



**MassBio**  
MASSACHUSETTS BIOTECHNOLOGY COUNCIL


# Biotechnology Industry Snapshot

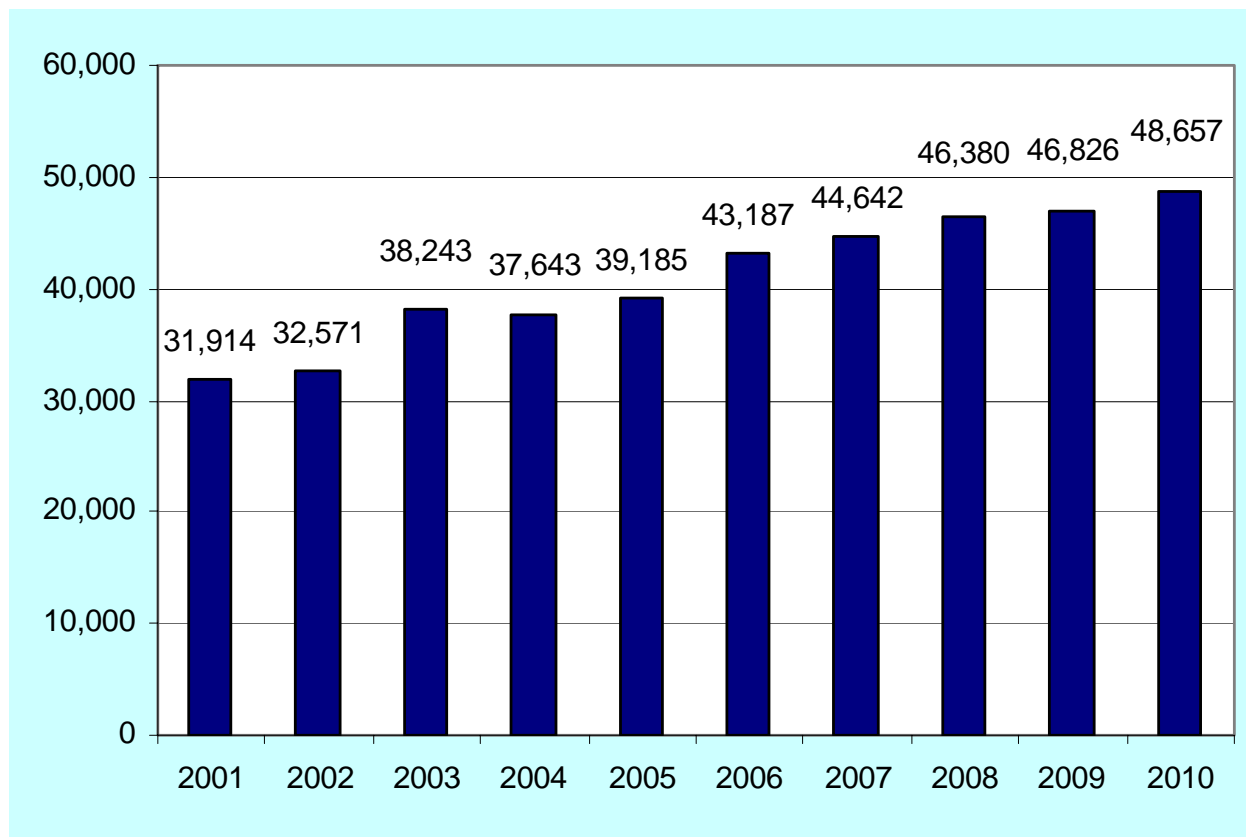
2011



## MA BioPharma Employment Growth Continues

The industry weathered the 2009 downturn without a drop in employment. In fact, we grew jobs at a projected 3.9% rate in 2010.

