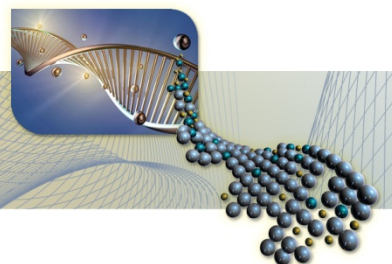


MASSACHUSETTS



Massachusetts' bioscience industry is a national leader, highly specialized, and has grown rapidly overall since 2001. The State has a specialized employment concentration in three of the four major subsectors—drugs and pharmaceuticals (location quotient of 1.24), medical devices and equipment (2.04), and research, testing and medical laboratories (2.90). Academic research and development expenditures in biosciences were \$1.17 billion in 2008, predominantly in biological sciences and in medical sciences, but also with a significant share in bio/biomedical engineering (\$59 million). Both academic bioscience R&D and research funded by the National Institutes of Health are highly concentrated in Massachusetts with per capita research funding ranking at or near the top among all states. In virtually every performance metric, Massachusetts places above its population rank. There were \$8.2 billion in venture capital investments in the last six years, reaching a peak of \$1.6 billion in both 2007 and 2008. The largest single investment sector was human biotechnology.

●●● Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

Metrics	Massachusetts	United States	Rank*
Bioscience Industry, 2008			
Total Bioscience Industry Employment, 2008	72,627	1,420,324	1
Bioscience Industry Location Quotient, 2008	2.06	n/a	1
Biosciences Industry Establishments, 2008	1,743	47,593	1
Academic R&D Expenditures, FY 2008			
Bioscience R&D (\$ thousands)	\$1,165,655	\$31,818,810	8
Bioscience Share of Total R&D	51.3%	61.3%	39
Bioscience R&D Per Capita	\$178.14	\$104.54	3
Change in Bioscience R&D, FY 2004–08	10.6%	22.3%	43
NIH Funding, FY 2009			
Total, Including ARRA Funds (\$ thousands)	\$2,833,927	\$25,837,590	2
Per Capita Funding	\$429.80	\$84.16	1
Change in Baseline Funding, FY 2004–09**	1.6%	-4.7%	21
Change in Total Funding, FY 2004–09	23.5%	14.6%	21
Clinical Trials, Initiated 2009	650	5,299	10
Higher Education Degrees in Bioscience Fields, AY 2008	4,916	161,811	9
Employment in Bioscience-related Occupations, 2008	38,520	717,510	5
Bioscience Venture Capital Investments, 2004–09 (\$ millions)	\$8,160.9	\$60,099	2
Bioscience and Related Patents, 2004–09	7,250	75,593	2

*State ranking figures for bioscience industry employment metrics are calculated as quintiles (I=Top Quintile; V=Bottom Quintile). All other metrics are ranked 1-52.

**Baseline Funding does not include American Recovery and Reinvestment Act (ARRA) funds for 2009.

For source notes, see end of State Profile.

