

## Tennessee



Tennessee’s bioscience industry is sizable, specialized, and growing. The industry grew its employment base by 2 percent from 2007 to 2012 with its employment level at more than 40,000 jobs in 2012 across 1,266 business establishments. Tennessee has a specialized employment concentration in the biosciences overall with a 24 percent greater concentration of jobs in the industry relative to the national average. Within the state’s bioscience industry, two of its five subsectors are specialized in their concentrations—agricultural feedstock and chemicals and bioscience-related distribution. Two subsectors had strong employment gains since 2007—medical devices and research, testing, and medical labs both grew by nearly 20 percent during the 5-year period. Tennessee’s research universities are especially focused in the biosciences relative to other fields with their nearly \$642 million in bioscience academic R&D in 2012 accounting for 66 percent of all academic research compared with 61 percent for the national average.

### Bioscience Performance Metrics

#### Summary of State Performance in Selected Bioscience-related Metrics

Metric	Tennessee	United States	Quintile
<b>Bioscience Industry, 2012</b>			
Bioscience Industry Employment	40,411	1,619,746	II
Bioscience Industry Location Quotient	1.24	n/a	II
Bioscience Industry Establishments	1,266	73,088	III
<b>Academic Bioscience R&amp;D Expenditures, FY 2012</b>			
Bioscience R&D (\$ thousands)	\$641,550	\$38,139,876	II
Bioscience Share of Total R&D	66%	61%	II
Bioscience R&D Per Capita	\$99	\$119	III
<b>NIH Funding, FY 2013</b>			
Funding (\$ thousands)	\$456,096	\$22,293,255	II
Funding Per Capita	\$70	\$70	II
<b>Bioscience Venture Capital Investments, 2009–13 (\$ millions)</b>	\$539.1	\$49,401.7	II
<b>Bioscience and Related Patents, 2009–13</b>	1,831	100,238	II

State ranking figures for bioscience performance metrics are calculated as quintiles, where I = top quintile, III = middle quintile, and V = bottom quintile.

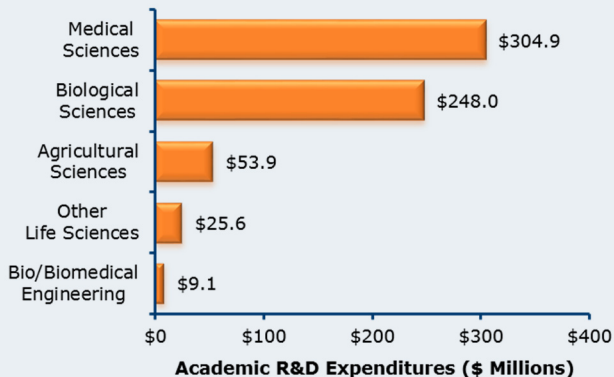
For source notes, see end of State Profile.

Industry Subsector	Tennessee		United States	
	2012	2007-2012 Change	2012	2007-2012 Change
<b>Agricultural Feedstock &amp; Chemicals</b>				
Establishments	30	-14.3%	1,772	5.2%
Employment	5,605	0.3%	76,404	-1.0%
Location Quotient	3.64		n/a	
Direct-Effect Employment Multiplier	13.6		18.1	
Total Employment Impact	75,991		1,382,637	
Average Annual Wage	\$98,366	11.7%	\$75,828	14.2%
<b>Bioscience-Related Distribution</b>				
Establishments	780	4.3%	36,793	1.4%
Employment	16,514	-7.5%	442,016	-3.9%
Location Quotient	1.74		n/a	
Direct-Effect Employment Multiplier	2.7		2.7	
Total Employment Impact	44,886		1,199,015	
Average Annual Wage	\$74,652	6.5%	\$85,188	11.5%
<b>Drugs and Pharmaceuticals</b>				
Establishments	32	23.1%	3,057	12.0%
Employment	1,839	-23.2%	284,331	-10.9%
Location Quotient	0.32		n/a	
Direct-Effect Employment Multiplier	9.5		9.9	
Total Employment Impact	17,548		2,673,265	
Average Annual Wage	\$93,956	12.3%	\$106,576	13.9%
<b>Medical Devices and Equipment</b>				
Establishments	104	-1.9%	7,235	12.0%
Employment	7,549	19.6%	349,432	1.4%
Location Quotient	1.07		n/a	
Direct-Effect Employment Multiplier	3.4		3.9	
Total Employment Impact	26,009		1,318,459	
Average Annual Wage	\$78,086	22.7%	\$75,695	10.7%
<b>Research, Testing, and Medical Laboratories</b>				
Establishments	320	12.1%	24,231	31.0%
Employment	8,903	19.5%	467,563	9.7%
Location Quotient	0.94		n/a	
Direct-Effect Employment Multiplier	2.7		2.7	
Total Employment Impact	23,741		1,284,196	
Average Annual Wage	\$74,436	11.3%	\$91,248	15.9%
<b>Total Bioscience Industry</b>				
Establishments	1,266	5.5%	73,088	11.4%
Employment	40,411	2.0%	1,619,746	-0.4%
Location Quotient	1.24		n/a	
Direct-Effect Employment Multiplier	4.4		4.9	
Total Employment Impact	177,551		7,857,572	
Average Annual Wage	\$79,414	10.6%	\$88,202	12.8%
<b>Total Private Sector</b>				
Establishments	137,287	-0.1%	8,699,564	-0.5%
Employment	2,240,782	-4.1%	111,137,206	-3.1%
Average Annual Wage	\$44,253	13.0%	\$49,130	11.1%

Note: U.S. employment metrics include Puerto Rico. Estimates of total impacts do not include Puerto Rico.