 52.5%  
Growth  
since  
2001

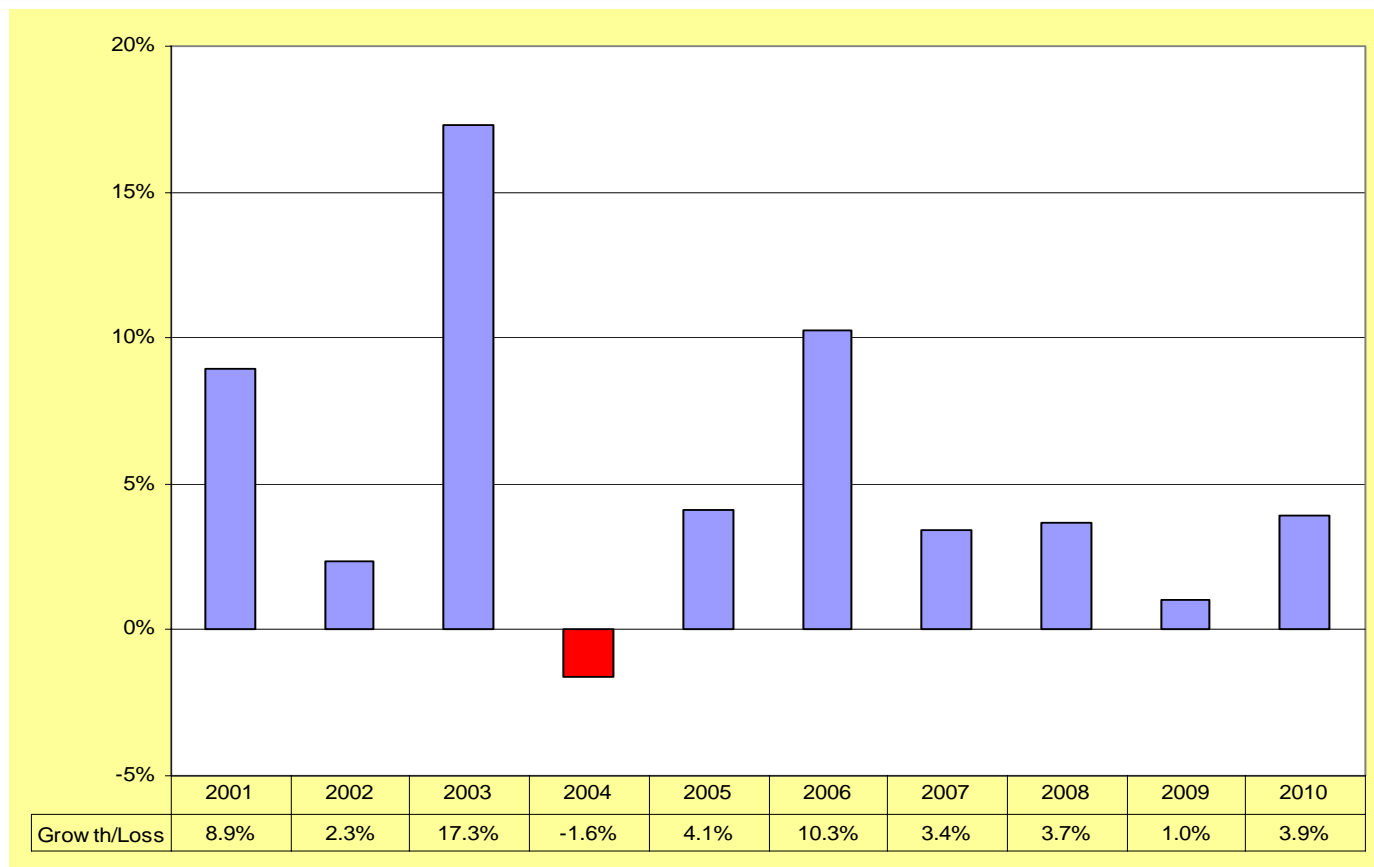


Source: U.S. Census, County Business Patterns and MassBio formula and analysis.  
\*2010 figure is a final estimate based on review of Massachusetts ES-202 data for 2010.



# Annual Growth/Decline Rates: 2001-2010

The industry rebounded from just 1% growth in 2009 to 3.9% growth in employment in 2010.



Source: U.S. Census, County Business Patterns and MassBio formula and analysis.  
\*2010 figures are final estimates based on review of Massachusetts ES-202 data for 2010.



## BioPharma Industry Impact in MA

The estimated average salary in the biopharma industry is 77% higher than the estimated state average salary of \$53,834.

**\$4,615,364,513 in payroll (2010)**

**\$95,628 in average salary (2010)**

While the industry's exports aren't completely captured under "Pharmaceutical Products," this category alone accounts for over 8% of all Massachusetts exports.

Massachusetts Exports, 2010

All Commodities	26,256,370,201	
Optic, Photo Etc, Medic Or Surgical Instrments Etc	5,324,511,940	20.20%
Industrial Machinery, Including Computers	4,601,715,086	
Electric Machinery Etc; Sound Equip; Tv Equip; Pts	4,518,662,880	
Pharmaceutical Products	2,136,306,456	8.10%



# Biotechnology R&D Employment

According to the Bureau of Labor Statistics' Quarterly Census of Employment & Wage (QCEW) data, Massachusetts leads the nation in biotechnology research & development employment.

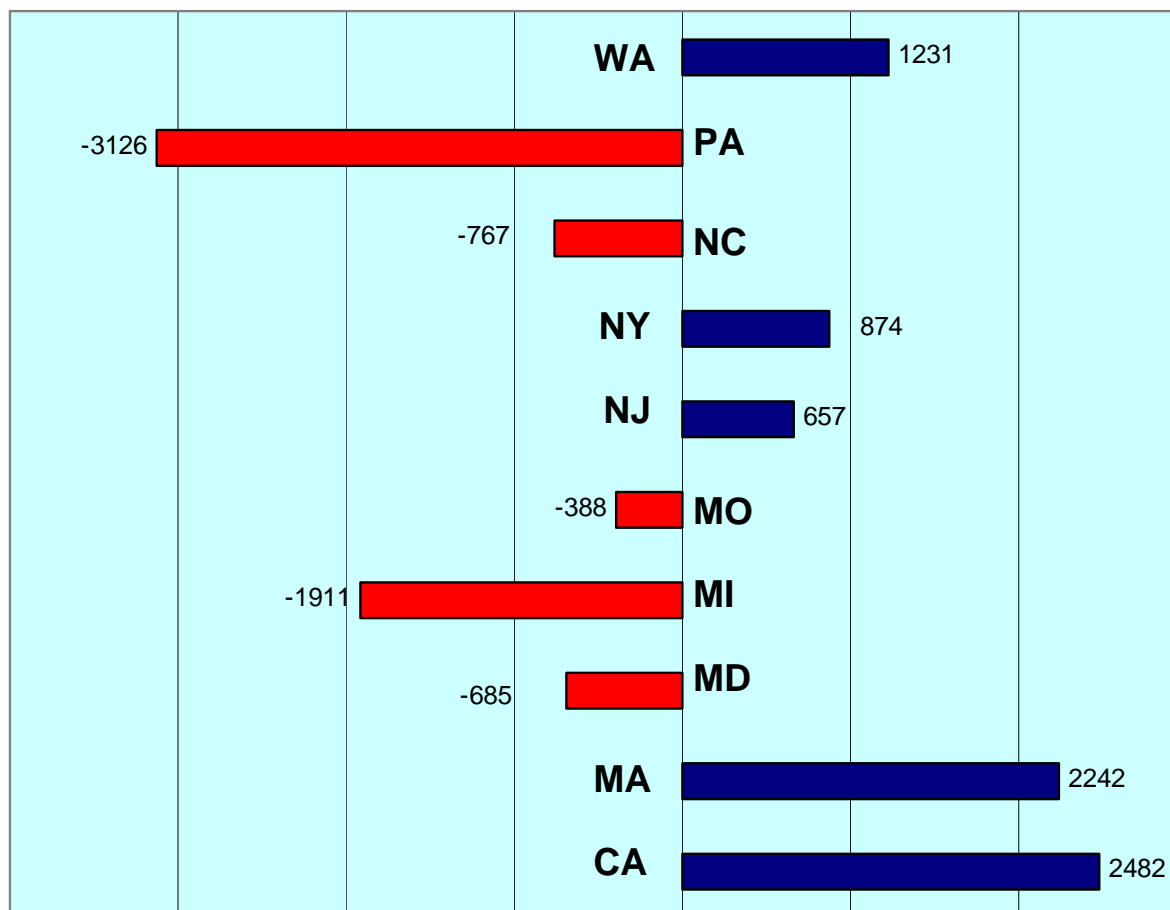
	2007	2010
CA	19,134	21,616
CT	2,452	1,582
MA	24,565	26,807
MD	10,154	9,469
MI	4,670	2,759
MO	4,262	3,874
NJ	8,567	9,224
NY	2,679	3,553
NC	7,042	6,275
PA	15,902	12,776
WA	2,499	3,730



# Biotech R&D Employment, 2007-2010

Massachusetts grew biotechnology research employment between 2007-2010.

