



# 2022 INDUSTRY SNAPSHOT

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

# EXECUTIVE SUMMARY

**The Massachusetts life sciences industry continues to experience significant growth, with research & development leading the way and the number of biomanufacturing jobs increasing considerably.**

- The biopharma research & development workforce continues to be the core of Massachusetts' cluster, exhibiting 17.2% year-over-year employment growth, second only to California.
- Meanwhile, the regional expansion of the biomanufacturing industry has led to significant year-over-year employment growth compared with competitor states, growing 15.2% between 2020 and 2021.

**Venture capital (VC) funding of the biopharma industry remains strong in 2022 despite a downturn in biopharma stock valuations.**

- The first six months of 2022 had the 4th highest amount of venture capital investment in Massachusetts-headquartered biopharma companies of any full year.
- Companies located outside of Cambridge, in communities such as Waltham, Bedford, and Watertown, received 57% of these investments (up from 42% in 2021).

**This strong VC funding along with additional expansion by established biopharma companies has driven a continued high demand for new life sciences lab and biomanufacturing space across the state.**

- Now totaling 55 million square feet, more than 15 million square feet of life sciences-specific space came online in Massachusetts in 2021, a three-fold increase over the previous year's growth.
- There are pipeline projections of between 26 million and 59 million square feet of new lab and Good Manufacturing Practice (GMP) space by the end of 2025.
- There is 1.7 million square feet of GMP under construction across Massachusetts, almost exclusively outside Boston and Cambridge.

**This is creating incredible opportunities to diversify and expand the state's workforce, improve patient outcomes, and bring new drugs to market.**

- Industry expansion beyond Boston and Cambridge, and an increase in biomanufacturing jobs, will create new pathways for underrepresented populations to enter the workforce, while partially alleviating external pressures such as housing costs and long commutes.
- The strength of the Massachusetts early-stage ecosystem has translated into a drug development pipeline for Massachusetts-headquartered companies that outpaces all but one competitor state, representing 15.6% of the U.S. pipeline and a nearly 25% increase in drug candidates over last year.

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
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
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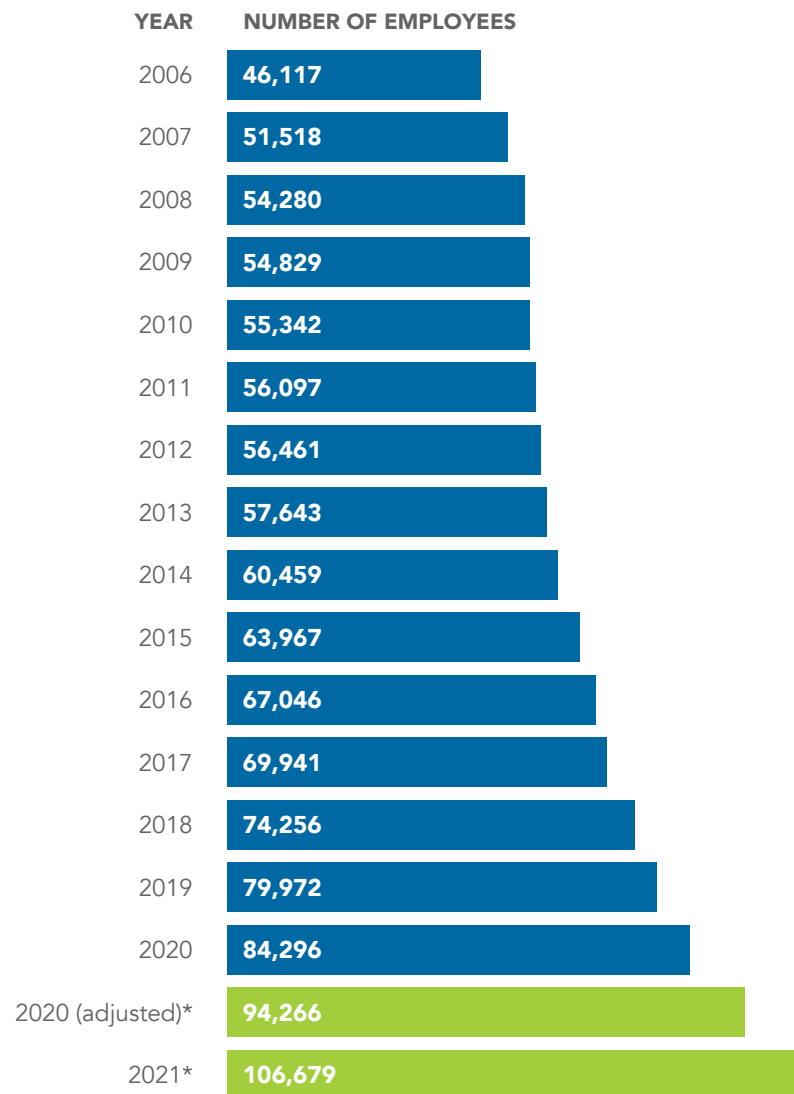


# INDUSTRY EMPLOYMENT: BIOPHARMA

### HIGHLIGHTS

 In 2021, biopharma employment in Massachusetts grew by 13.2%.

 Since the Massachusetts Life Sciences Initiative was passed in 2008, biopharma employment grew by 96.5% and has grown 131% since 2006.



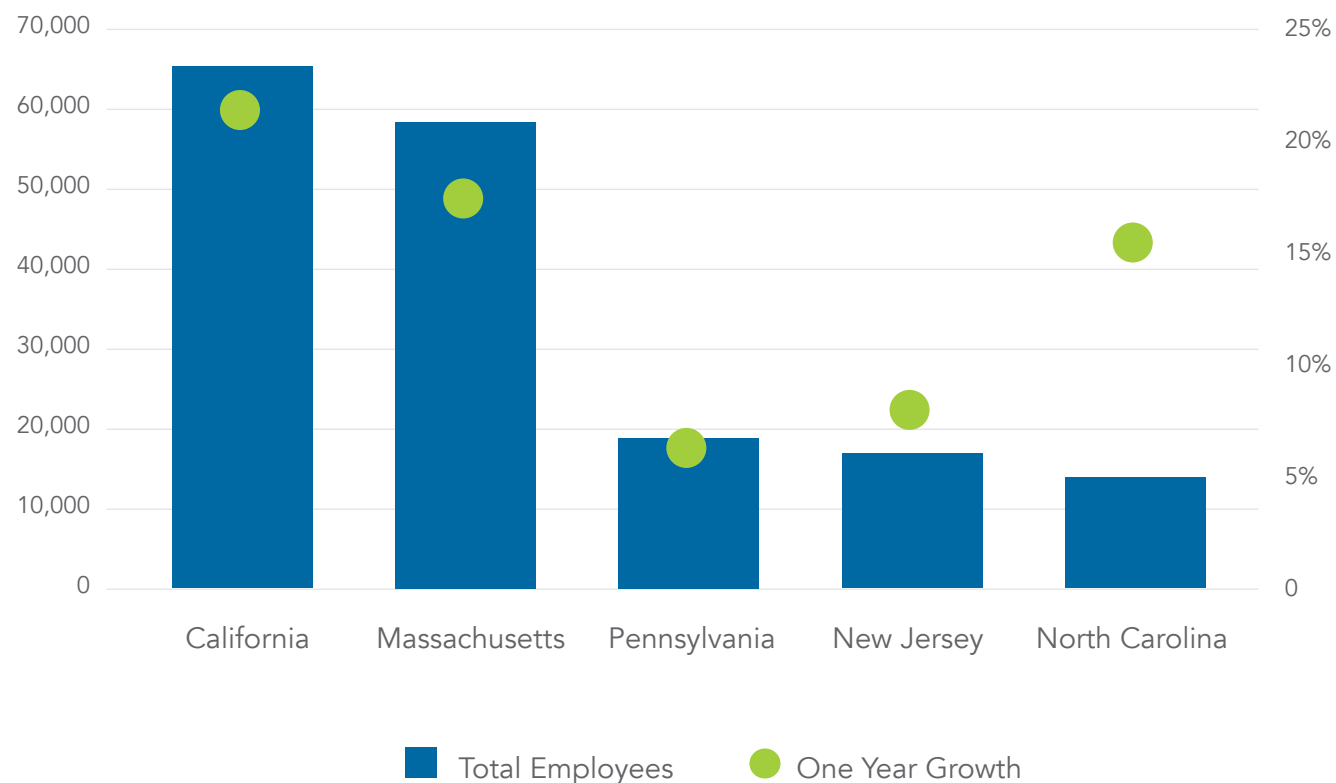
\*Note: In response to the changing life sciences industry, MassBio has revised which NAICS codes we use to measure total biopharma employment in 2021. This revised methodology is reflected in 2020 (adjusted) and the new 2021 data.