## Bioscience Research in Tennessee

### Bioscience Academic R&D Expenditures, FY 2012



### NIH Awards, 2009–2013

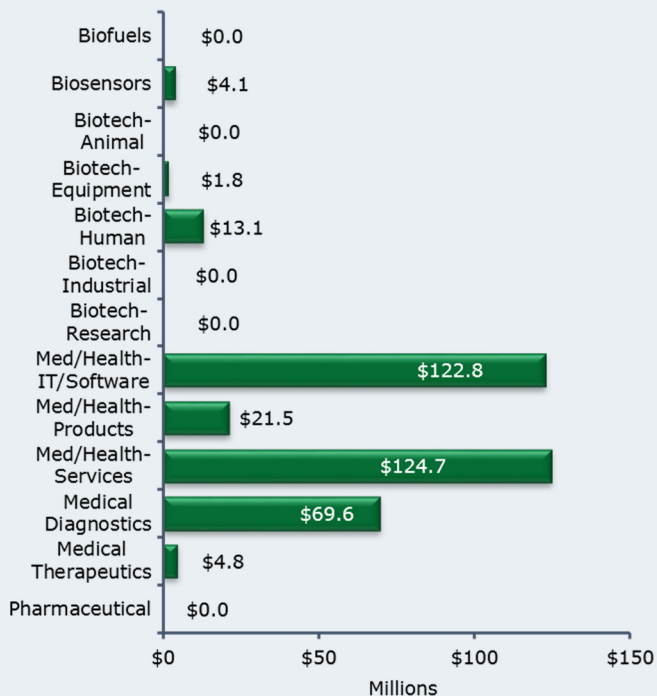


## Bioscience Venture Capital in Tennessee

### Bioscience-Related Venture Capital Investments, 2009–2013

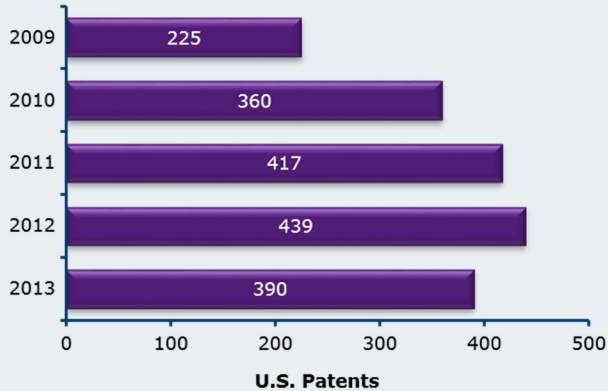


### Bioscience-Related Venture Capital Investments by Segment, 2009–2013

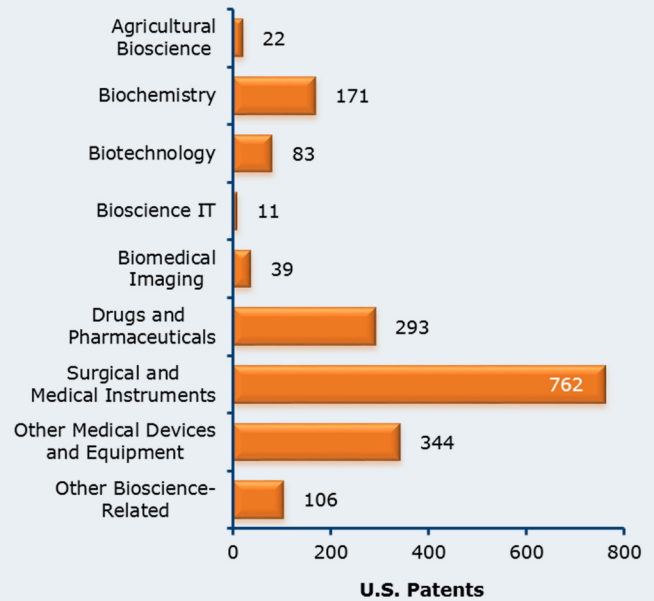


## Bioscience Patents in Tennessee

### Bioscience-Related Patents, 2009–2013



### Bioscience-Related Patents by Segment, 2009–2013



## 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), and NIH-managed funding for FY 2009 and FY 2010 from the American Recovery and Reinvestment Act (ARRA) website.

**Venture Capital:** Thomson Reuters Thomson ONE venture capital database.

**Patents:** U.S. Patent & Trademark Office data from Thomson Reuters Delphion Patent Analysis Database.

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