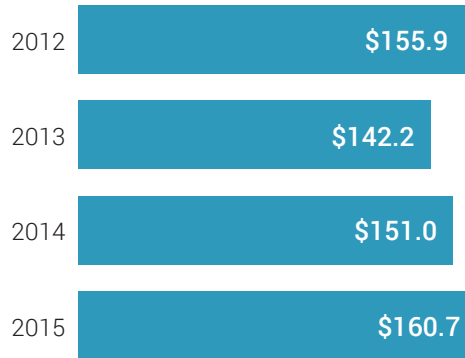


### Bioscience Research in Kentucky

Bioscience Academic R&D Expenditures  
\$ Millions  
FY 2014

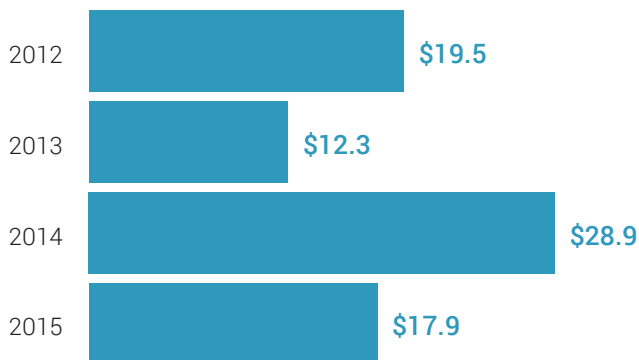


NIH Awards  
\$ Millions  
FY 2012-2015

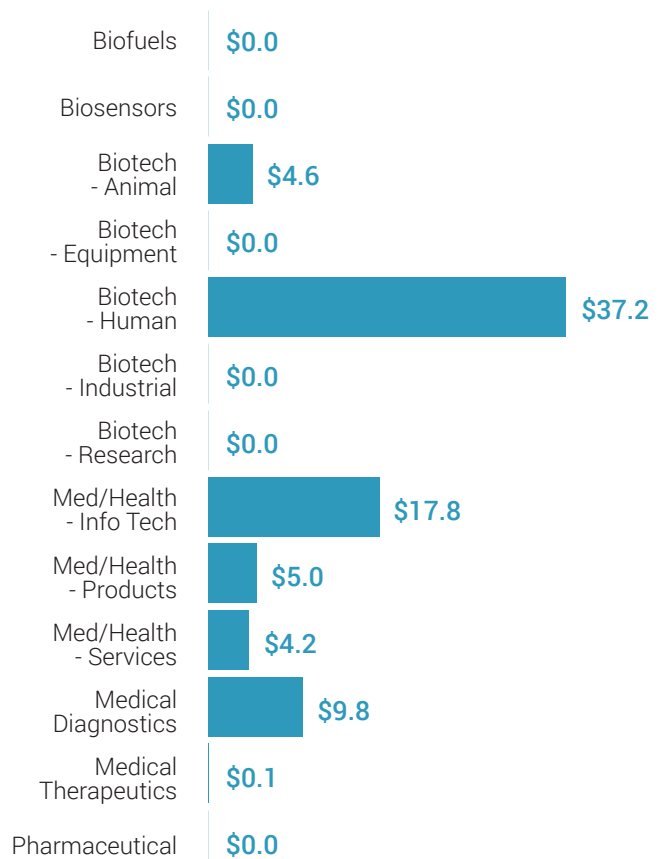


### Bioscience Venture Capital in Kentucky

Bioscience-Related Venture Capital Investments  
\$ Millions  
2012-2015



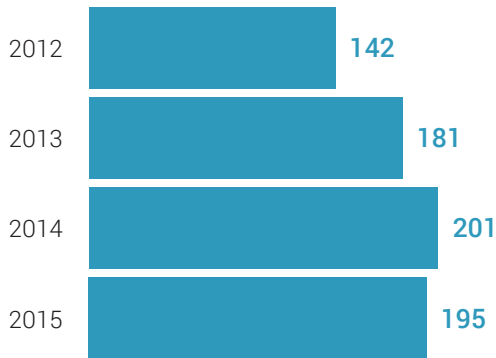
Bioscience-Related Venture Capital Investments by Segment  
\$ Millions  
2012-2015



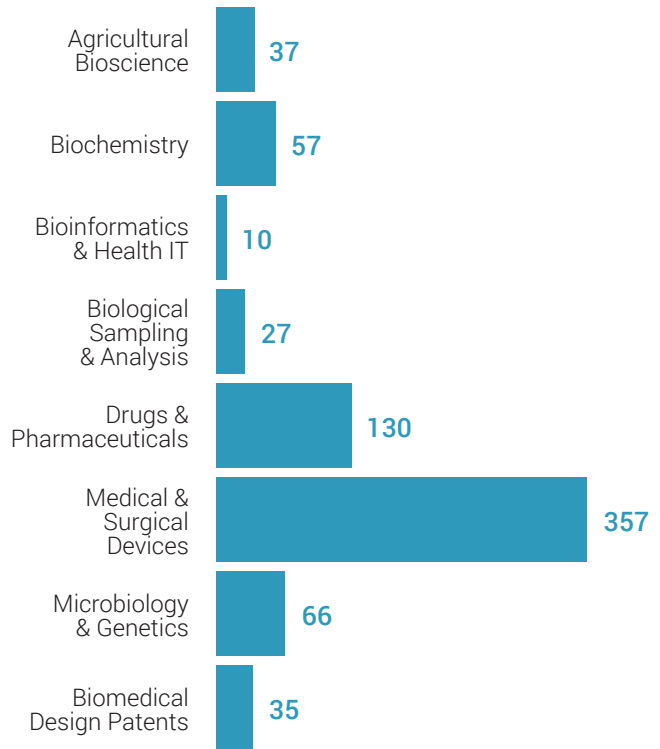


Bioscience Patents in Kentucky

Bioscience-Related U.S. Patents 2012-2015



Bioscience-Related U.S. Patents by Segment 2012-2015



Source Notes

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

**Employment Multipliers:** IMPLAN Group, LLC 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:** Thomson Reuters Thomson ONE venture capital database.

**Patents:** U.S. Patent & Trademark Office data from Thomson Reuters Thomson Innovation patent analysis database.

For a more detailed discussion of the data and methodology used, please see the Appendix to the full national report.

