

MASSBIO

2024 Industry Snapshot

massbio.org/industry-snapshot

Letter from the CEO & President



Dear Reader —

As we release the 2024 edition of the MassBio Industry Snapshot, we find Massachusetts on the verge of making another commitment to the life sciences, biopharma companies delivering transformative treatments for patients, and an industry on the rise.

We have been through a lot – and that could be an understatement for some – but when we consider the

data in this report to be a gut check, I am feeling optimistic and confident heading into the end of this year and into 2025:

- Massachusetts added almost 3,000 biopharma net new jobs last year; in fact, we accounted for nearly 17% of the job growth in the entire state in 2023—remarkable when you consider we are just 3.7% of the workforce.
- Boston's Seaport and Suffolk County added more R&D jobs than anywhere else in the Commonwealth (+2,181 jobs), while Worcester County bucked the biomanufacturing job trend by expanding (+11.8%).
- Two-thirds of the \$3.26 billion in VC funding given to local companies in the first half of the year went to companies not located in Cambridge—communities like Watertown, Waltham, and Framingham.
- Nearly \$30 billion was spent in acquiring 17 Massachusetts companies, a notable jump in M&A activity at a time when private biotechs are looking for exits, and large pharma companies are looking for their next commercial opportunity.

And how does this all translate into helping patients in need?

We are behind only California in the scale of our drug pipeline—one where oncology and CNS continue to dominate. Massachusetts, with an unequaled collection of biotechs, is a global leader in advanced therapies. From DNA/RNA to genetically modified cell therapies, we are the hotbed of innovation, pioneering transformational and even curative advances for patient populations of all sizes.

It is our very strengths on the R&D side of the local industry that will lead directly toward an expansion of biomanufacturing capacity because companies, treatment centers, and patients want their personalized medicines made close by. Worcester is champing at the bit to be a biomanufacturing hub, and there are other communities beyond Greater Boston with sites and people just waiting for these types of facilities and jobs to come.

While job growth slowed compared to prior years, the workforce still got larger as other clusters contracted. We know that VC funding was at its lowest first-half total since 2019, but large rounds continue to follow the clinical data and great science. We may have a 16% vacancy rate for lab space statewide, but that is far more of an asset than the 0.7% vacancy rate just two years ago. As the funding environment changes, companies will be able to scale here in a tenant-favored market.

We also aren't standing still. MassBio will soon release our new 5-year strategic plan, a roadmap for where this industry goes next through partnerships and collaboration. As we release this report, Governor Healey and legislative leaders continue to work together to finalize a reauthorization of the Life Sciences Initiative, which would deliver the tools needed to expand this industry's reach and impact. Biomanufacturing remains a top priority, and that is closely aligned with our workforce training and diversity goals. Resourcing early-stage biotechs and diverse founders is another.

As you review the following pages and where we've been recently as an industry, this is but a moment in time. Our charge is to constantly be looking forward – to that next discovery that changes a patient's life forever.

Kendalle Burlin O'Connell
CEO & President, MassBio

Acknowledgements

Gratitude to the industry leaders who provided their commentary in this year's Snapshot: Congressman Jake Auchincloss, Abe Ceesay, Abbie Celniker, Michael Collins, Rep. Ann Margaret Ferrante, Laurie Glimcher, Yvonne Greenstreet, Secretary Yvonne Hao, *Marie-Louise Hovgaard-Sveen*, House Speaker Ron Mariano, Odile Smith, *Tamar Thompson*, and Yanni Tsipis.

Note: MassBio Board of Directors members are italicized.

Executive Summary

Massachusetts continued to grow its biopharma workforce through the strength of its research and development (R&D) sector, gaining ground on California, a state that saw its total jobs decrease last year. Massachusetts remains in a good position to expand its biomanufacturing sector.

- Massachusetts added nearly 3,000 net new biopharma jobs in 2023, an increase of 2.6%, for a total of nearly 117,000 now in the workforce.
- Massachusetts now trails California by only 900 R&D jobs. Massachusetts's year-over-year R&D job growth was 3.7%, outpacing California, New York, New Jersey, and North Carolina (which all saw a decrease in R&D jobs) and offsetting a small loss of biomanufacturing jobs.
- Though New Jersey, North Carolina, and Florida each saw their biomanufacturing workforces grow, this increase remains in large batch manufacturing, not the making of advanced precision medicines where Massachusetts stands to grow in the coming years.