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

## HIGHLIGHTS

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

Up-and-coming states with emerging R&D workforces include Maryland, Washington, and Texas.

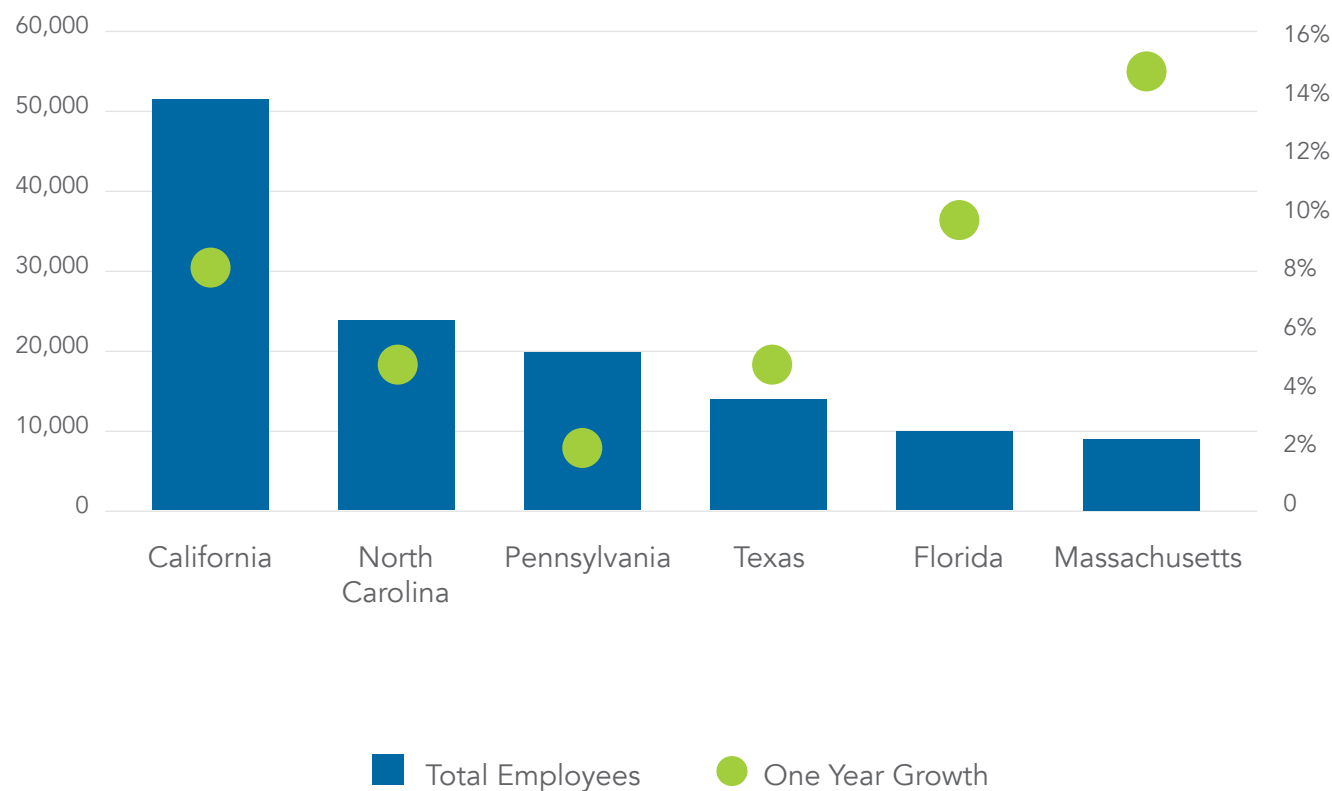


Source: Privately owned companies, U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

## HIGHLIGHTS

The regional growth of the biomanufacturing industry in Massachusetts has led to significant year-over-year employment growth compared with competitor states.

With 1.7 million square feet of GMP under construction in Massachusetts, we expect this trend to continue.



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

## INDUSTRY EMPLOYMENT: BIOPHARMA

# LARGEST BIOPHARMA INDUSTRY EMPLOYERS IN MASSACHUSETTS



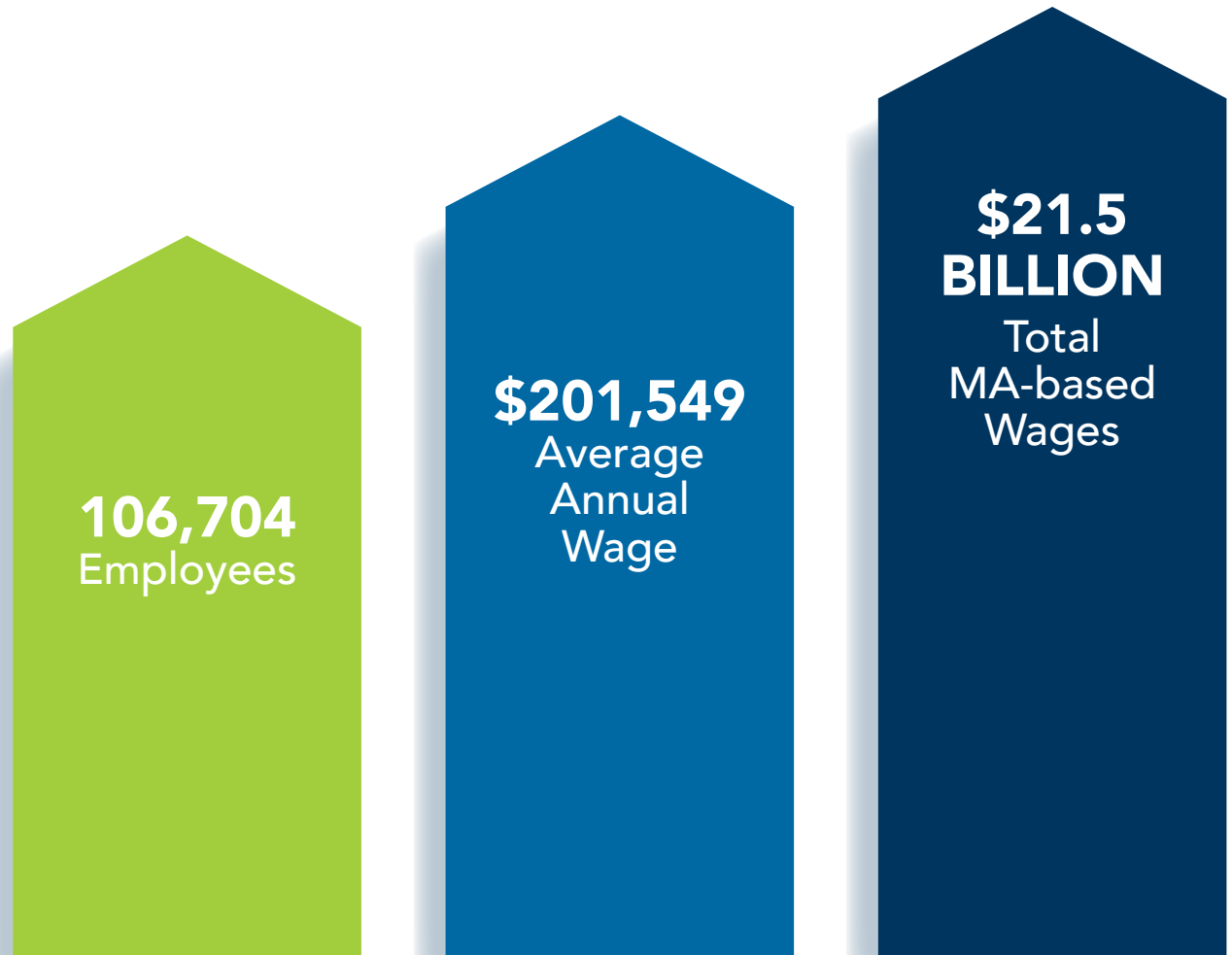
RANK	COMPANY	EMPLOYEES
1	Takeda	6,288
2	Sanofi	4,300
3	Pfizer	2,886
4	Novartis	2,500
4	Vertex	2,500
6	Biogen	2,469
7	Moderna	2,290
8	Bristol Myers Squibb	1,688
9	AbbVie	1,328
10	Alnylam	1,200
10	Foundation Medicine	1,200
12	Merck	955
13	EMD Serono	907
14	Alexion	800
15	Alkermes	730
16	Amgen	664
17	Sarepta	653
18	AstraZeneca	450
19	Sunovion	415
20	GlaxoSmithKline	363

