

2021 Industry Snapshot

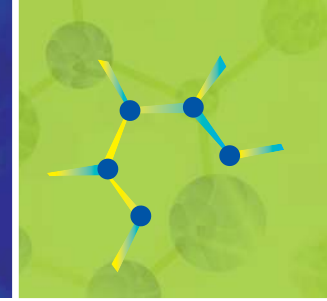
[MassBio.us/Industry-Snapshot](https://massbio.us/Industry-Snapshot)



MassBio[®]

MASSACHUSETTS BIOTECHNOLOGY COUNCIL

Executive Summary



The Massachusetts biopharma industry continues to raise funding at record-breaking rates

- Massachusetts-headquartered companies raised \$4.3 billion in venture capital funding in the first quarter of 2021 alone, after raising \$5.8 billion in all of 2020

This is leading to incredible growth in the real estate pipeline to meet the demand of biopharma companies that are choosing to launch and scale across Massachusetts

- From 2020 to 2021, Massachusetts added nearly 5 million square feet of lab space with projections of an additional 20 million square feet of lab and biomanufacturing space to be built out by 2024
- Much of this expansion is happening outside of Cambridge & Boston

This is creating amazing opportunities for for our state's economy and residents

- Based on conservative estimates, 20 million new square feet of lab and biomanufacturing space will create demand for up to 40,000 net-new employees by 2024
- Biomanufacturing jobs are accessible to a broader population and have a high average salary

This opportunity presents a significant challenge: finding enough talent to fill these roles

- Massachusetts' ability to attract and retain the biopharma workforce is dependent on external factors such as housing, transportation, and childcare

At the end of the day, the record-paced investments, real estate growth, and company creation will lead to new therapies and cures for patients around the world.



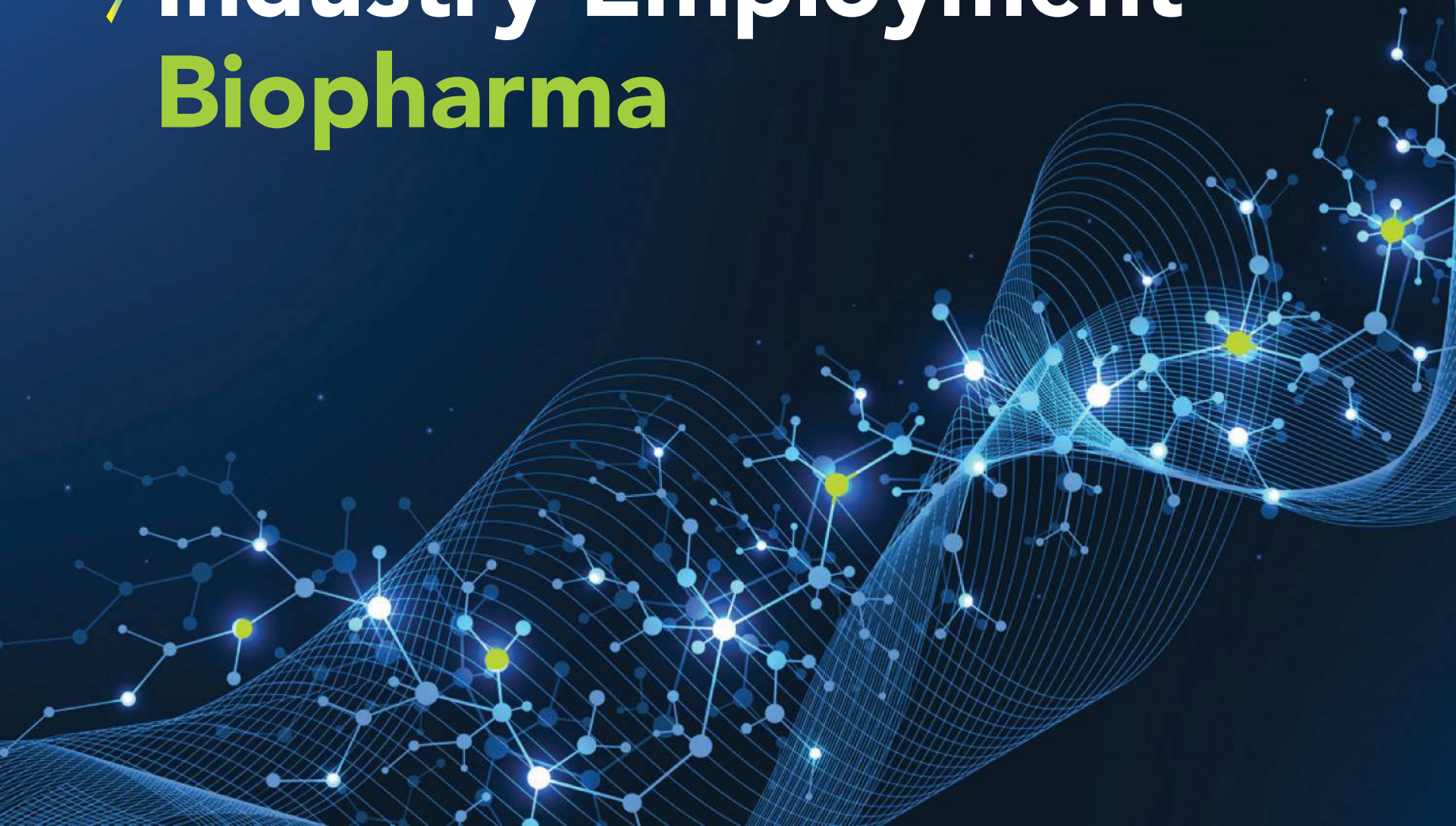
2021 Industry Snapshot

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Industry Employment Biopharma