Venture capital (VC) funding followed the data and great science with ninety-five Massachusetts-based, mostly clinical-stage companies announcing fundraising rounds in the first six months of 2024. Sixty-five percent of Massachusetts VC funding went to companies not located in Cambridge.

- In the first half of 2024, Massachusetts-based companies received \$3.26 billion across 95 rounds, with only California-based companies taking a larger share of national VC dollars (CA's 45% to MA's 21%).
- Sixty-five percent of venture dollars went to companies located outside of Cambridge, the largest percentage in MassBio Industry Snapshot's history. Boston (21%), Waltham (20%), and Watertown (9%) led the way after Cambridge (35%), demonstrating the presence of multiple strong innovation hubs beyond Kendall Square.
- Licensing agreements were an alternative source of funding for Massachusetts biotechs with 18 announced deals in the first half of 2024 worth a total value of \$14.8 billion, including nearly \$600 million in upfront cash payments.

Significant merger and acquisition (M&A) activity in Massachusetts is delivering the exits investors need while giving global pharmaceutical companies access to external innovation. Though initial public offerings (IPOs) remained mostly elusive across biopharma, the first half of this year matched 2023's full-year totals in IPOs both locally and nationally, foreshadowing a potential positive trend.

- Seventeen Massachusetts companies were acquired in the first six months of 2024 for a total disclosed price of \$28.9 billion, six more and nearly triple last year's total, respectively.
- Massachusetts-based biopharma companies held two IPOs in the first half of the year, matching 2023's total, while 17 companies went public nationally, just below the 19 that went public all of last year.

With an unmatched density of biotechs, Massachusetts has become a global leader in advanced therapies like cell and gene therapy, thereby increasing the state's percentage of the United States' drug pipeline. This is no small feat considering that most domestic pharmaceutical companies have a presence in the Commonwealth but are headquartered elsewhere.

- As of mid-July, Massachusetts was home to 15.2% of the domestic drug development pipeline (second only to California at 26%), and 6.4% of the global pipeline (far ahead of Japan's 3.9%).
- The percentage of the Massachusetts pipeline in advanced therapies (24%) is larger than China's (15%) and every domestic direct competitor state, including California (20%). Massachusetts (449) has two-thirds of China's advanced therapy pipeline (674).

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Industry Employment: Biopharma

Economic Impact, 2023



“Massachusetts is the global hub of the life sciences, and the biopharma industry is a major driver of our economy. Advancing innovation in health care is what the Commonwealth does better than anywhere else in the world because of the people, institutions, and companies that call Massachusetts home. I’m proud

of the role the House of Representatives has historically played in making investments in this very successful public-private partnership. This type of collaboration will ensure the Commonwealth continues to deliver for residents and communities through jobs and tax revenues, as well as the patients who need the lifesaving medicines being developed in local labs.”

— **House Speaker Ron Mariano**

3rd Norfolk District

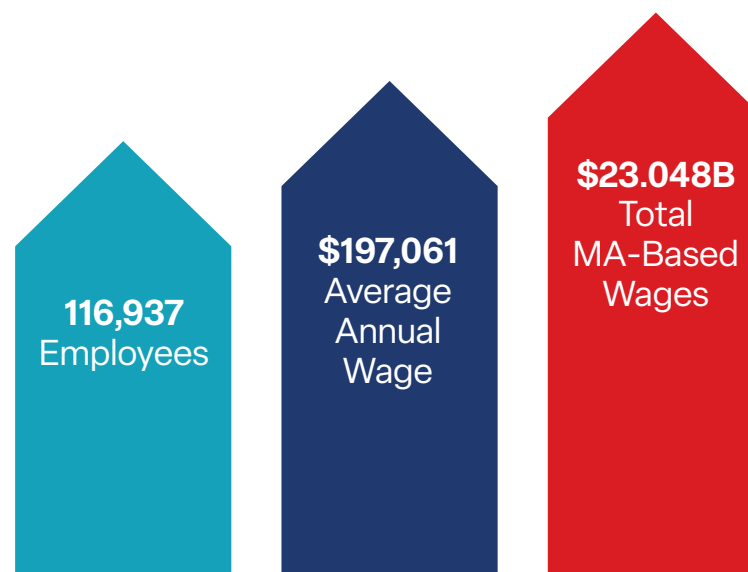
Massachusetts House of Representatives



“Massachusetts is where life science ideas are discovered, developed, and scaled every day. We are the global hub for healthcare and life science innovation thanks to our best-in-class talent and pioneering startups and companies that employ more than 116,000 people in rewarding, high-paying jobs. It’s critical that the state continues to support this key sector and lengthen our lead.”