We were outpaced only by California.

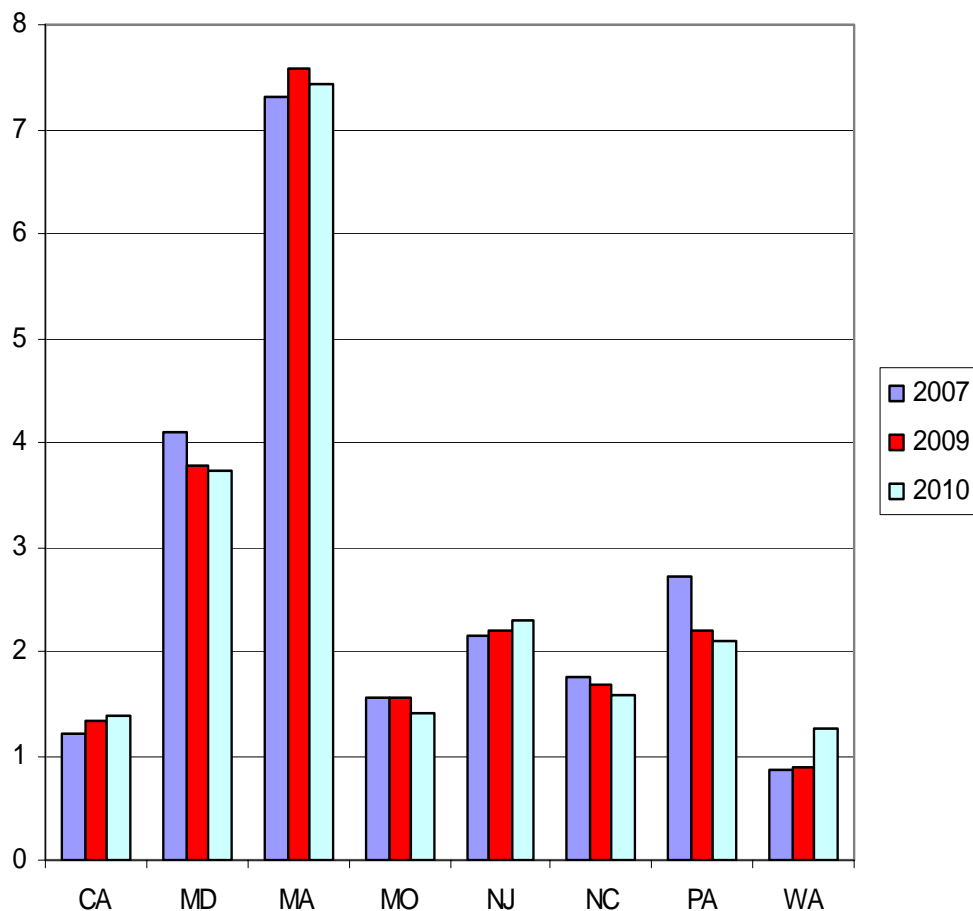




# Biotechnology Research Concentration

Massachusetts holds a dominant position in terms of *industry concentration* in “Biotechnology Research and Development” – almost twice the concentration of jobs as the next closest state.

The Massachusetts concentration did, however, decline slightly from 2009.



## What is a Location Quotient?

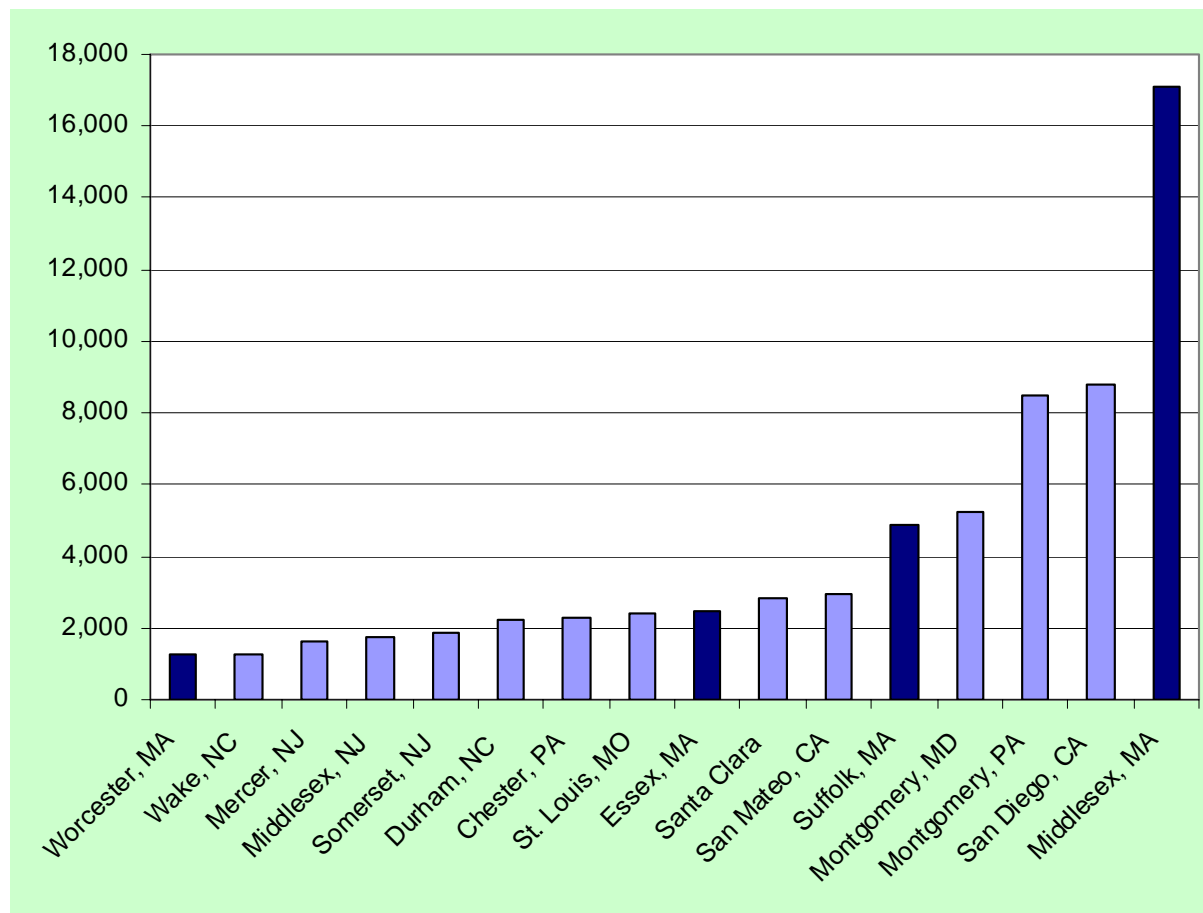
**Location Quotients** measure the concentration and strength of an industry in a region versus the nation as a whole. Location Quotients of more than 1.0 mean that the industry enjoys a greater concentration in a region versus the nation as a whole.