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



## INDUSTRY EMPLOYMENT: BIOPHARMA

### ECONOMIC IMPACT, 2021



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



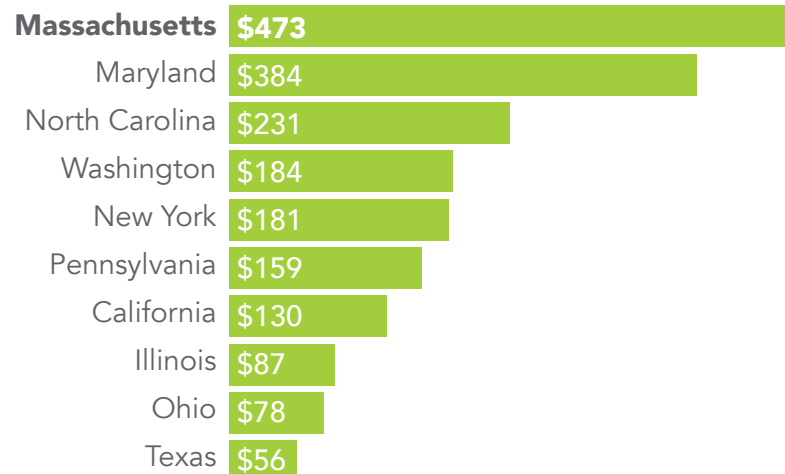
# INDUSTRY INVESTMENT

## HIGHLIGHTS

Despite representing just 2% of the nationwide population, over 9% of all NIH funding went to Massachusetts organizations in 2021.

Total NIH awards to Massachusetts grew by more than twice the rate of the national average.

## FUNDING PER CAPITA



STATE	FUNDING	NUMBER OF AWARDS
California	\$5,132,766,008	9,103
New York	\$3,662,420,303	6,061
<b>Massachusetts</b>	<b>\$3,328,279,019</b>	<b>5,758</b>
North Carolina	\$2,411,545,433	2,742
Maryland	\$2,372,538,518	2,701
Pennsylvania	\$2,069,152,946	4,133
Texas	\$1,643,831,655	3,411
Washington	\$1,420,361,201	1,838
Illinois	\$1,116,993,470	2,251
Ohio	\$916,306,875	1,941
<b>United States</b>	<b>\$35,733,566,196</b>	<b>62,996</b>

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

## HIGHLIGHTS

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


Massachusetts received 54% of all NIH funding to independent hospitals, up from 51% in 2020.


PRIVATE HOSPITAL	CITY	STATE	AWARDS	FUNDING
<b>Massachusetts General Hospital</b>	<b>Boston</b>	<b>MA</b>	<b>1,006</b>	<b>\$600,667,106</b>
<b>Brigham and Women's Hospital</b>	<b>Boston</b>	<b>MA</b>	<b>615</b>	<b>\$357,068,821</b>
Vanderbilt University Medical Center	Nashville	TN	555	\$344,312,186
<b>Boston Children's Hospital</b>	<b>Boston</b>	<b>MA</b>	<b>409</b>	<b>\$219,099,952</b>
Cincinnati Children's Hospital Medical Center	Cincinnati	OH	323	\$166,010,321
<b>Dana-Farber Cancer Institute</b>	<b>Boston</b>	<b>MA</b>	<b>269</b>	<b>\$159,777,039</b>
Children's Hospital of Philadelphia	Philadelphia	PA	277	\$134,575,922
<b>Beth Israel Deaconess Medical Center</b>	<b>Boston</b>	<b>MA</b>	<b>228</b>	<b>\$127,771,968</b>
St. Jude Children's Research Hospital	Memphis	TN	146	\$108,757,687
Seattle Children's Hospital	Seattle	WA	167	\$106,079,076
Cedars-Sinai Medical Center	Los Angeles	CA	183	\$93,710,480
New York State Psychiatric Institute	New York	NY	129	\$70,266,219
<b>Boston Medical Center</b>	<b>Boston</b>	<b>MA</b>	<b>80</b>	<b>\$56,213,699</b>
National Jewish Health	Denver	CO	58	\$44,911,407
<b>McLean Hospital</b>	<b>Belmont</b>	<b>MA</b>	<b>82</b>	<b>\$44,492,104</b>
Roswell Park Cancer Institute Corp	Buffalo	NY	81	\$42,890,828
Rhode Island Hospital	Providence	RI	79	\$39,023,350
<b>Massachusetts Eye and Ear Infirmary</b>	<b>Boston</b>	<b>MA</b>	<b>71</b>	<b>\$33,439,533</b>
Children's Hospital of Los Angeles	Los Angeles	CA	61	\$32,131,518
Henry Ford Health System	Detroit	MI	40	\$29,943,791

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

# INDUSTRY INVESTMENT: TOP MASSACHUSETTS-BASED, NIH FUNDED HIGHER EDUCATION & RESEARCH INSTITUTES IN 2021

## HIGHLIGHTS

 Massachusetts' higher education and research institutes received \$1.42 billion in NIH funding in 2021.

 5% of all NIH funding to higher education and research institutes goes to Massachusetts organizations.

ORGANIZATION	AWARDS	FUNDING
Broad Institute, Inc.	115	\$181,550,331
Harvard Medical School	384	\$176,100,032
Boston University Medical Campus	302	\$172,981,948
University of Massachusetts Medical School Worcester	358	\$170,455,068
Harvard School of Public Health	190	\$151,976,469
Massachusetts Institute of Technology	274	\$116,758,236
Harvard University	152	\$79,839,325
Tufts University Boston	140	\$69,298,717
Boston University (Charles River Campus)	152	\$57,997,462
Northeastern University	91	\$42,547,105
University of Massachusetts Amherst	103	\$37,311,536
Brandeis University	71	\$27,286,208
Joslin Diabetes Center	36	\$17,330,229
Boston College	42	\$16,150,770
Schepens Eye Research Institute	32	\$14,293,840

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

# INDUSTRY INVESTMENT: VENTURE CAPITAL INVESTMENT

## HIGHLIGHTS

The first half of 2022 had the 4th highest amount (\$5.099 Billion) of VC investment of any year on record.

MA biopharma companies have received 26% of all VC investment nationally during Q1 and Q2 of 2022.

Of companies that received VC money in the first half of 2022, 36% of R&D programs were focused on oncology. The top three is rounded out by CNS at 17% and anti-infectives at 9%.


### TOTAL VC FUNDING TO MA HEADQUARTERED BIOPHARMA COMPANIES (IN BILLIONS)



Source: Evaluate and Pitchbook, July 2022

# INDUSTRY INVESTMENT: TOP VC FINANCING ROUNDS FOR MASSACHUSETTS-HEADQUARTERED COMPANIES, Q1 & Q2 2022

## HIGHLIGHTS

 122 companies received 124 rounds of investment. The average round was \$41.1 million compared to the national average of \$28.8 million.