— **Secretary Yvonne Hao**

Executive Office of Economic Development
Commonwealth of Massachusetts



Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, July 2024

Massachusetts Biopharma Industry Employment

- The Massachusetts biopharma workforce, despite headwinds and layoffs, grew 2.6% in 2023.
- The workforce has experienced 115% growth since the Life Sciences Initiative was passed.
- At the end of 2023, the Massachusetts biopharma industry was 3.7% of all employment in Massachusetts, though the industry represented 16.9% of all employment growth in the Commonwealth for 2023.

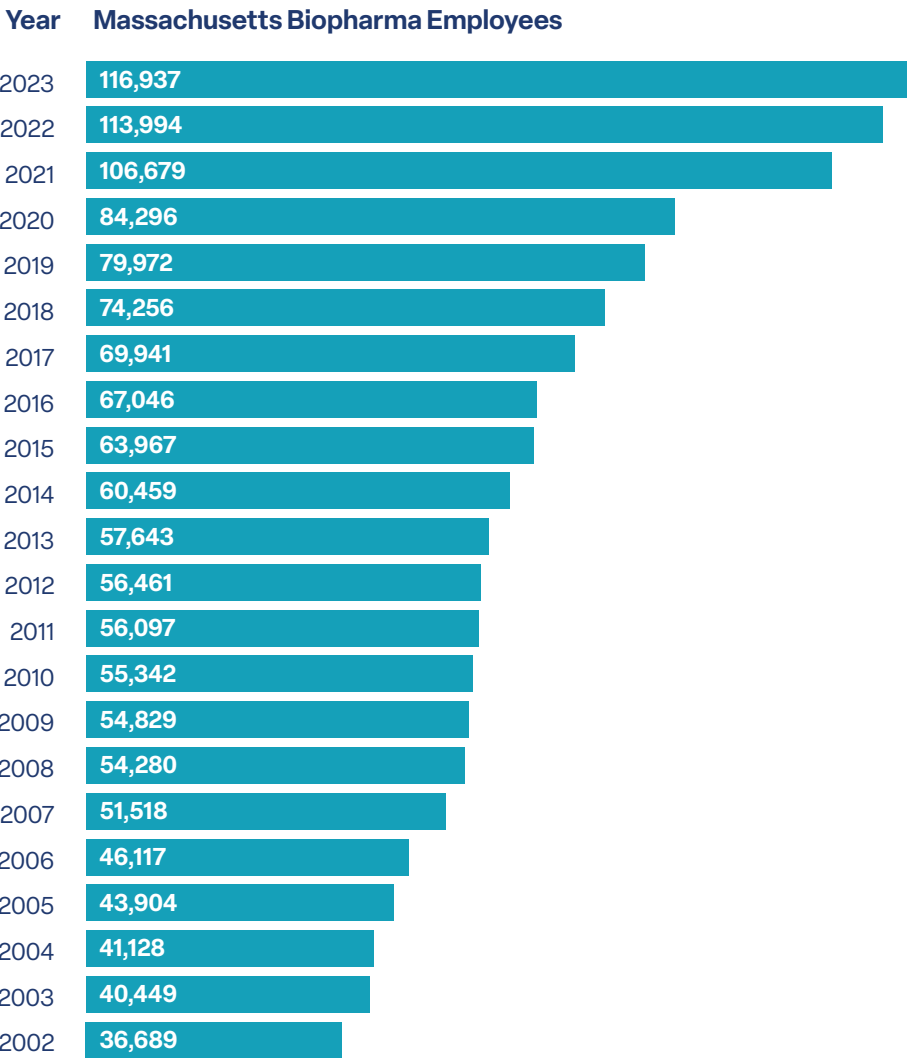


“Massachusetts has the key ingredients that a global biopharmaceutical company needs to be successful in delivering scientific advances to patients—talent, partners, clinics and academic institutions. It’s why Alexion, AstraZeneca Rare Disease has such a strong presence here, and why AstraZeneca is investing

further in the community with a strategic R&D site in Kendall Square. We are here to be contributors, collaborators and community leaders.”