	2007	2009	2010
CA	1.22	1.34	1.39
MD	4.1	3.77	3.74
MA	7.32	7.58	7.42
MO	1.56	1.55	1.4
NJ	2.15	2.20	2.29
NC	1.75	1.68	1.57
PA	2.71	2.19	2.09
WA	0.87	0.90	1.27



# Biotech R&D Employment: U.S. Counties

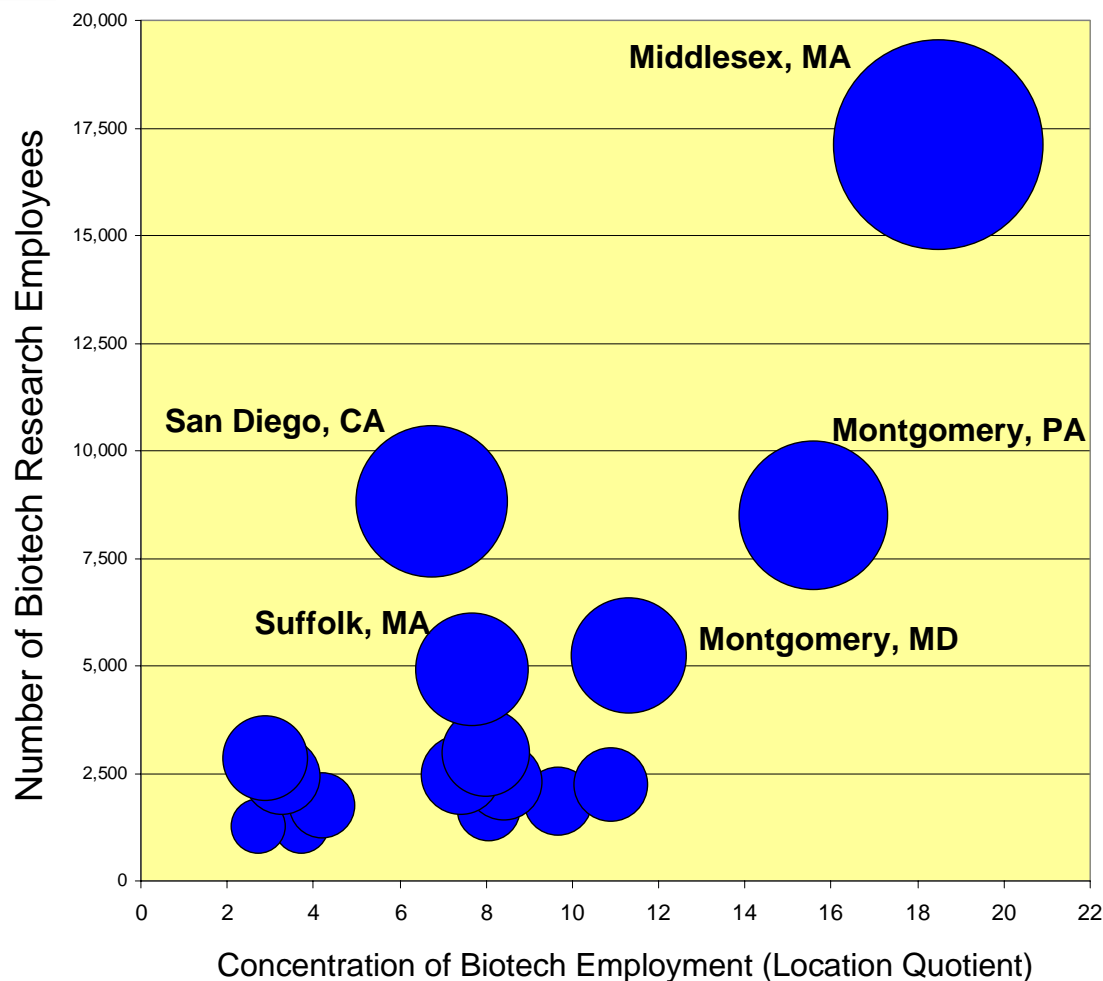
Among leading U.S. counties in biotech R&D employment, Middlesex County in Massachusetts continues to stand out.





# Biotech R&D Employment: U.S. Counties

This graphic combines the factors of biotech research employment by county with the corresponding industry concentration (location quotient) in each county noted on the previous page.



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)



# A Pause in BioPharma Manufacturing Growth

Only Massachusetts, Maryland, and North Carolina have grown biopharma manufacturing jobs since 2006. However, Massachusetts shed manufacturing positions in 2010 along with all of the other states, except Maryland. This trend is confirmed by other data sources as well.