COMPANY	FINANCING (IN MILLIONS)	INVESTMENT ROUND
Tessera	\$300	Series C
Upstream Bio	\$200	Series A
Affini-T Therapeutics	\$175	Series A
LifeMine	\$175	Series C
Frontera Therapeutics	\$160	Series B
Aerium Therapeutics	\$150	Series A
Dewpoint Therapeutics	\$150	Series C
MoMa Therapeutics	\$150	Series B
RVAC Medicines	\$140	Series B
Saliogen Therapeutics	\$132.25	Series B
Be Biopharma	\$130	Series B
Korro Bio	\$116	Series B
Sionna Therapeutics	\$111	Series B
Scipher Medicine	\$110	Series D
Triana Biomedicines	\$110	Series A

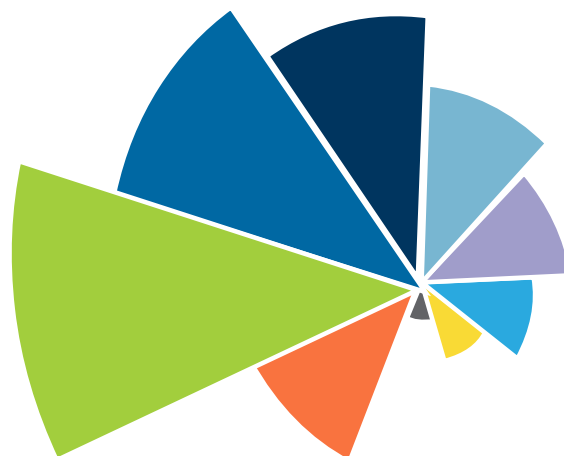
Source: Pitchbook, July 2022

# INDUSTRY INVESTMENT: LOCATION OF VC-BACKED COMPANIES, Q1 & Q2

## HIGHLIGHTS

57% of VC money went to companies located outside of Cambridge – up from 42% in 2021.

MA VC INVESTMENT BY MUNICIPALITY



	SUM OF DEAL SIZE (IN MILLIONS)	SUM OF DEAL SIZE %
Cambridge	\$2200.15	43.15%
Boston	\$1509.38	29.60%
Waltham	\$561.02	11.00%
Watertown	\$170	3.34%
Bedford	\$160.6	3.15%
Natick	\$117.88	2.31%
Framingham	\$91.5	1.79%
Concord	\$60	1.18%
Other	\$228.56	4.48%

Source: Pitchbook, July 2022



## HIGHLIGHTS

Although total IPOs declined significantly compared to 2021, 38% of all biopharma IPOs in the U.S. were from Massachusetts companies.



**\$230M**  
BOSTON



**\$216M**  
CAMBRIDGE



**\$193.6M**  
BOSTON



**\$108M**  
CAMBRIDGE



**\$98M**  
CAMBRIDGE

Source: Pitchbook, July 2022

# HIGHLIGHTS

Through Q2 of 2022, 11 MA headquartered biopharma companies have been acquired for a disclosed total of \$4.47 billion.

MA headquartered biopharma companies have acquired seven companies (six from outside of MA) for a disclosed total of \$649 million.

## MA HQ COMPANIES ACQUIRED

ACQUIRING COMPANY	TARGET COMPANY	AMOUNT
		\$3.3B
		\$417M
		\$300M

## MA HQ COMPANIES MAKING ACQUISITIONS

ACQUIRING COMPANY	TARGET COMPANY	AMOUNT
		\$604M
		\$45M

Source: Pitchbook, July 2022



# DRUG DEVELOPMENT PIPELINE

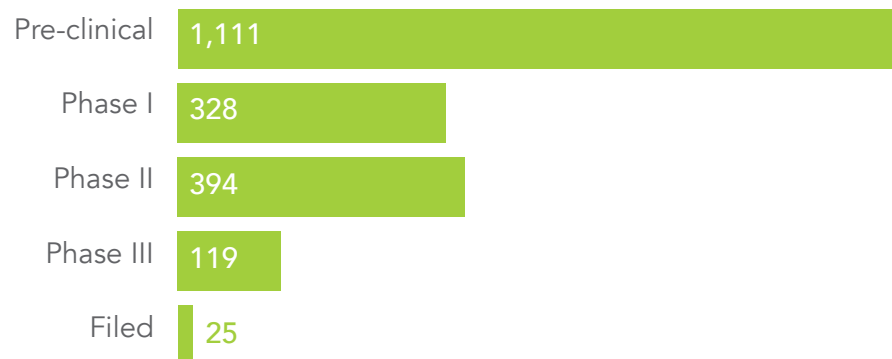
# DRUG DEVELOPMENT PIPELINE: MASSACHUSETTS HEADQUARTERED COMPANIES

## HIGHLIGHTS

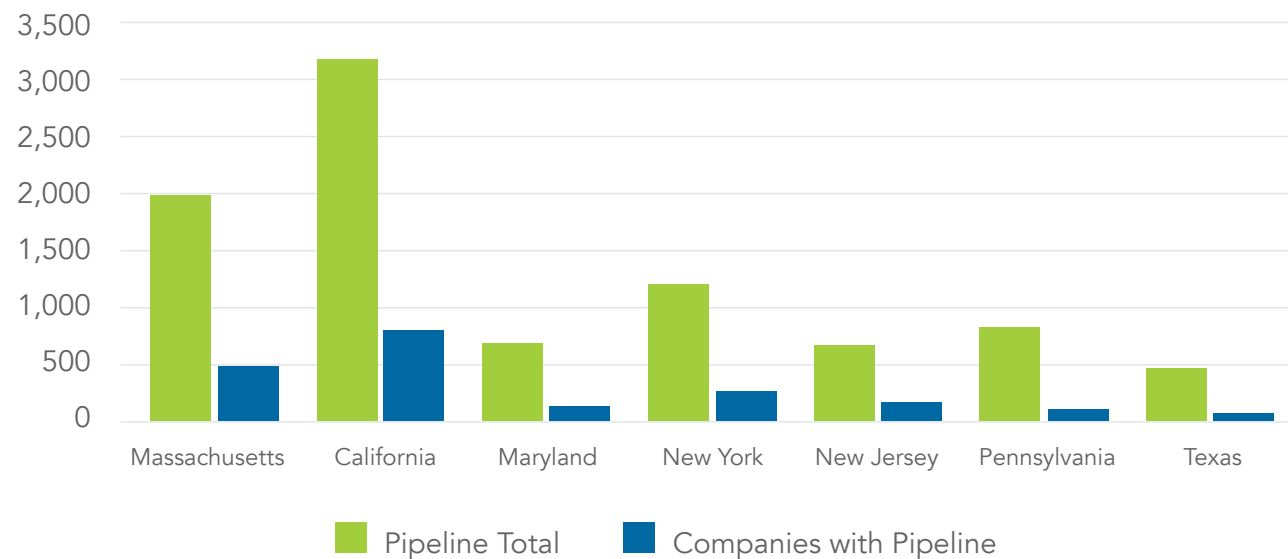
The drug pipelines of MA headquartered biopharma companies make up 7.2% of the global pipeline and 15.6% of the US pipeline.

The most common therapeutic areas of the MA pipeline are: oncology 34%, CNS 15%, and anti-infectives 10%.