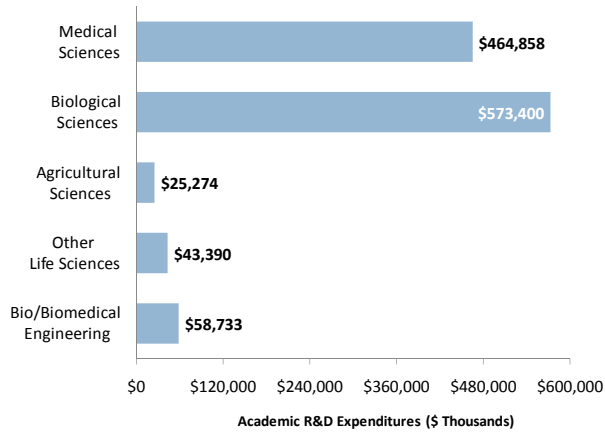
●●● Bioscience Industry Base, 2008

INDUSTRY SUBSECTOR	Massachusetts		United States	
	2008	2001-08 Change	2008	2001-08 Change
AGRICULTURAL FEEDSTOCK & CHEMICALS				
Establishments	26	-2.1%	2,440	16.0%
Employment	631	24.5%	114,793	1.9%
Location Quotient	0.22		n/a	
Direct-Effect Employment Multiplier	4.65		11.33	
Total Employment Impact	2,938		1,284,650	
Average Annual Wage	\$78,862		\$72,279	
DRUGS & PHARMACEUTICALS				
Establishments	92	7.0%	2,771	6.4%
Employment	9,580	22.9%	311,882	2.3%
Location Quotient	1.24		n/a	
Direct-Effect Employment Multiplier	6.40		9.92	
Total Employment Impact	61,298		2,873,278	
Average Annual Wage	\$101,527		\$93,378	
MEDICAL DEVICES & EQUIPMENT				
Establishments	441	-6.4%	15,227	0.4%
Employment	22,135	-17.6%	435,509	2.0%
Location Quotient	2.04		n/a	
Direct-Effect Employment Multiplier	3.63		4.87	
Total Employment Impact	80,396		2,029,581	
Average Annual Wage	\$84,586		\$63,606	
RESEARCH, TESTING, & MEDICAL LABORATORIES				
Establishments	1,184	78.5%	27,154	57.7%
Employment	40,281	97.2%	558,140	46.1%
Location Quotient	2.90		n/a	
Direct-Effect Employment Multiplier	2.48		3.30	
Total Employment Impact	99,847		1,853,127	
Average Annual Wage	\$110,771		\$80,785	
TOTAL BIOSCIENCES INDUSTRY				
Establishments	1,743	39.8%	47,593	28.3%
Employment	72,627	30.7%	1,420,324	15.8%
Location Quotient	2.06		n/a	
Direct-Effect Employment Multiplier	3.37		5.82	
Total Employment Impact	244,479		8,040,636	
Average Annual Wage	\$101,294		\$77,595	
TOTAL PRIVATE SECTOR				
Establishments	206,905	11.1%	8,860,956	13.8%
Employment	2,831,339	-1.1%	113,917,377	3.5%
Average Annual Wage	\$57,272		\$45,229	

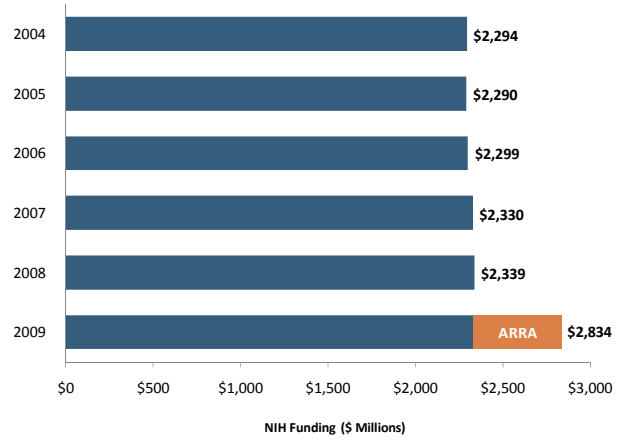
Note: U.S. employment metrics include Puerto Rico. Estimates of total employment impacts do not include Puerto Rico.