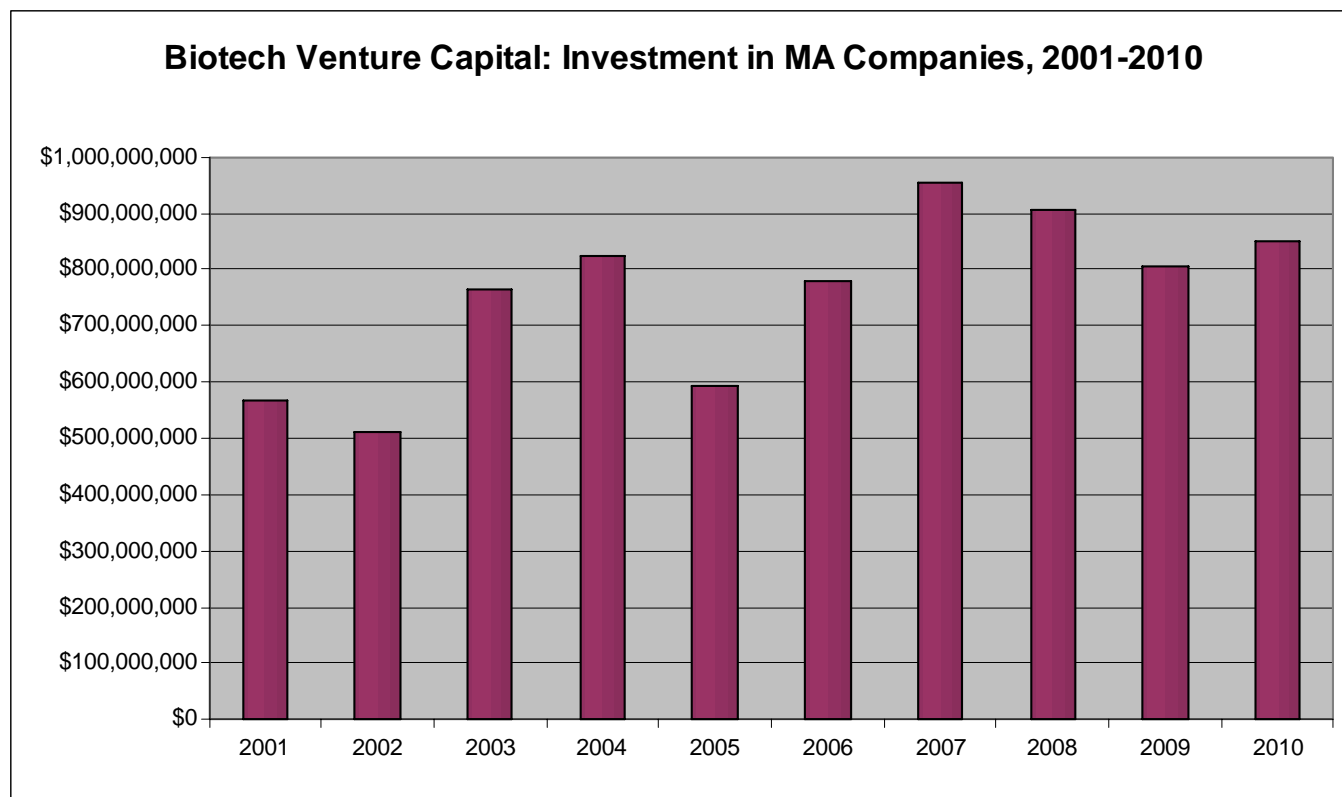
	2006	2007	2008	2009	2010
CA	44,047	43,971	43,035	43,386	43,162
CT	9,404	8,825	7,926	7,410	7,225
IL	19,084	18,654	18,534	18,077	18,032
IN	19,255	19,525	18,822	17,950	17,141
MA	7,944	9,139	9,581	9,706	9,514
MD	5,536	6,220	6,097	6,379	6,574
NJ	40,379	42,256	37,957	33,933	32,794
NY	21,720	21,731	20,971	20,495	20,070
NC	19,409	19,224	18,787	20,345	20,119
PA	22,299	22,107	22,294	21,743	21,352



# Venture Capital Investment

In 2010, Massachusetts companies received \$850 million in VC biotech financing.

In the first quarter of 2011, MA companies received \$104 million in VC financing, the **lowest** quarter since 2004. In Q2, MA companies received \$371 million, an **all-time quarterly high**.



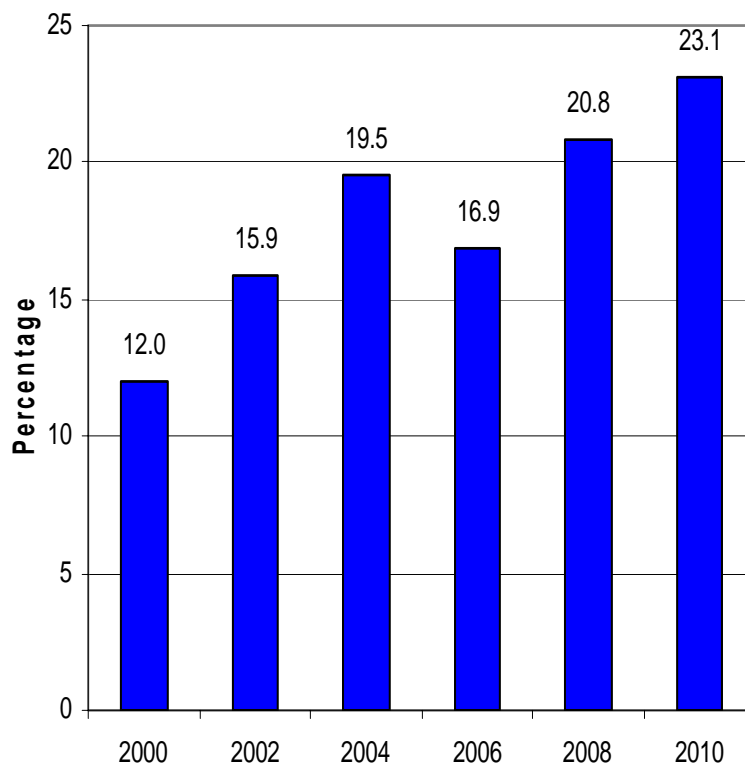
Source Data: 2010 PricewaterhouseCoopers, National Venture Capital Association, MoneyTree™ Report, Historical Trend Data, MedTrack, and MassBio analysis.