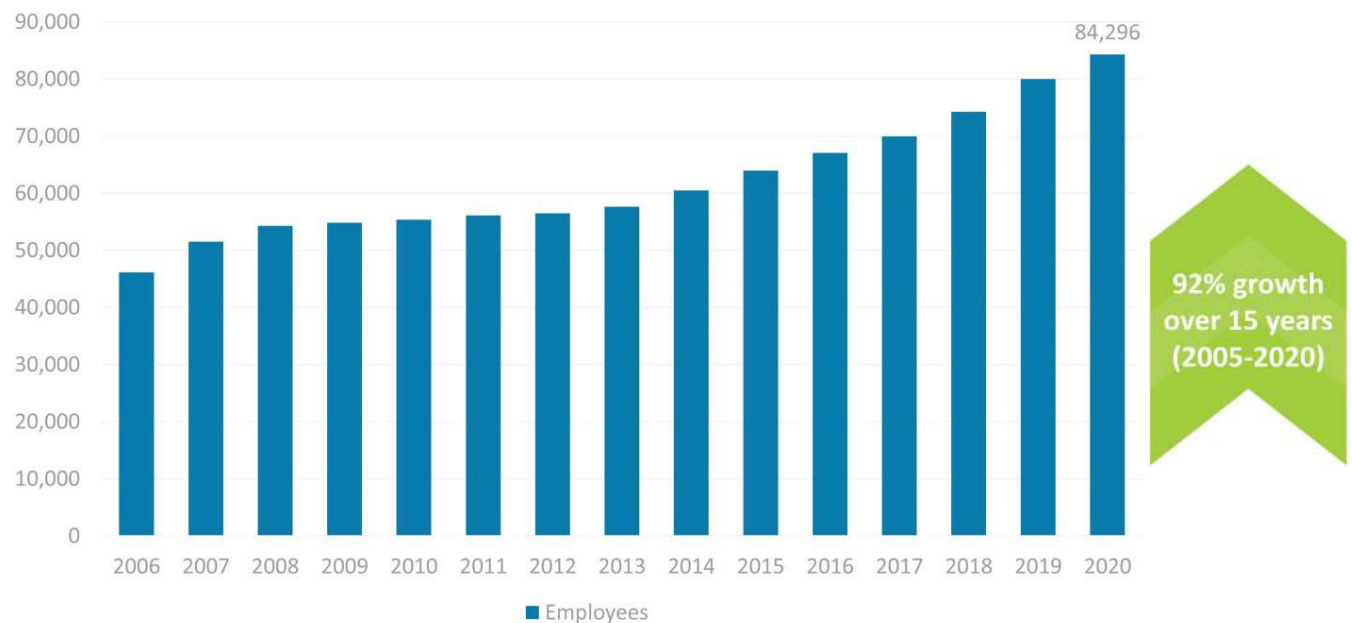


Massachusetts Biopharma Industry Employment

Industry Employment

In 2020, biopharma employment in Massachusetts grew at **5.5%**.

Since the Massachusetts Life Sciences Initiative was passed in 2008, biopharma employment grew by **55%**.

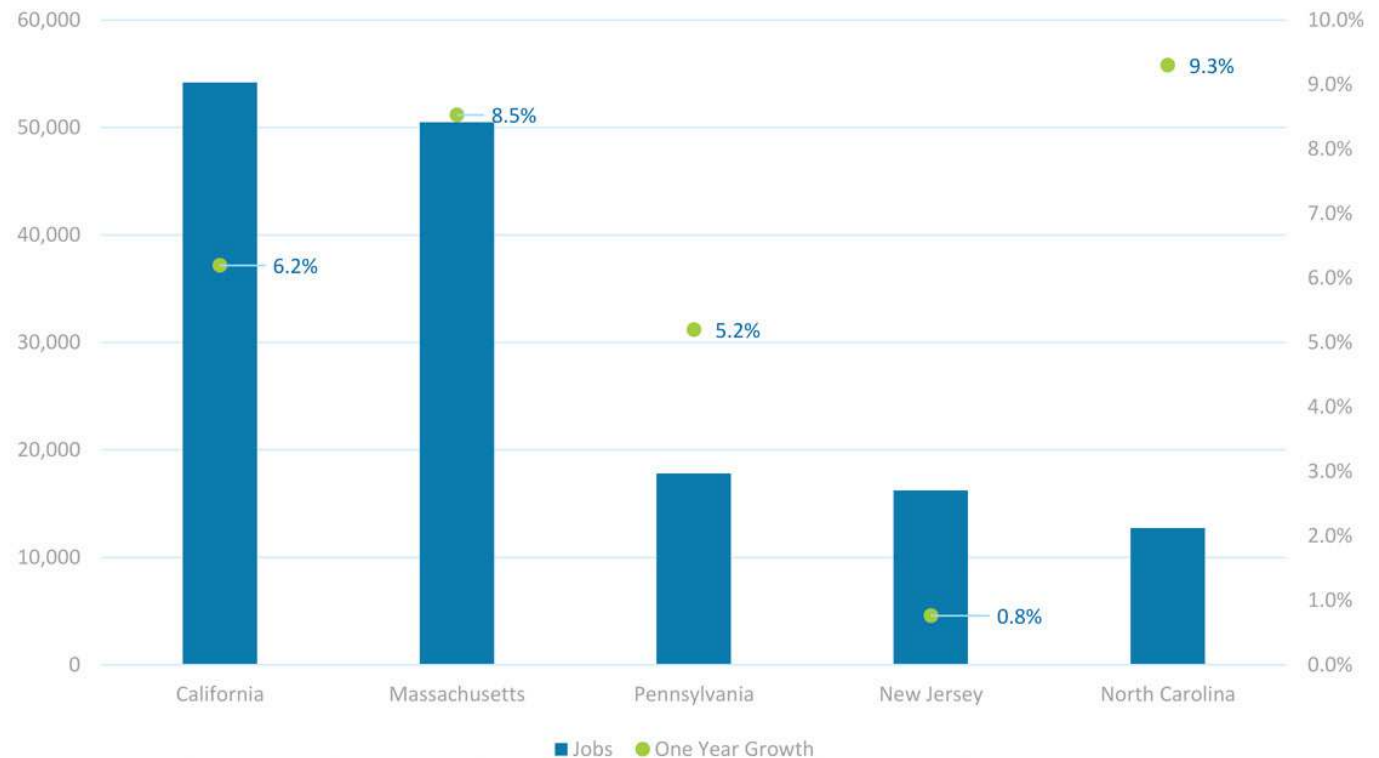


Source: Privately owned companies, U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

Year-Over-Year Research & Development Job Growth

Industry Employment

The core of Massachusetts' biopharma cluster continues to be the R&D workforce, with **significant job growth each year.**