### DRUG PIPELINE OF MA HEADQUARTERED COMPANIES



### STATES WITH LEADING DRUG PIPELINES



Source: Evaluate, July 2022

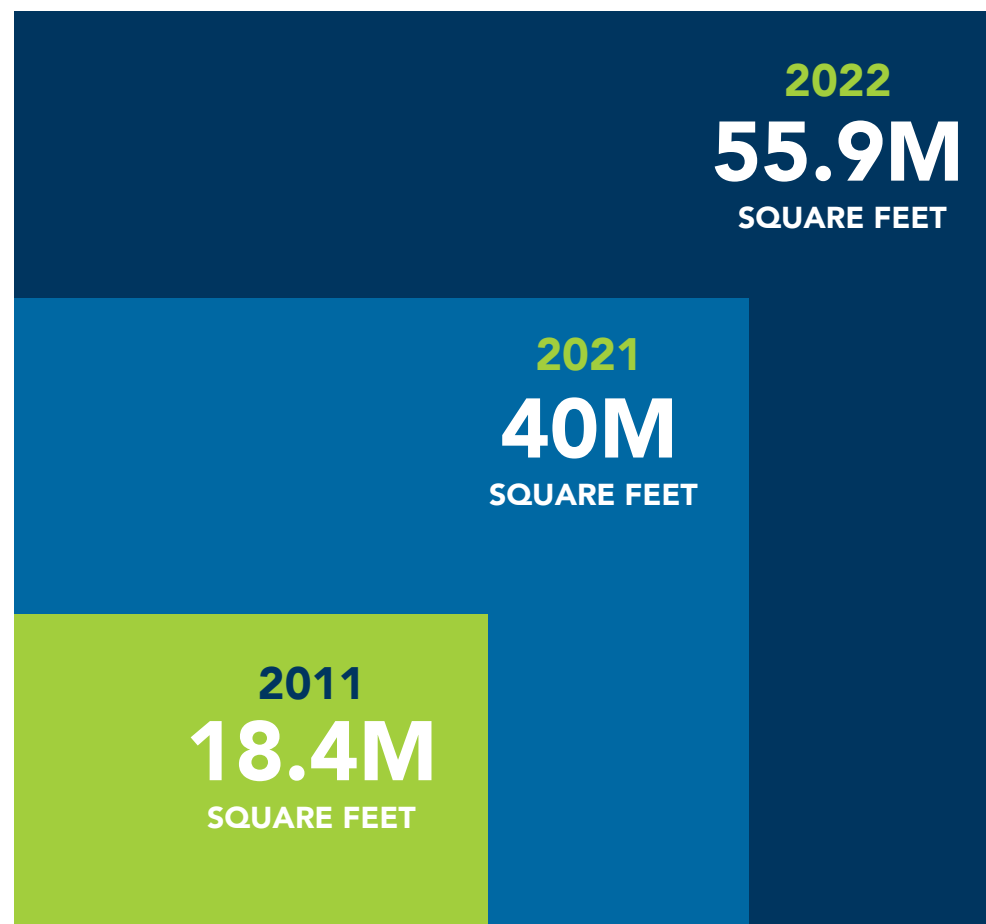


# REAL ESTATE

## HIGHLIGHTS

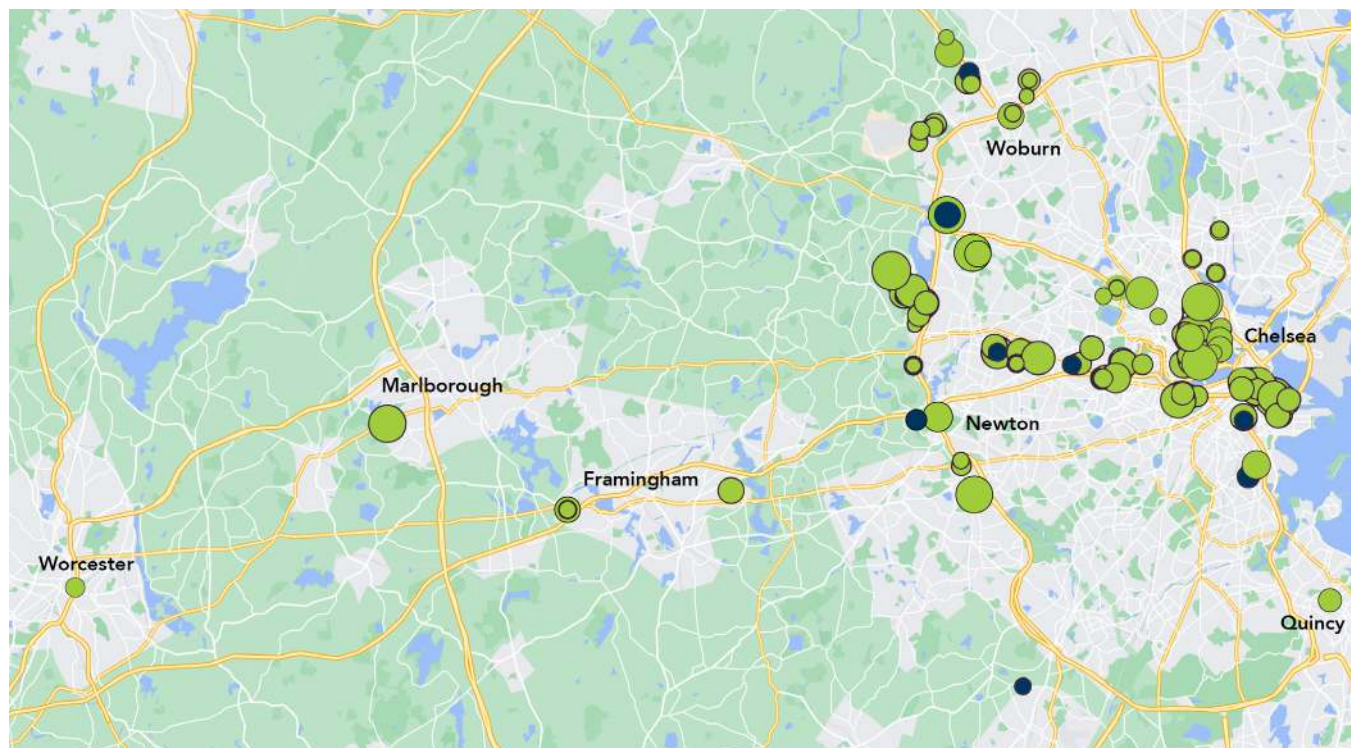
✱ Pipeline projections call for anywhere between 26 million and 59 million SF to be added to Massachusetts inventory by the end of 2025.

- 1.7 million SF of GMP space is currently under construction
- 14.86 million SF of lab space is currently under construction



Source: JLL, CBRE, and Colliers

# REAL ESTATE: LAB AND GMP PIPELINE BY SIZE AND USE



■ GMP ■ R&D

Source: JLL for deliveries by the end of 2025

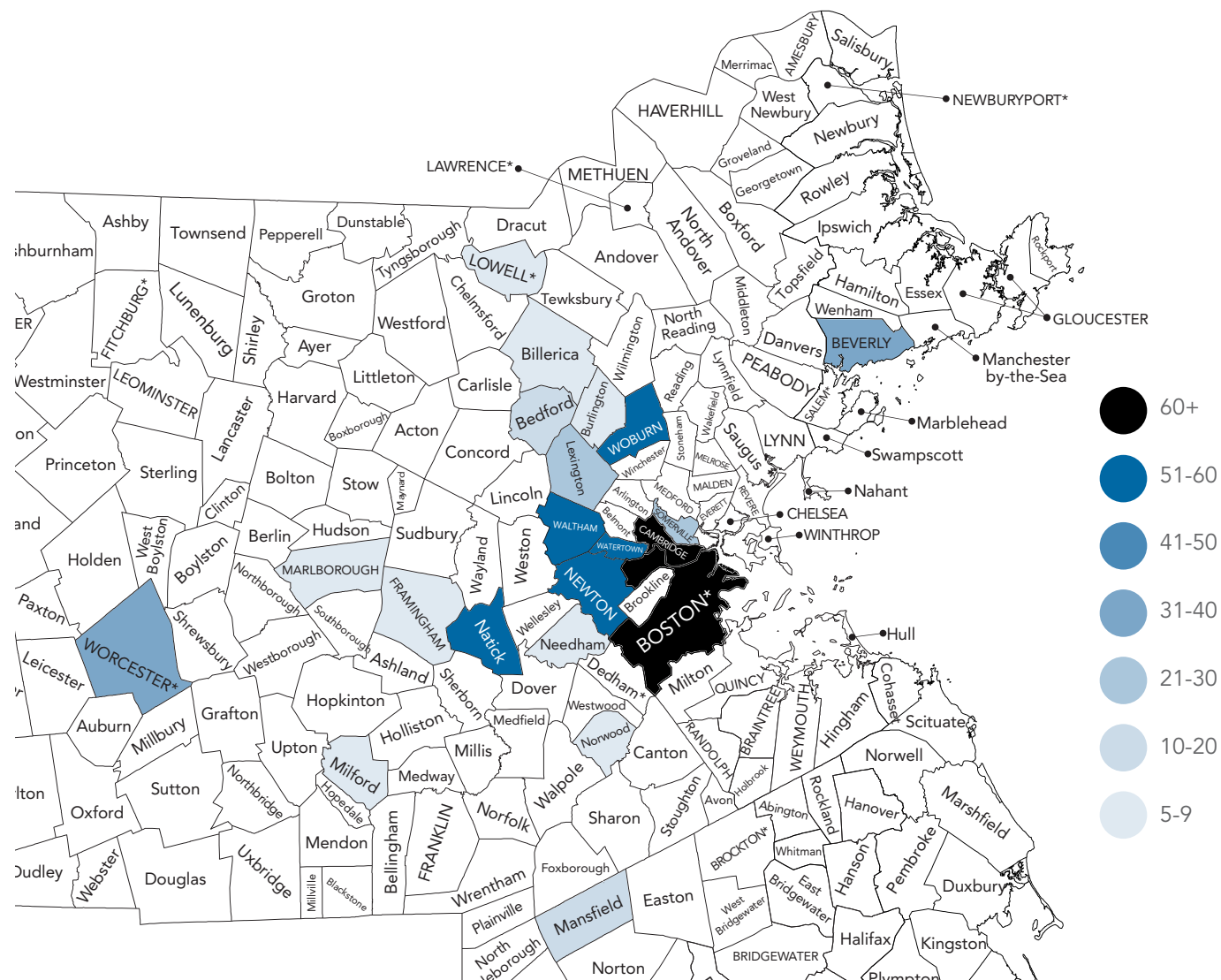
# REAL ESTATE:

## LARGEST LAB AND GMP LEASES IN 2021

TENANT NAME	ADDRESS	TOWN	SIZE (SF)	LAB/CGMP
Moderna	325 Binney Street	Cambridge	462,000	Lab
National Resilience	500 Soldiers Field	Boston	310,000	GMP
Flagship (Tessera, Cellarity & Other)	101 South Street	Somerville	269,000	Lab
Entrada	6 Tide Street	Boston	265,000	Lab
Moderna	One Investors Way	Norwood	236,566	GMP
Ginkgo Bio	Parcel P - Marine Park Seaport	Boston	228,000	Lab
ElevateBio lab	225 Wyman Street	Waltham	179,386	Lab
Akkis Oncology	21-25 Drydock Ave	Boston	170,952	Lab
Prime Medicine	60 First Street	Cambridge	150,000	Lab
Seqirus	225 Wyman Street	Waltham	135,000	Lab
ArrantaBio	1414 Mass Avenue	Boxborough	130,000	GMP
Bioverativ Therapeutics	225 2nd Ave	Waltham	126,000	Lab
Vericel Corporation	25 Network Drive	Burlington	125,749	GMP
TScan Therapeutics	880 Winter Street	Waltham	115,000	Lab
Bristol Myers Squibb	250 Water Street	Cambridge	112,000	Lab
C4 Therapeutics	490 Arsenal Street	Watertown	111,000	Lab
Generation Bio	41 Seyon Street	Waltham	104,000	GMP
Verve Therapeutics	201 Brookline Avenue	Boston	104,000	Lab
Geneworks	4 Burlington Woods	Burlington	101,000	Lab
Kymera Therapeutics	1 Arsenal on The Charles	Watertown	100,000	Lab
Affini-T Therapeutics	20 Seyon Street	Watertown	94,000	GMP




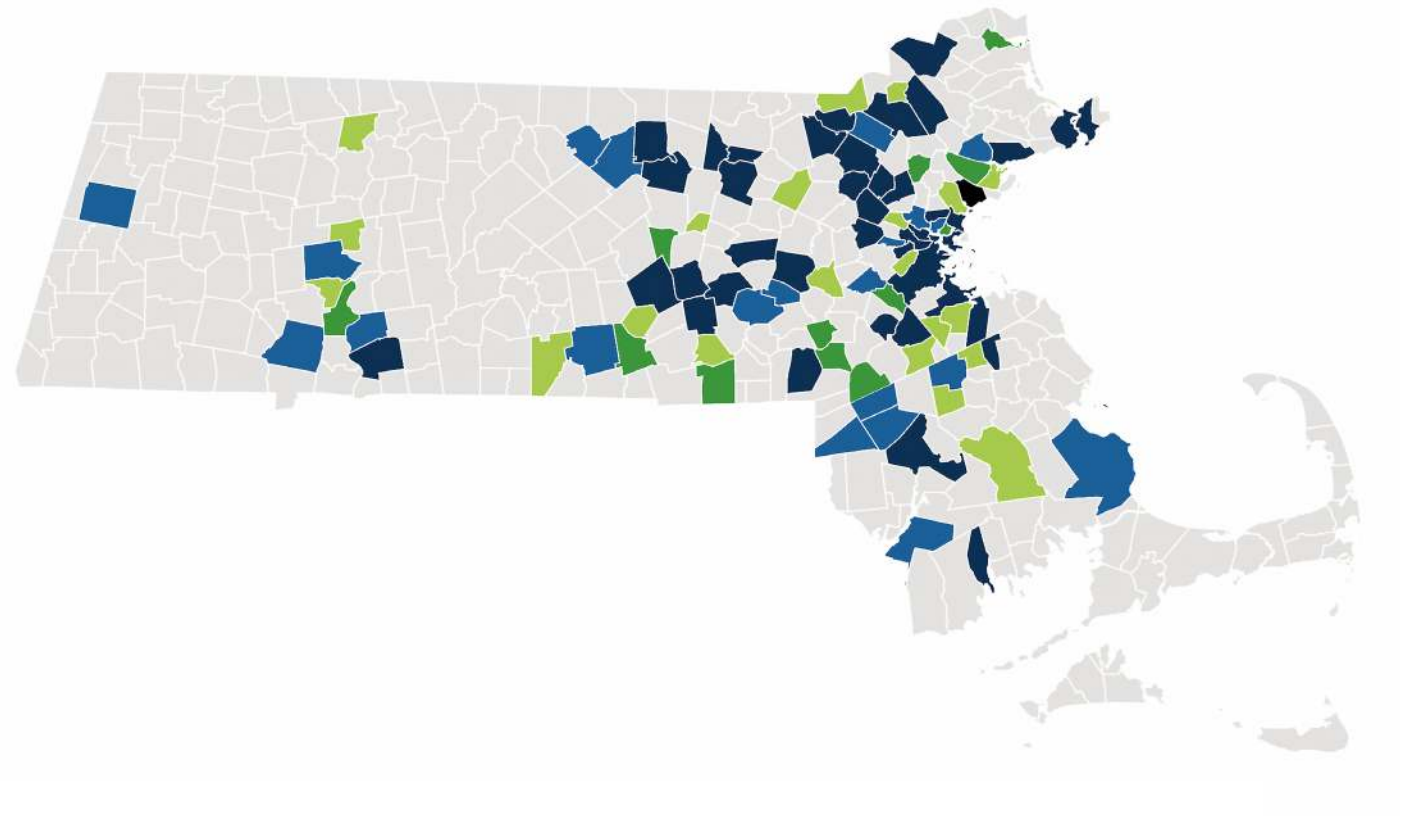
# REAL ESTATE: DENSITY OF MASSBIO MEMBERSHIP



Source: MassBio Membership Surveys

## HIGHLIGHTS

 Of the 92 BioReady® rated municipalities, 37 (40%) are rated Platinum.