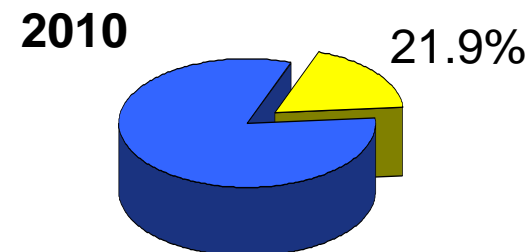
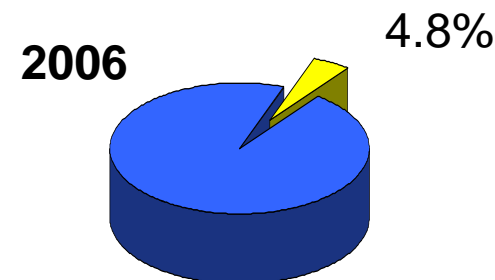
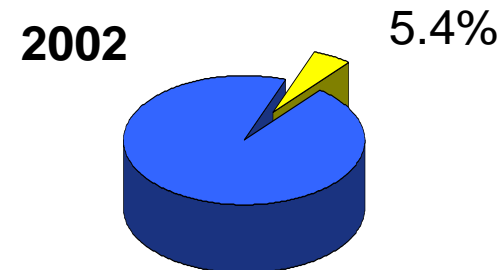
# MA Share of the Biotech VC Dollar

In 2010, Massachusetts companies received **23.1%** of all U.S. VC biotech investment – an all-time high.

The percentage of investments at the start-up and seed stage was at a higher percentage in 2010 than in 2002 or 2006.



Percentage invested at Start-up/Seed Stage



Source: 2010 PricewaterhouseCoopers, National Venture Capital Association, MoneyTree™ Report, Historical Trend Data, MassBio analysis.



# Drug Development Pipeline August 2011

Massachusetts-headquartered companies\* account for about 10% of the U.S. drug development pipeline and 5% of the global pipeline.

Candidate medicines of Massachusetts-headquartered\* companies, by clinical trials stage

Pre-Clinical	316
Phase I	216
Phase II	275
Phase III	76
Pending Approval	14

Massachusetts-headquartered companies' share of U.S. and Global drug development pipeline

	Total Trials	PC	I	II	III	PA
% of US	9.41%	11.00%	11.99%	8.26%	8.46%	3.89%
% of Global	4.91%	5.88%	6.43%	4.56%	3.52%	1.44%

\* There are many drugs in development in Massachusetts by companies with headquarters located outside of Massachusetts. These candidate drugs are not included in any Massachusetts pipeline estimates found in this report.



## Massachusetts Pipeline by Therapeutic Area

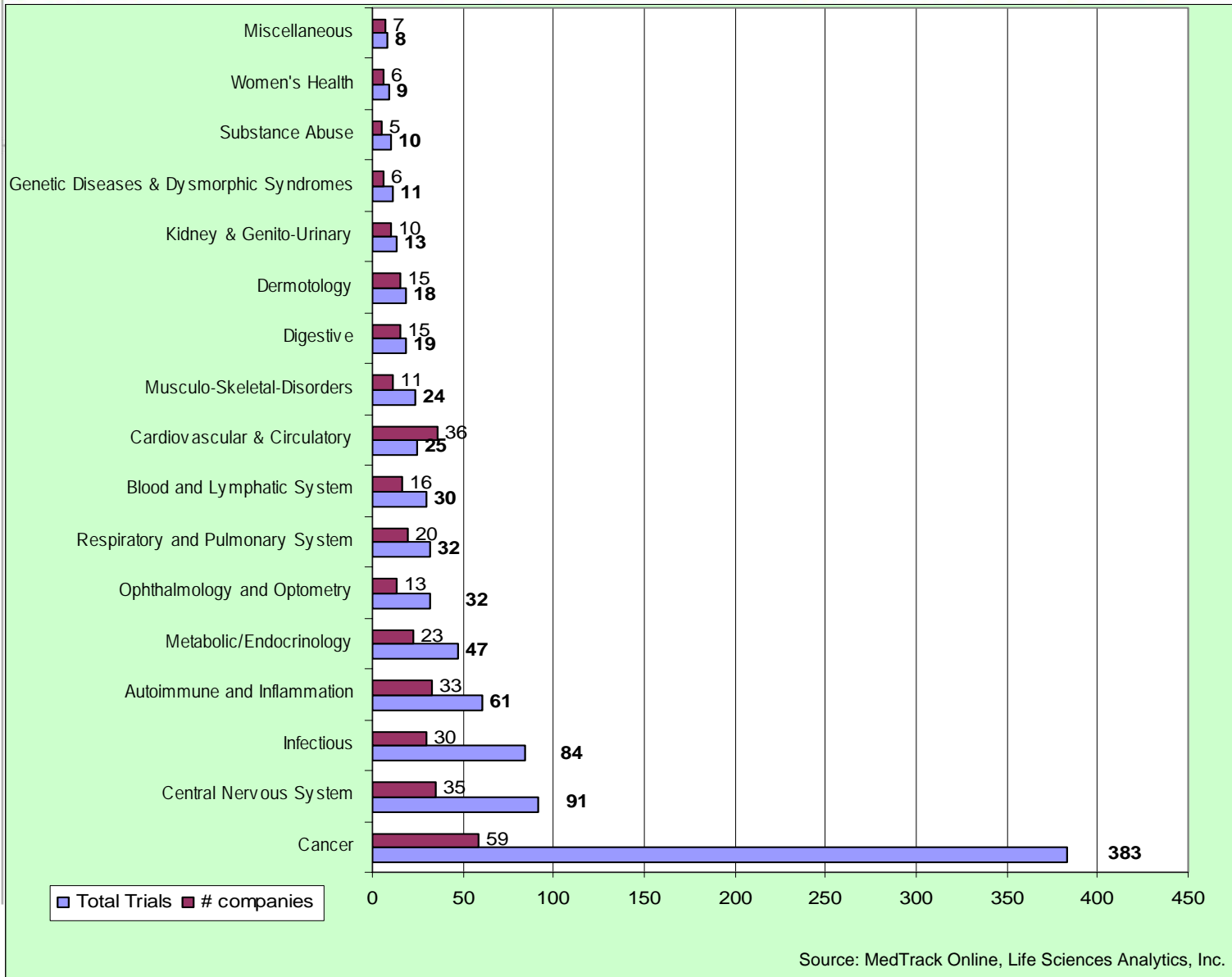
Of the 897 drugs in the Massachusetts pipeline, 42.7% are cancer drugs.

Drugs intended for the Central Nervous System (CNS) therapeutic area are next at 10.1% of the pipeline.