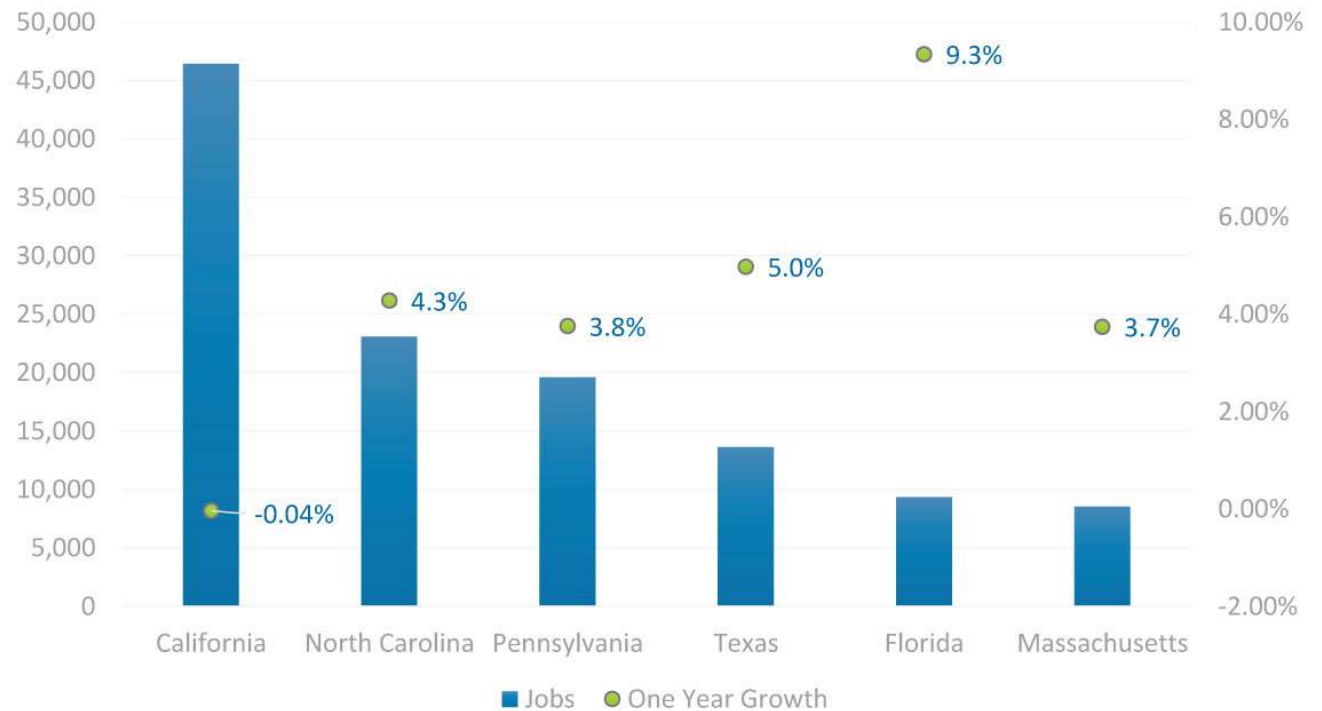


Source: Privately owned companies, U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

Year-Over-Year Biomanufacturing Job Growth

Industry Employment

The average salary for Massachusetts biomanufacturing employees is more than **\$160,000** per year.

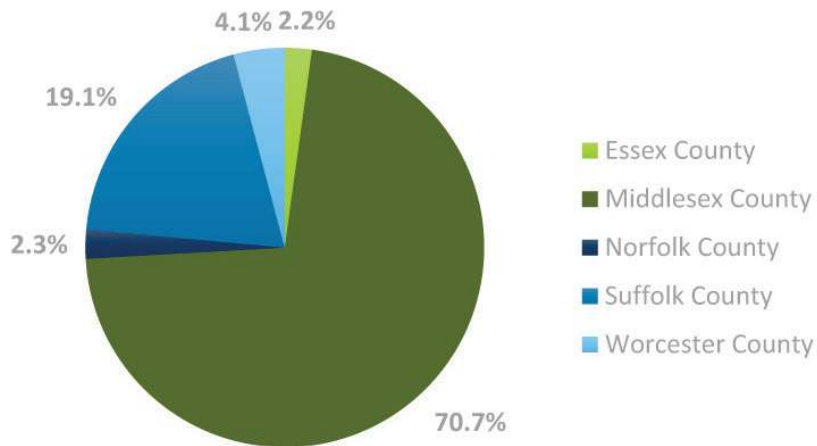


Source: Privately owned companies, U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

Massachusetts R&D Workforce by Region

Industry Employment

2020 R&D Jobs by County



Counties with Highest
Growth in R&D Jobs

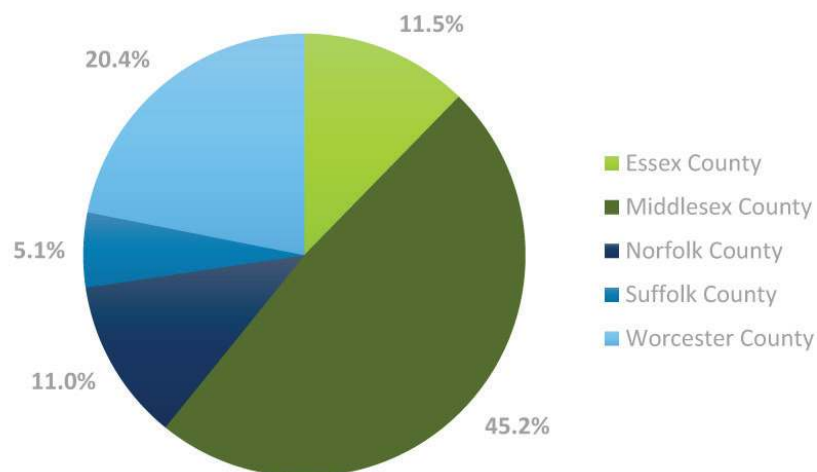
	2019	2020	% Change
Total R&D Jobs	46520	50488	8.5%
Middlesex	32866	35706	8.6%
Suffolk	8786	9633	9.6%
Worcester	1964	2055	4.6%
Norfolk	960	1165	21.4%
Essex	1061	1086	2.4%

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

Massachusetts Biomanufacturing Workforce by Region

Industry
Employment

2020 Biomanufacturing Jobs by County



Counties with Highest
Growth in Biomanufacturing
Jobs

	2019	2020	% Change
Total Manufacturing Jobs	8228	8536	3.7%
Middlesex	3678	3856	4.8%
Worcester	1613	1740	7.9%

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

Largest Biopharma Industry Employers in Massachusetts

Industry Employment

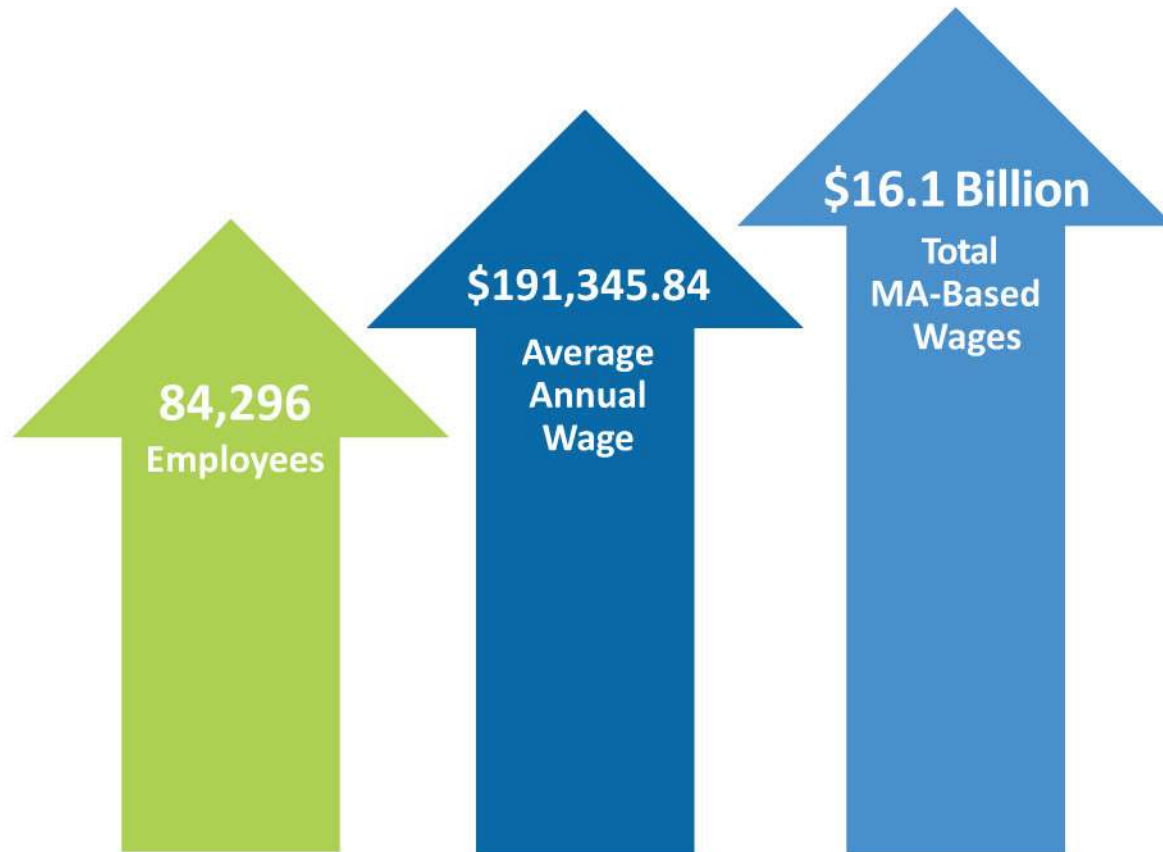
Rank	Company	Employees
1	Takeda	6,750
2	Sanofi	4,000
3	Biogen	2,800
4	Novartis	2,500
5	Vertex	2,500
6	Pfizer	2,250
7	Moderna	1,738
8	Bristol Myers Squibb	1,361
9	AbbVie	1,328
10	Foundation Medicine	1,211