●●● Bioscience Performance Metrics

Bioscience Academic R&D Expenditures in Massachusetts, FY 2008

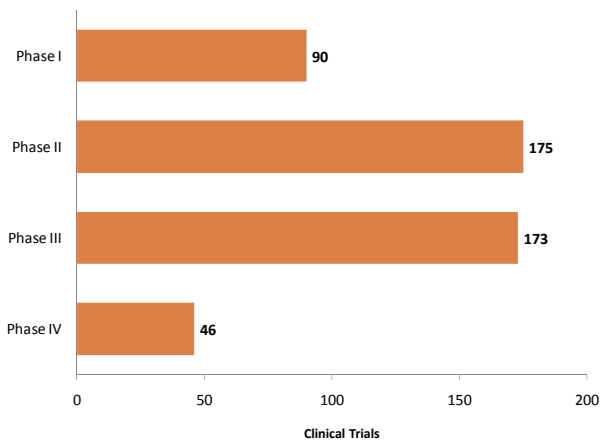


NIH Awards in Massachusetts, 2004–2009

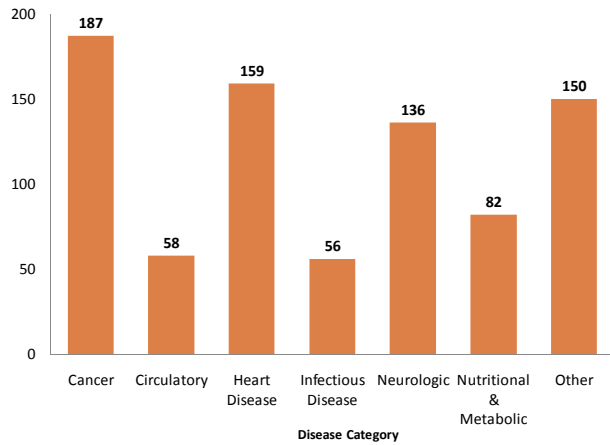


●●● Recent Clinical Trial Activities

Clinical Trials by Phase in Massachusetts, 2009

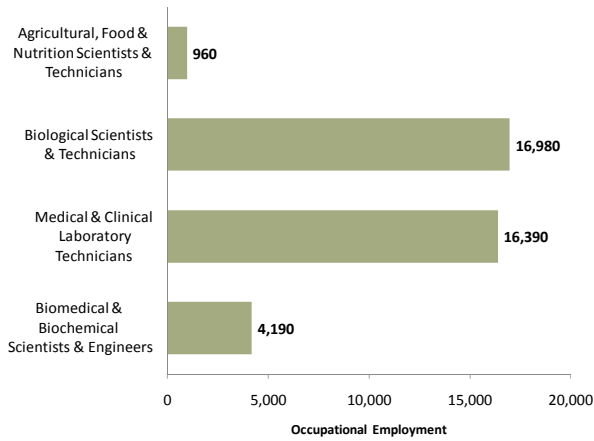


Clinical Trials by Major Disease Category in Massachusetts, 2009

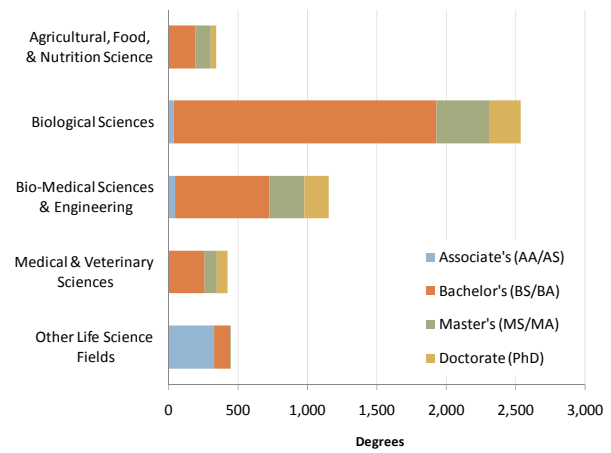


Bioscience Talent Base

Bioscience-related Occupational Employment in Massachusetts, 2008

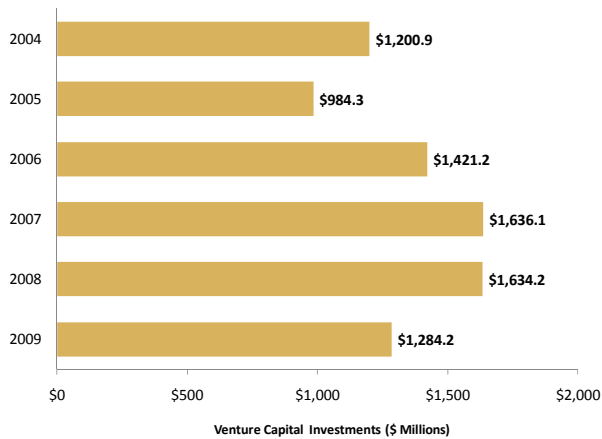


Bioscience-related Degrees in Massachusetts, AY 2008

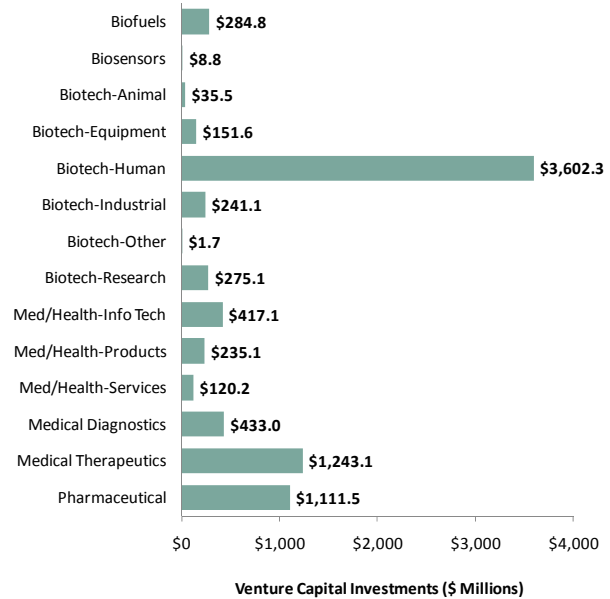


Bioscience Venture Capital

Bioscience-related Venture Capital Investments in Massachusetts, 2004–2009

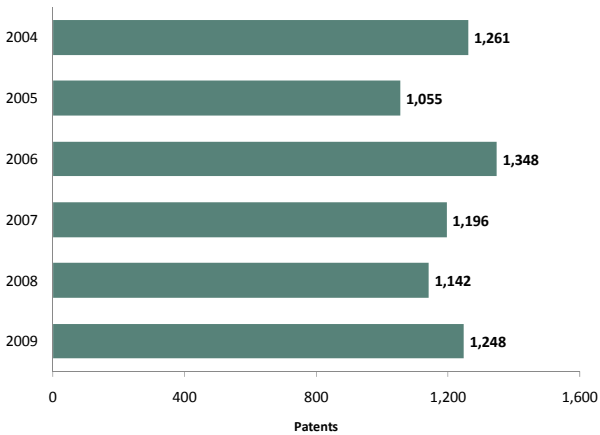


Bioscience-related Venture Capital Investments in Massachusetts by Segment, 2004–2009

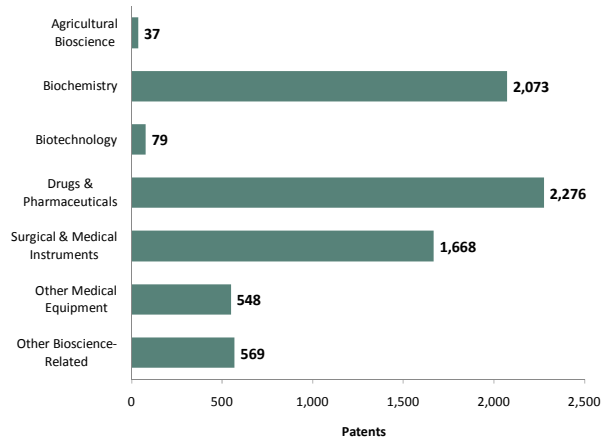


●●● Bioscience Patents

Bioscience-related Patents in Massachusetts, 2004–2009



Bioscience-related Patents by Classification Group in Massachusetts, 2004–2009



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Source Notes:

Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) industry data provided by the Minnesota IMPLAN Group, 2001 and 2008.

Employment Multipliers: U.S. Bureau of Economic Analysis RIMS II Employment Multipliers, 2006 (most currently available).

Academic R&D Expenditures: National Science Foundation (NSF) Survey of Research and Development Expenditures at Universities and Colleges, 2004 and 2008.

NIH Funding: National Institutes of Health, Office of Extramural Research, Award Trends, Dollars Awarded by State, 2004 and 2009.

Clinical Trials: National Institutes of Health, Clinicaltrials.gov, trials that were initiated in 2009.

Higher Education Degrees: National Center for Educational Statistics, Integrated Postsecondary Education Data System (IPEDS), 2008.

Occupational Employment: U.S. Bureau of Labor Statistics, Occupational Employment Statistics (OES) survey data, 2008.

Venture Capital: Thomson Reuters' VentureXpert Database, 2004–2009, as of January 15, 2010.

Patents: U.S. Patent & Trademark Office data as available from the Thomson Reuters' Delphion Patent Analysis Database, 2004–2009, as of January 15, 2010.

For a more detailed discussion of the data and methodology used, please see the Appendix to the full national report. ©2010