	Total Trials	Companies
Cancer	383	59
Central Nervous System	91	35
Infectious	84	30
Autoimmune and Inflammation	61	33
Metabolic/Endocrinology	47	23
Ophthalmology and Optometry	32	13
Respiratory and Pulmonary System	32	20
Blood and Lymphatic System	30	16
Cardiovascular & Circulatory	25	36
Musculo-Skeletal-Disorders	24	11
Digestive	19	15
Dermatology	18	15
Kidney & Genito-Urinary	13	10
Genetic Diseases & Dysmorphic Syndromes	11	6
Substance Abuse	10	5
Women's Health	9	6
Miscellaneous	8	7



## Massachusetts Pipeline by Therapeutic Area

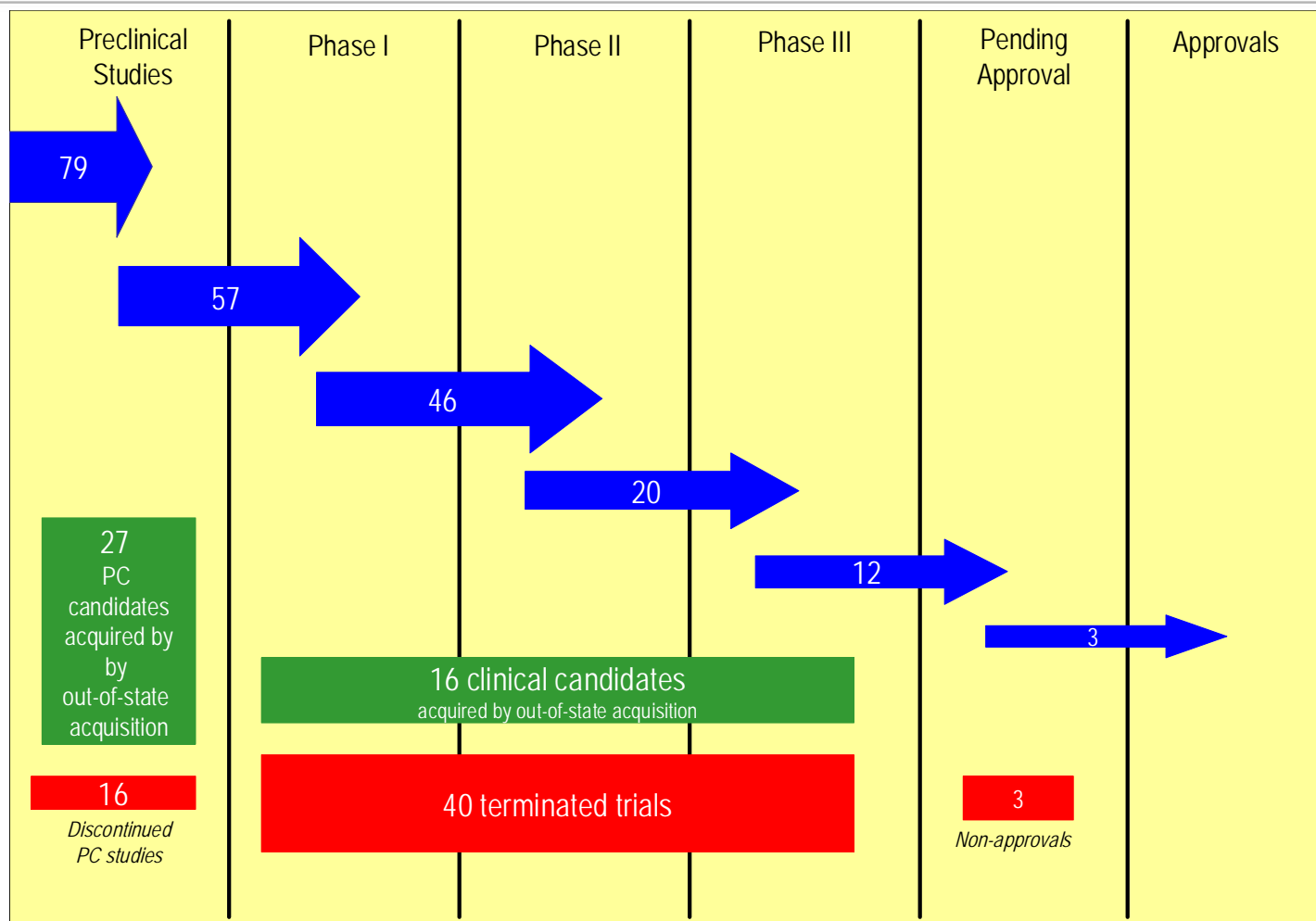




## Massachusetts Drug Pipeline Movement: May 2010-April 2011

Between May 2010 and April 2011, 217 candidate drugs advanced in the development pipeline – from entering into pre-clinical trials through advancing to approval by the FDA.

43 drug candidates were acquired by out-of-state companies and 59 candidate trials were terminated or the proposed drug met with non-approval.