Rank	Company	Employees
11	Alexion	1,070
12	Alnylam	1,048
13	EMD Serono	1,000
14	Alkermes	750
15	bluebird bio	707
16	Amgen	702
17	Merck	686
18	Sarepta	596
19	Agios	536
20	AstraZeneca	500

Sources: MassBio Membership Reports & Surveys; Boston Business Journal Book of Lists, 2021

Massachusetts Biopharma Economic Impact, 2020

Industry
Employment

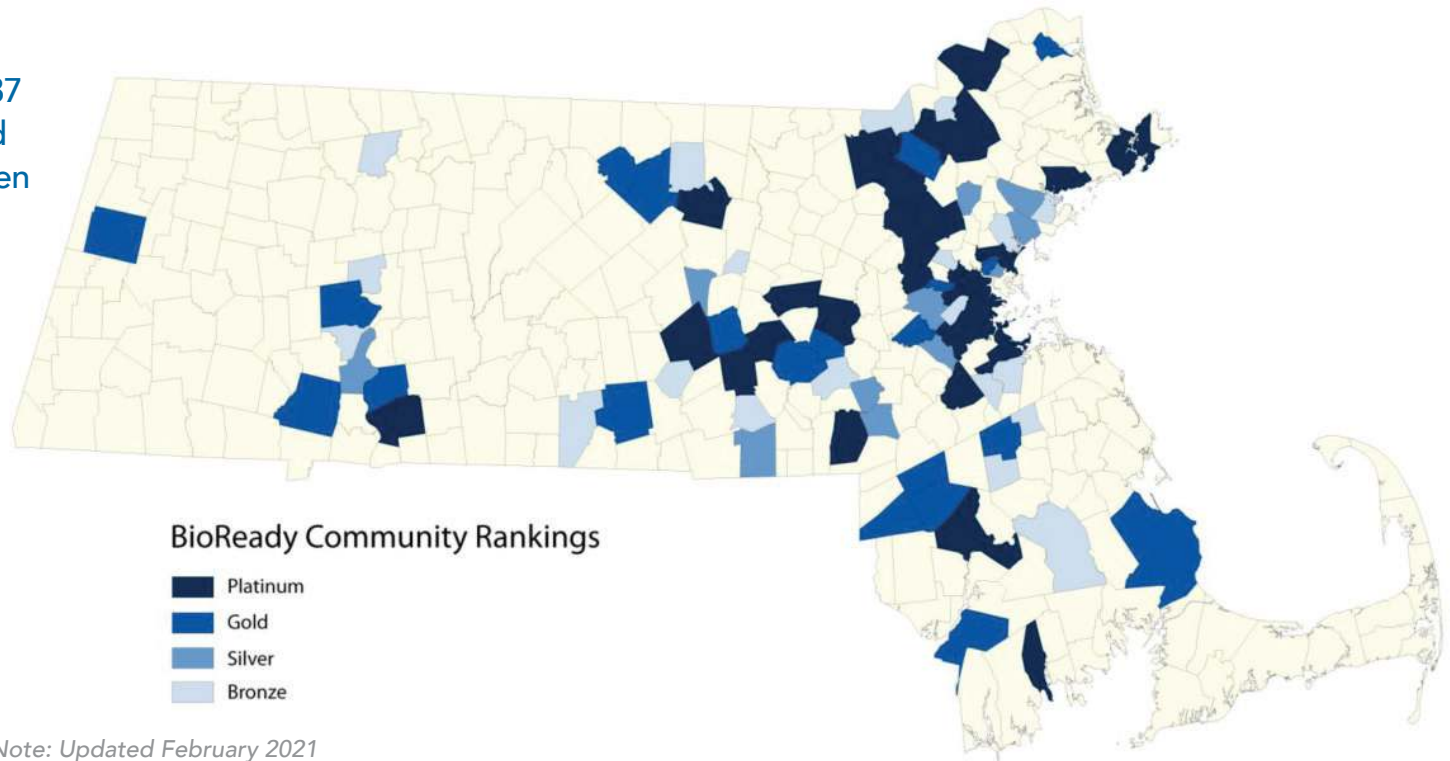


Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

BioReady® Communities, 2020

Industry
Employment

Of Massachusetts' 87
BioReady towns and
cities, **38%** have been
designated as
**Platinum-Rated
Communities**