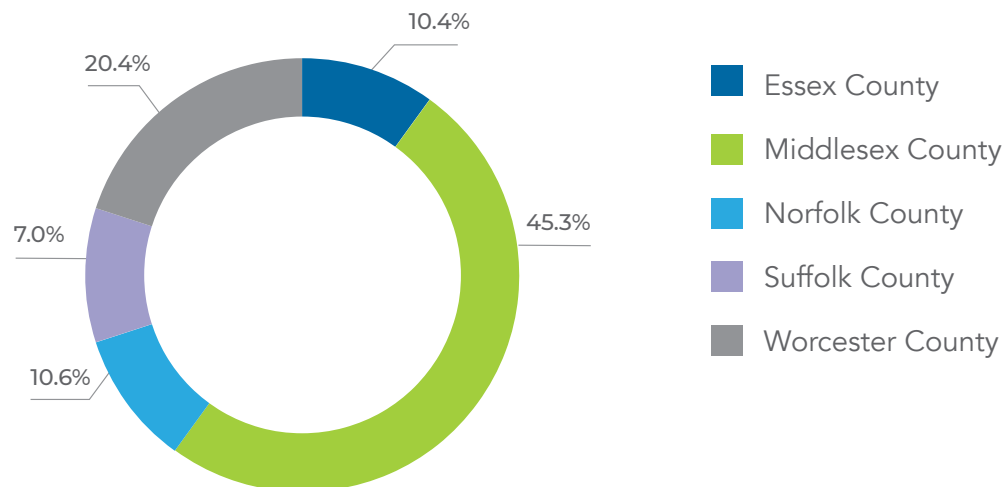
■ Platinum   ■ Gold   ■ Silver   ■ Bronze



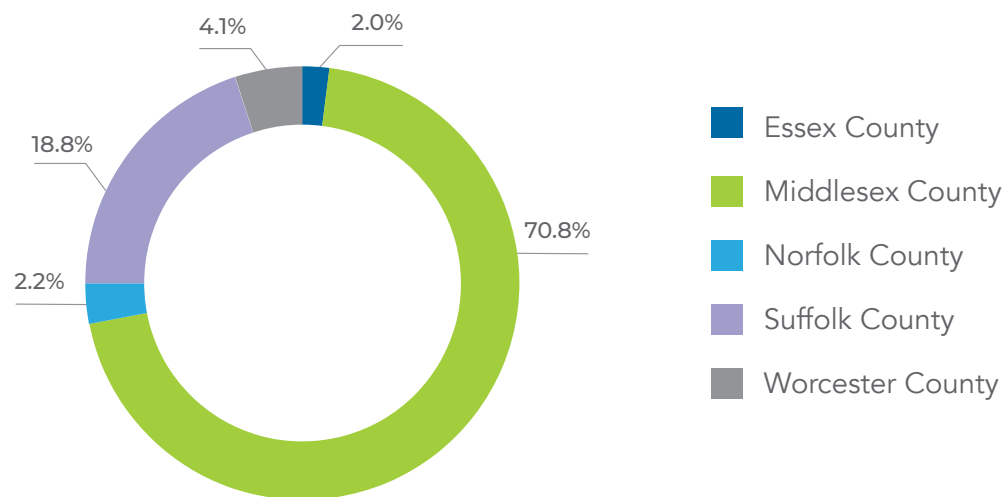
# SPOTLIGHT BY REGION

## SPOTLIGHT BY REGION: MASSACHUSETTS WORKFORCE BY REGION

### 2021 BIOMANUFACTURING JOBS BY COUNTY



### 2021 RESEARCH AND DEVELOPMENT JOBS BY COUNTY



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

## SPOTLIGHT BY REGION: SUFFOLK COUNTY DEEP DIVE

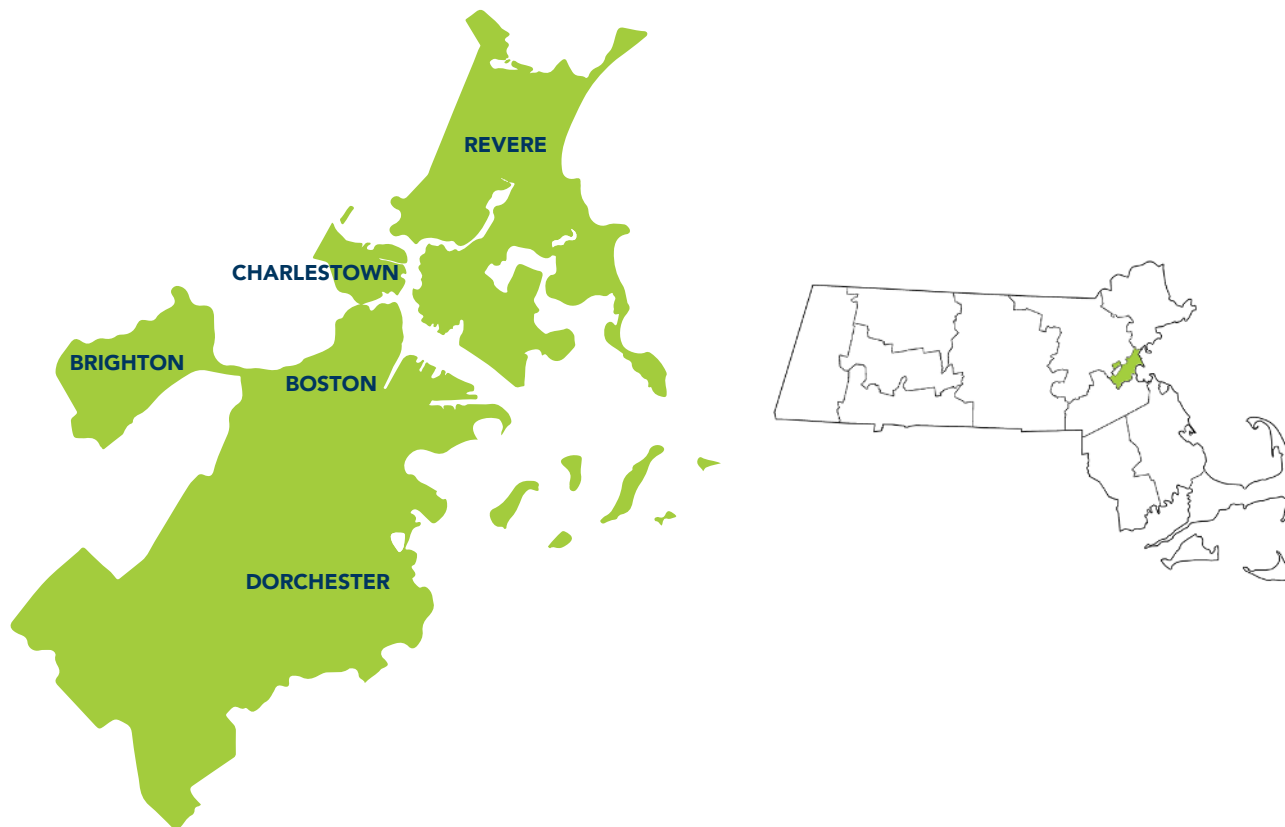
 **14,071,319 SF**  
EXISTING BIOPHARMA  
INVENTORY

 **11.5M SF** OF  
NEW LAB SPACE  
IN THE PIPELINE

 VACANCY RATES:  
**0.5% - 1.7%**

 PRICE PER SF:  
**\$107 - \$110**

- Boston lab rents average \$108 per SF



CORE COMPANIES



AVERAGE SALARY  
**\$173,891**

### R&D AND MANUFACTURING EMPLOYMENT GROWTH

SUFFOLK COUNTY	2020	2021	ONE YEAR GROWTH
Manufacturing jobs	434	685	57.8%
R&D jobs	9,633	11,139	15.6%

## SPOTLIGHT BY REGION: MIDDLESEX COUNTY DEEP DIVE

 **38,078,348 SF**  
EXISTING BIOPHARMA  
INVENTORY

 **14.5M SF** OF LAB  
AND **905K** OF GMP  
IN THE PIPELINE

 VACANCY RATES:  
**1.7% - 4.4%**

 PRICE PER SF:  
**\$94 - \$97**

- Cambridge lab rents average \$118 per SF



### CORE COMPANIES



### AVERAGE SALARY

**\$236,833**

### R&D AND MANUFACTURING EMPLOYMENT GROWTH

MIDDLESEX COUNTY	2020	2021	ONE YEAR GROWTH
Manufacturing jobs	3,856	4,454	15.5%
R&D jobs	35,706	41,883	17.3%