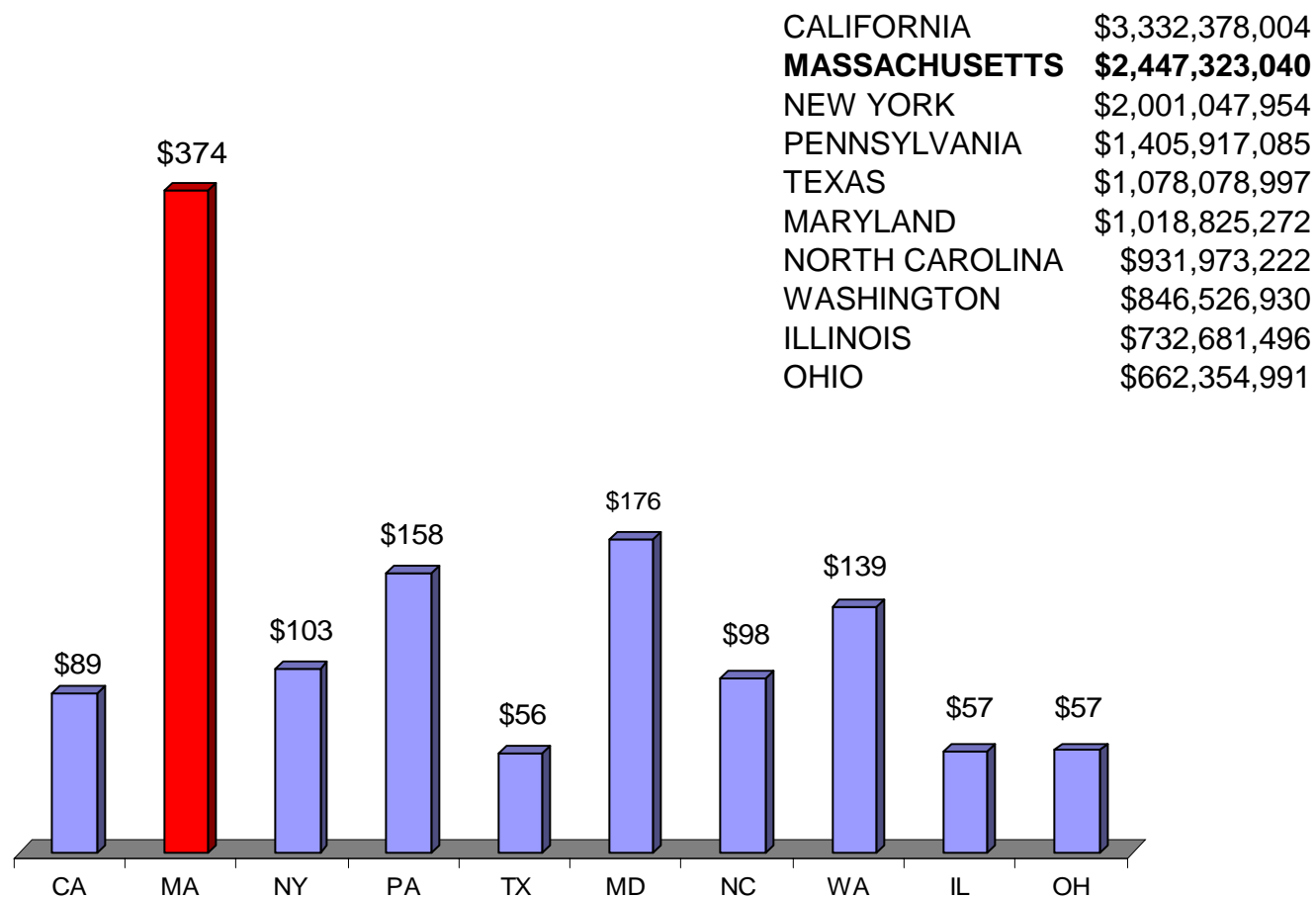




# National Institutes of Health Funding, 2010

NIH basic research funding increased slightly to \$21.8 billion nationwide. Excluding the federal stimulus funding of 2009, NIH funding has remained stagnant since 2003.

On a NIH-funding *per capita basis*, Massachusetts far exceeded other leading NIH-recipient states. Massachusetts is home to the Top 5 NIH-funded research hospitals in the U.S.



CALIFORNIA	\$3,332,378,004
<b>MASSACHUSETTS</b>	<b>\$2,447,323,040</b>
NEW YORK	\$2,001,047,954
PENNSYLVANIA	\$1,405,917,085
TEXAS	\$1,078,078,997
MARYLAND	\$1,018,825,272
NORTH CAROLINA	\$931,973,222
WASHINGTON	\$846,526,930
ILLINOIS	\$732,681,496
OHIO	\$662,354,991



# Leading BioPharma Employers in MA

A look at the leading biopharma employers in Massachusetts illustrates the power of the life sciences supercluster.

1. Genzyme (Sanofi)	4,356
2. Pfizer	2,600
3. Biogen Idec	2,300
4. Novartis	2,100
5. Thermo Fisher Scientific	1,700
6. Shire	1,500
7. Vertex	1,310
8. EMD Millipore	1,237
9. Parexel International	1,200
10. Millennium: Takeda Oncology	1,050
11. Charles River Laboratories	970
12. AstraZeneca	900
13. EMD Serono	850
14. Hologic	800
15. Abbott Laboratories	750
16. Sunovion Pharmaceuticals (DSP)	690
17. Nova Biomedical	631
18. Cubist	626
19. Lantheus	550
19. Merck	330
20. Bristol-Myers Squibb	320



# What is in a number?

***How do we get to the 48,647 employment number?*** MassBio relies on data from two sources.

For the years 2001-2009, MassBio derives its industry numbers from the County Business Patterns data of the U.S. Census Bureau. County Business Patterns “basic data items are extracted from the Business Register, a file of all known single and multi-establishment employer companies maintained and updated by the U.S. Census Bureau. Data for single-establishment companies are obtained from various Census Bureau programs, such as the Annual Survey of Manufactures and Current Business Surveys, as well as from administrative record sources.”

Because there is a 1.5 year time lag in the provision of CBP data, for the year 2010 as in past years, MassBio used a formula to estimate the growth or decline rate in industry employment based on data from the state’s ES-202 data. MassBio then applied this growth rate to the 2009 aggregate industry employment number generated from County Business Patterns (CBP) data. MassBio has used this formula in recent years with a high degree of accuracy. Our 2009 projection, for example, was only 106 jobs in variance from the final actual number revised for 2009.



# What is in a number?

## ***What is considered “biopharma” employment?***

Using the North American Industry Classification System (NAICS), by which both the CBP and ES-202 data is reported, MassBio has determined that several NAICS classifications can be considered part of the biotechnology and pharmaceutical industry. However, only in certain cases can the industry claim 100% of any one NAICS code. Therefore, MassBio determined that a percentage of some industry classifications could be used in estimating overall industry employment. In some cases, the percentage determination for certain industry codes was based on reports developed by other organizations. The following NAICS codes are utilized:

- NAICS 3254: Pharmaceutical MFG (100%)
- NAICS 541711: Research & Development in Biotechnology (100%)
- NAICS 541712: R&D in the physical, engineering, and life sciences (except biotech) (33%)
- NAICS 334516: Analytical Lab Instrument MFG (30%)
- NAICS 54138: Testing Laboratories (30%)
- NAICS 4242: Drug merchant wholesalers (10%)
- NAICS 622: Hospitals 622 (4.5%)
- NAICS 61131: Universities (1.9%)

and the minimum reported figures in statistical ranges for 4 "green biotech" classifications:  
325199, 325221, 311222, 311223.



## Questions?

As the premier source of information on biotechnology in Massachusetts, MassBio tracks industry statistics over time and issues an overview report each year.

For more information, contact:

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