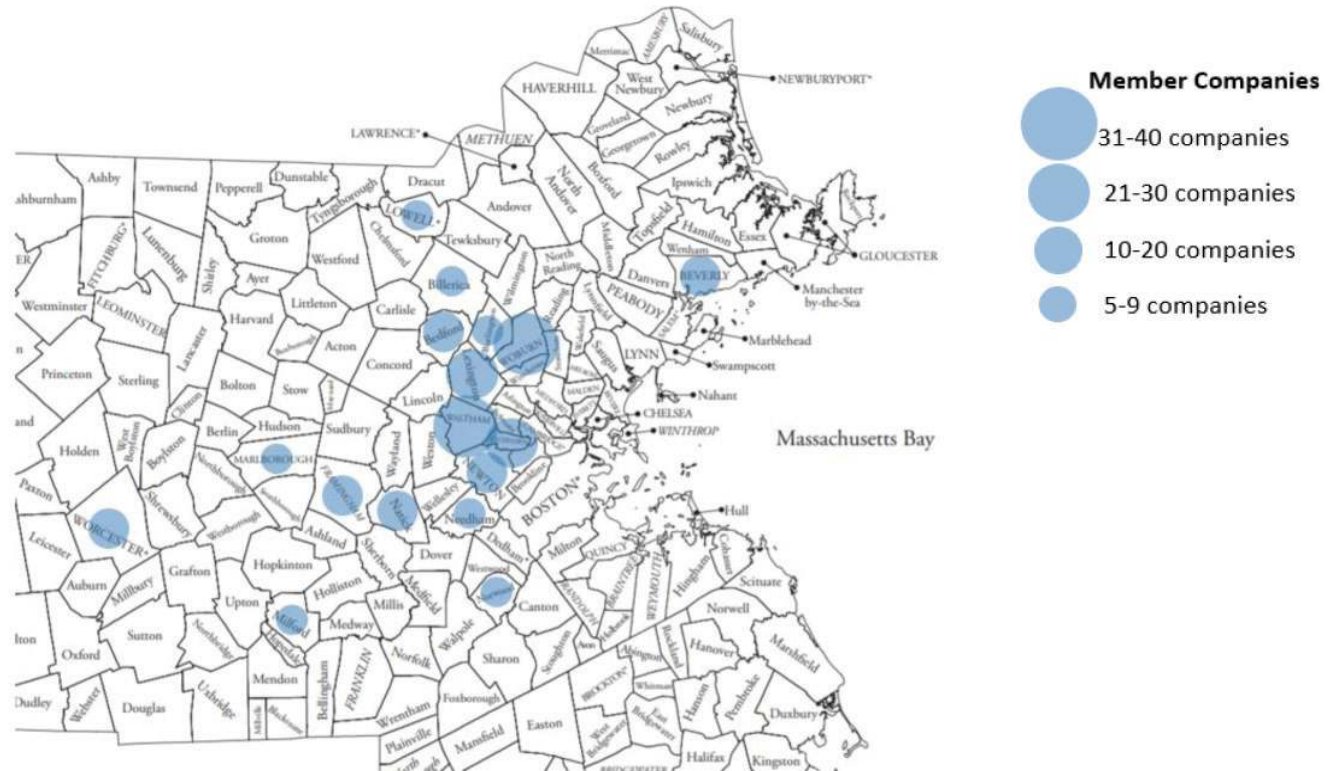
Note: Updated February 2021

For more information on MassBio's BioReady Ratings visit:
massbio.org/initiatives/bioready-communities/

Density of MassBio Membership* (Outside Cambridge and Boston)

Industry
Employment

Of MassBio's dues-paying life sciences members, **251 (33.29%)** are located in Cambridge and **90 (11.94%)** are located in Boston.



*Dues-Paying MassBio Life Sciences Members

Life Sciences Lab Inventory Growth

Industry Employment

Over **21.6 million** square feet of lab space has been built in Massachusetts over the last 10 years, an increase of **117%**.



Sources: Colliers and CBRE

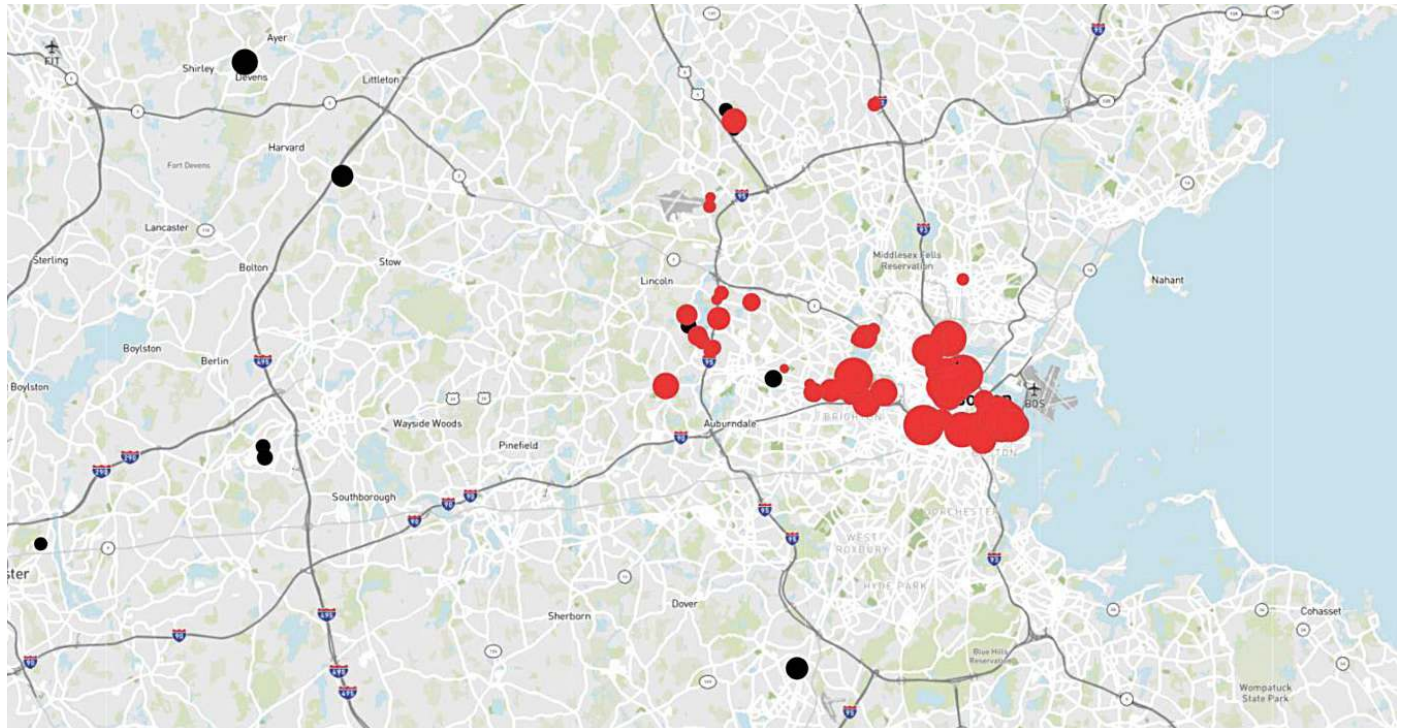
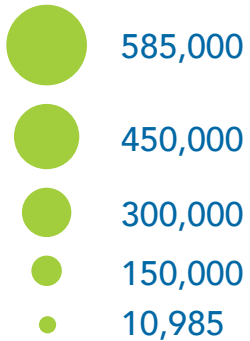
Massachusetts Life Sciences Real Estate Pipeline Through 2024

Industry
Employment

Use

- R&D
- GMP

Lab Size (sq ft)



Source: JLL

Massachusetts Life Sciences Real Estate Pipeline Through 2024

Industry
Employment

Based on conservative estimates
(2 employees per 1,000 square feet),
Massachusetts may need nearly
40,000 net-new employees
by 2024.

Statewide Projections

TYPE	SIZE
GMP	1,524,109
R&D	18,316,461
Grand Total	19,840,570

Source: JLL

Significant Developments by Municipality

CITY	SIZE
Boston	7,155,834
Cambridge	4,254,679
Somerville	2,202,533
Watertown	1,744,146
Waltham	1,646,359
Bedford	354,000
Lexington	326,744



Industry Investment



Top NIH-Funded States by Total Funding & Per Capita in 2020

Industry
Investment

Just under 10% of all NIH funding went to Massachusetts organizations in 2020.