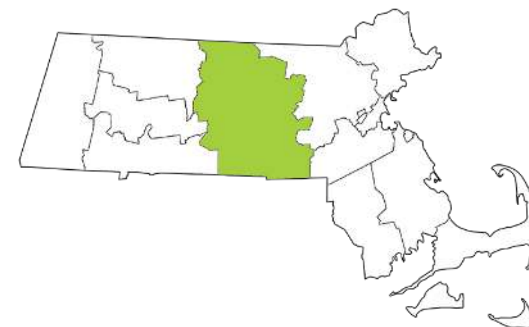
## SPOTLIGHT BY REGION: WORCESTER COUNTY DEEP DIVE

 **1,394,948 SF** OF  
EXISTING BIOPHARMA  
INVENTORY

 **389K SF** OF GMP  
IN THE PIPELINE

 VACANCY RATES:  
**0.0% - 10.7%**

 PRICE PER SF:  
**\$31 - \$45**



CORE COMPANIES



abbvie

AVERAGE SALARY


**\$122,873**

R&D AND MANUFACTURING EMPLOYMENT GROWTH

WORCESTER COUNTY	2020	2021	ONE YEAR GROWTH
Manufacturing jobs	1,740	2,007	20.4%
R&D jobs	2,055	2,451	19.3%

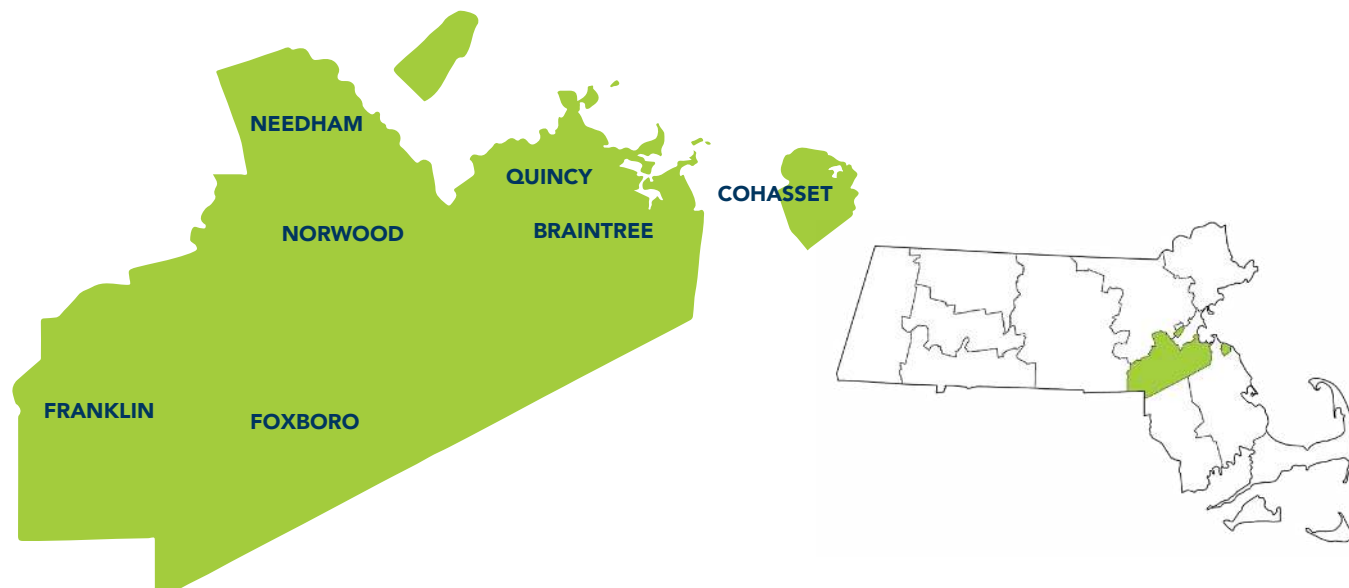
## SPOTLIGHT BY REGION: NORFOLK COUNTY DEEP DIVE

 **1,169,148 SF** OF  
EXISTING BIOPHARMA  
INVENTORY

 **140K SF** OF  
MANUFACTURING,  
**48.5K** OF LAB  
IN THE PIPELINE

 VACANCY RATES:  
**0.4% - 7.6%**

 PRICE PER SF:  
**\$49 - \$52**



CORE COMPANIES



AVERAGE SALARY

**\$138,480**

R&D AND MANUFACTURING EMPLOYMENT GROWTH

NORFOLK COUNTY	2020	2021	ONE YEAR GROWTH
Manufacturing jobs	939	1,038	10.5%
R&D jobs	1,165	1,314	12.8%



## SPOTLIGHT BY REGION: ESSEX COUNTY DEEP DIVE

 **978,472 SF** OF  
EXISTING BIOPHARMA  
INVENTORY

 **224K SF** OF GMP,  
**125K SF** OF LAB  
IN THE PIPELINE

 VACANCY RATES:  
**1.8% - 7.4%**

 PRICE PER SF:  
**\$35 - \$60.5**



CORE COMPANIES



AVERAGE SALARY

**\$138,514**

R&D AND MANUFACTURING EMPLOYMENT GROWTH

ESSEX COUNTY	2020	2021	ONE YEAR GROWTH
Manufacturing jobs	979	1,027	4.9%
R&D jobs	1,086	1,205	11.0%

# 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 1,500+ members dedicated to preventing, treating, and curing diseases through transformative science and technology that brings value and hope to patients.

Learn more at **MassBio.org**



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**MASSBIO WEST**

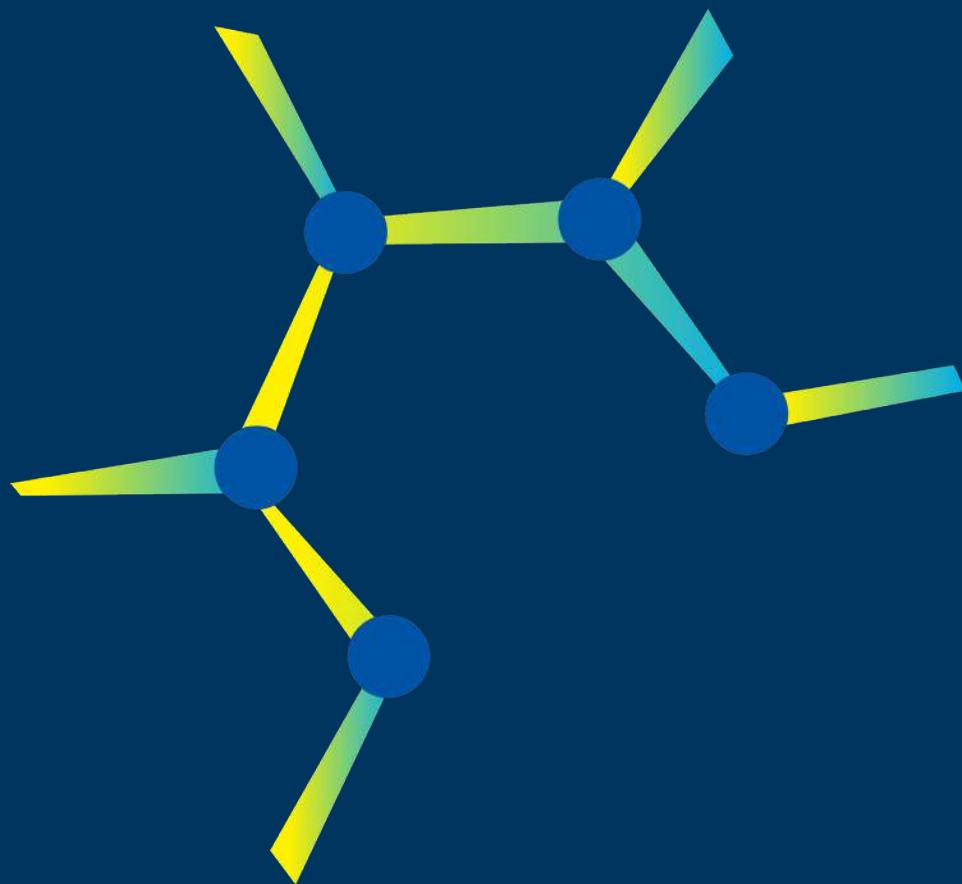
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As the premier source of information on life sciences in Massachusetts, MassBio tracks industry statistics over time and issues an overview Industry Snapshot each year.

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