Top NIH Funding

STATE	FUNDING	NUMBER OF AWARDS
California	\$4,996,305,832	8,900
Massachusetts	\$3,295,948,531	5,654
New York	\$3,187,154,703	6,081
Maryland	\$2,254,903,122	2,678
North Carolina	\$2,204,154,708	2,650
Pennsylvania	\$2,040,306,377	4,080
Washington	\$1,630,628,091	1,796
Texas	\$1,509,154,057	3,201
Illinois	\$1,130,299,723	2,285
Ohio	\$982,992,962	1,921
United States	\$34,963,147,380	62,581

Funding Per Capita



Source: NIH, Research Portfolio Online Reporting, U.S. Census Bureau

Top NIH-Funded Independent Hospitals in 2020

Industry
Investment

Three of the top four NIH-funded independent hospitals are in Massachusetts.

Massachusetts received 51% of all NIH funding to independent hospitals.

ORGANIZATION	CITY	STATE	AWARDS	FUNDING
Massachusetts General Hospital	Boston	MA	999	\$551,214,295
Vanderbilt University Medical Center	Nashville	TN	531	\$377,931,988
Brigham and Women's Hospital	Boston	MA	613	\$327,644,200
Boston Children's Hospital	Boston	MA	381	\$209,484,975
Children's Hospital of Philadelphia	Philadelphia	PA	290	\$178,185,562
Dana-Farber Cancer Institute	Boston	MA	272	\$174,094,914
Cincinnati Children's Hospital Medical Center	Cincinnati	OH	323	\$168,440,418
Beth Israel Deaconess Medical Center	Boston	MA	245	\$135,941,803
St. Jude Children's Research Hospital	Memphis	TN	142	\$114,256,597
Seattle Children's Hospital	Seattle	WA	164	\$97,658,273
Cedars-Sinai Medical Center	Los Angeles	CA	179	\$90,419,233
New York State Psychiatric Institute	New York	NY	139	\$68,331,629
Boston Medical Center	Boston	MA	79	\$61,416,950
National Jewish Health	Denver	CO	62	\$44,972,849
McLean Hospital	Belmont	MA	86	\$44,711,126
Roswell Park Cancer Institute Corp	Buffalo	NY	73	\$38,765,145
Rhode Island Hospital	Providence	RI	77	\$37,921,345
Henry Ford Health System	Detroit	MI	47	\$33,161,090
Massachusetts Eye And Ear Infirmary	Boston	MA	69	\$32,639,530
California Pacific Medical Center Research Institute	San Francisco	CA	11	\$26,815,282
Montefiore Medical Center (Bronx, NY)	New York	NY	3	\$24,709,760

Please note: NIH lists university-operated hospitals separately.

Source: NIH, Research Portfolio Online Reporting

Top Massachusetts-Based, NIH-Funded Higher Education & Research Institutes in 2020

Industry
Investment

Massachusetts centers of higher education and research institutes received **\$1.52 billion** in NIH Funding in 2020.

ORGANIZATION	AWARDS	FUNDING
University Of Massachusetts Medical School Worcester	349	\$294,146,927
Broad Institute	103	\$191,864,802
Harvard Medical School	350	\$178,569,161
Boston University Medical Campus	308	\$164,685,352
Harvard School Of Public Health	179	\$146,629,556
Massachusetts Institute Of Technology	247	\$113,554,200
Harvard University	156	\$87,297,083
Tufts University Boston	142	\$65,064,605
Boston University (Charles River Campus)	153	\$61,050,884
Northeastern University	82	\$38,247,784
University Of Massachusetts Amherst	108	\$35,034,877
Brandeis University	75	\$28,950,322
Joslin Diabetes Center	35	\$15,702,501
Boston College	40	\$15,625,619
Schepens Eye Research Institute	32	\$12,024,944
Whitehead Institute For Biomedical Research	29	\$10,832,647

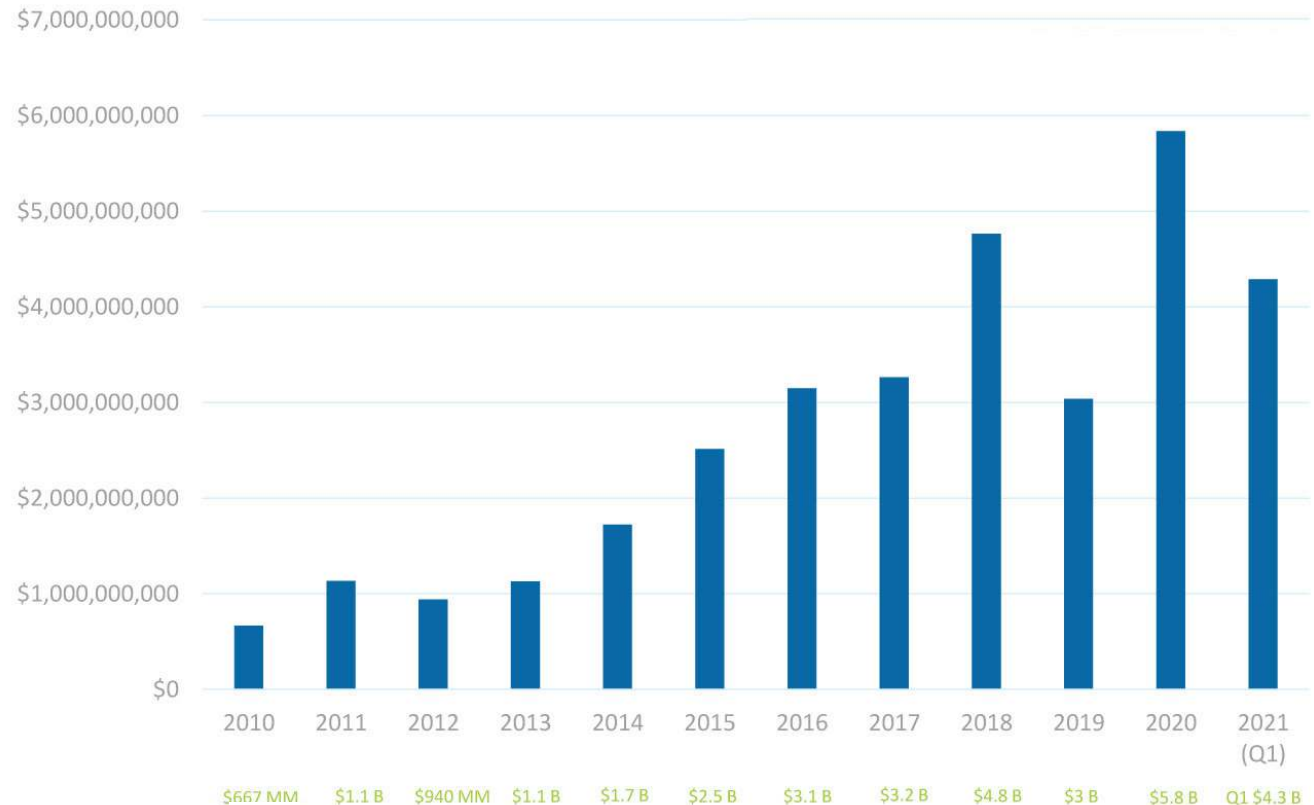
Source: NIH, Research Portfolio Online Reporting

Venture Capital Investment: Biopharma

Industry Investment

Massachusetts-headquartered biopharma companies raised **\$5.8B** in venture funding in 2020.

Funding to Massachusetts-headquartered biopharma companies in Q1 2021 **already surpassed** the third-highest funding year on record (2017).



Source: PwC Money Tree Report Biopharma includes biotechnology, drug discovery, drug development, and pharmaceuticals/drugs.

Top VC Financing Rounds for Massachusetts-Headquartered Companies, Q1 & Q2 2021

Industry
Investment

Oncology, CNS, and anti-infectives led the projects of the companies in the top financings of 2021.

COMPANY	INVESTMENT ROUND	FINANCING (IN MILLIONS)
ElevateBio	Series C	\$525
EQRx	Series B	\$500
Adagio Therapeutics	Series C	\$336
Centessa Pharmaceuticals	Series A	\$250
Tessera Therapeutics	Series B	\$230
Affinivax	Series C	\$226
Valo Health	Series B	\$190
Pyxis Oncology	Series B	\$152
Omega Therapeutics	Series C	\$126
eGenesis	Series C	\$125
Ikena Oncology	Series B	\$120
Entrada Therapeutics	Series B	\$116
Valo Health	Series B	\$110
Atalanta Therapeutics	Series A	\$110
Affinia Therapeutics	Series B	\$110
FogPharma	Series C	\$107
TScan Therapeutics	Series C	\$100

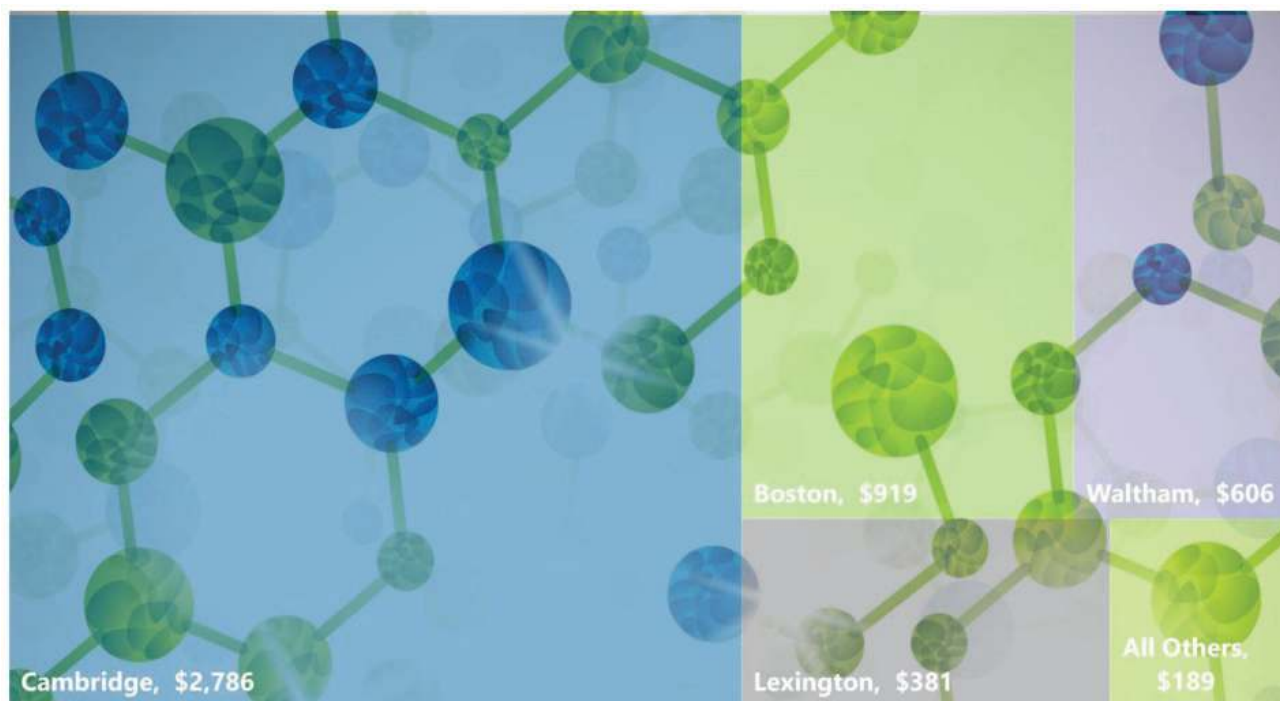
Source: EvaluatePharma®, July 2021 Note: Excluding PIPE numbers.

Location of VC-Backed Companies, Q1 & Q2 2021

Industry
Investment

Nearly 43% of all VC investment in Massachusetts-headquartered companies went to companies outside of Cambridge.

Investment Amount (\$ Millions)



Source: EvaluatePharma®, July 2021

Massachusetts IPOs, Q1 & Q2 2021

Industry Investment

In the first half of 2021, there have been **10 IPOs** from Massachusetts-headquartered biopharma companies, on-par with 2020's **21 IPOs**.

Massachusetts-headquartered biopharma companies raised a total of **\$2.1B** in IPO offerings in H1 2021, compared to **\$3.9B** in IPO offerings in 2020 and **\$910 MM** in 2019.

 **cerevel** \$350 MM

 **CENTESSA**
PHARMACEUTICALS \$330 MM

 **verve**
THERAPEUTICS \$267 MM

 **cullinan**
ONCOLOGY \$250 MM

 **VOR**
BIOPHARMA \$203 MM

 **ikena**
ONCOLOGY \$144 MM

 **CYTEIR**
THERAPEUTICS \$133 MM

 **FINCH** \$128 MM

 **Decibel**
THERAPEUTICS™ \$127 MM

 **Werewolf**
THERAPEUTICS \$120 MM

Note: Figures refer to "offer amounts" (investment secured) at time of IPO.

Source: EvaluatePharma®, July 2021

Massachusetts SPACs, Q1 & Q2 2021

Industry
Investment

Pending Mergers (Company Valuation)



GINKGO BIOWORKS™
THE ORGANISM COMPANY

\$17.5B



\$2.8B



\$1.6B



\$1.3B

Completed Mergers (Financing Raised)



\$350MM



\$216MM

Location of Massachusetts-Headquartered Companies with IPOs, Q1 & Q2 2021

Industry
Investment

Cumulative IPO Amount (\$ Millions)

Massachusetts-headquartered biopharma companies located outside of Cambridge accounted for **43%** of all dollars raised by IPO in the first half of 2021.





Drug Development Pipeline

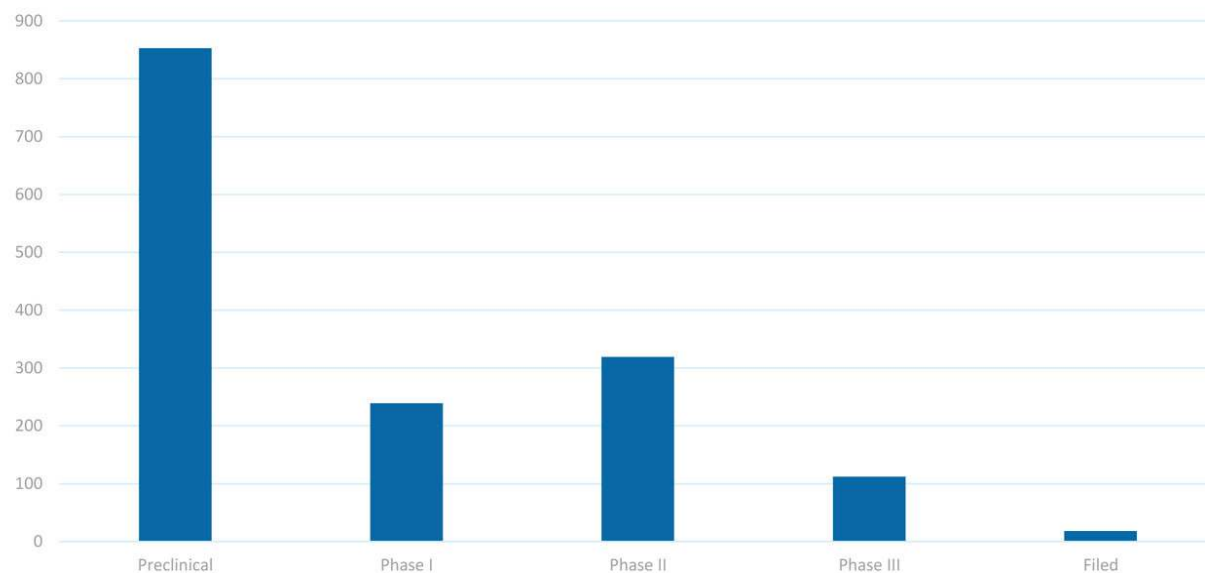


Drug Development Pipeline: Massachusetts-Headquartered Companies

Drug Development Pipeline

The drug development pipeline for Massachusetts-headquartered companies includes **18 candidates** pending FDA approval.

- 1,541 Drug Candidates
- 14% of the US Pipeline
- 7% of the Global Pipeline

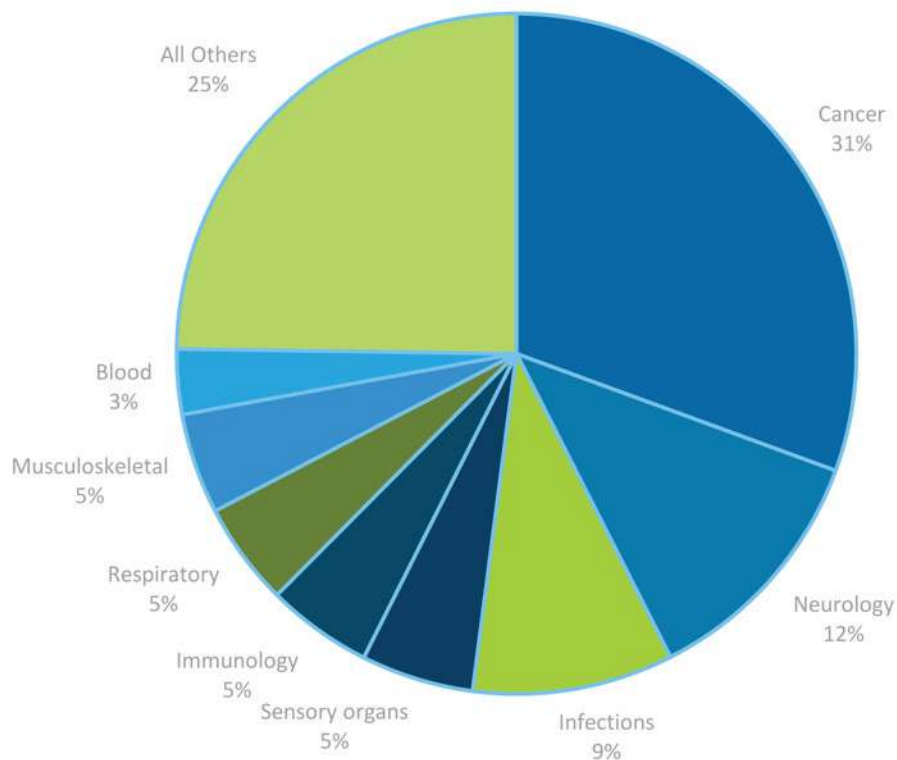


Source: EvaluatePharma®, July 2021

Drug Development Pipeline by Therapeutic Area: Massachusetts-Headquartered Companies

Drug Development Pipeline

Oncology continues to be the most frequently researched therapeutic area in Massachusetts.



Source: EvaluatePharma®, July 2021

About Us

MassBio's mission

is to advance Massachusetts' leadership in the life sciences to grow the industry, add value to the healthcare system, and improve patient lives. MassBio represents the premier global life sciences and healthcare hub, with 1,400+ members dedicated to preventing, treating, and curing diseases through transformative science and technology that brings value and hope to patients.



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MassBio West

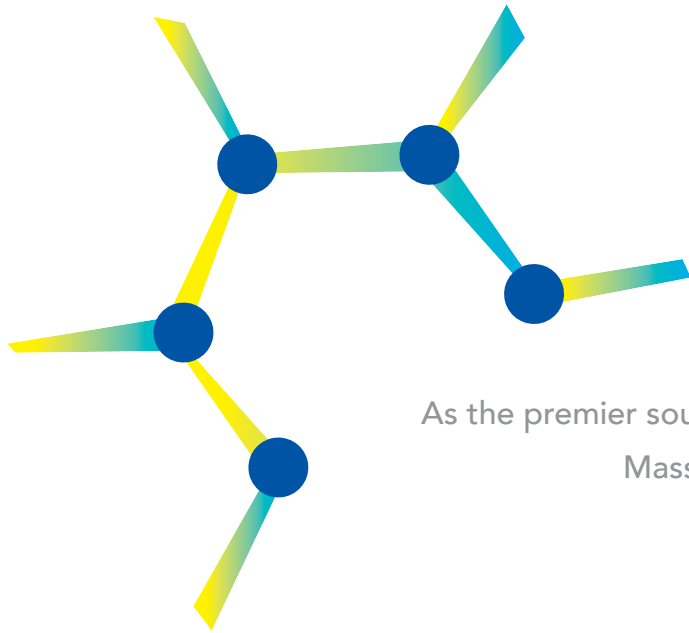
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As the premier source of information on life sciences in Massachusetts, MassBio tracks industry statistics over time and issues an overview Industry Snapshot each year.

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MassBio.org

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