— Tamar Thompson

Head, Corporate Affairs, Alexion, AstraZeneca Rare Disease
Chair, MassBio Board



Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, July 2024

Year-Over-Year Research and Development Job Growth

- Massachusetts’ R&D workforce continued to grow faster than direct competitor states. Massachusetts is just 900 R&D jobs behind California.
- Florida’s workforce is small, though the state is making a play to grow several clusters across the state, centered around University of Florida campuses.
- Nationally, biotech R&D workforce decreased by 0.5%.



“Massachusetts’ wealth of intellectual capital, leading-edge science, and collaborative ecosystem provides an ideal environment for fostering innovative scientific ideas that deliver value and solutions for patients worldwide.

“Novo Nordisk’s U.S. R&D hub aims to significantly contribute to this ecosystem, nurturing talent and driving innovation in cardiometabolic and rare diseases. By forging partnerships with Massachusetts’ academia, hospitals, and biotechs, we aim to uncover groundbreaking ideas. We are dedicated to fulfilling our commitment to redefining health by uniting knowledgeable and inquisitive individuals at Novo Nordisk and in Massachusetts, all driven by the common goal of making a meaningful impact.”

— Marie-Louise Hovgaard-Sveen
Head of US R&D Operations, Novo Nordisk

	2022	2023	Change	Year over Year Change
California	70,465	67,456	-3,009	-4.27%
Massachusetts	64,195	66,554	2,359	3.67%
Pennsylvania	20,161	20,660	499	2.48%
New Jersey	17,805	16,951	-854	-4.80%
North Carolina	16,857	16,620	-237	-1.41%
Maryland	13,030	13,109	79	0.61%
New York	12,413	12,256	-157	-1.26%
Washington	11,138	11,572	434	3.90%
Texas	10,027	10,285	258	2.57%
Florida	4,962	5,239	277	5.58%

Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, July 2024

Year-Over-Year Biomanufacturing Job Growth

- Economic and industry headwinds stalled Massachusetts’ push to grow the biomanufacturing sector, with a loss of just over 2% of the workforce.
- Massachusetts’ growing leadership in advanced modalities, coupled with a friendly state policy landscape and potential federal government resources, provide an opportunity for the Commonwealth to substantially expand its biomanufacturing footprint.



“Our Massachusetts teams embody the state’s history of innovation while advancing the local life sciences industry and giving back to the community. The 2023 FDA approval for commercial production at our new cell therapy facility in Devens, coupled with the opening of a cutting-edge R&D site at Cambridge Crossing, underscores our ongoing commitment to the Commonwealth. This continued investment is a testament to the vibrant and diverse life sciences ecosystem here. We take immense pride in being a part of Massachusetts as we work to discover, develop, and deliver innovative medicines that help patients prevail over serious diseases.”

— **Odile Smith**
Vice President & Devens Site Head, Bristol Myers Squibb

	2022	2023	Total Change	Change
California	47,141	43,641	-3,500	-7.4%
New Jersey	28,068	30,022	1,954	7.0%
North Carolina	24,733	25,811	1,078	4.4%
New York	24,406	24,558	152	0.6%
Illinois	22,702	22,444	-258	-1.1%
Pennsylvania	20,770	19,920	-850	-4.1%
Texas	14,079	14,241	162	1.2%
Florida	11,103	12,000	897	8.1%
Maryland	11,012	10,822	-190	-1.7%
Massachusetts	10,493	10,264	-229	-2.2%

Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, July 2024

Industry Employment: Biopharma

Largest Biopharma Industry Employers in Massachusetts

Rank	Company	Massachusetts Employees
1	Takeda	6,214
2	Moderna	4,400
3	Sanofi	4,326
4	Vertex	3,400
5	Pfizer	2,800
6	Novartis	2,600
7	BMS	2,460
8	Alnylam	2,076
9	AZ/Alexion	1,900
10	Biogen	1,654
11	Abbvie	1,542
12	Foundation	1,100
13	EMD	1,086
14	Merck	944
15	Sarepta	721
16	Ginkgo	700
17	GSK	667
18	Alkermes	574
19	Novo Nordisk	450
20	Amgen	430

Source: MassBio membership reports and surveys conducted June through August 2024.

Industry Investment

Top NIH-Funded States by Total Funding & Per Capita in 2023

- Despite having just 2% of the US population, Massachusetts organizations received 9.3% of all NIH (National Institutes of Health) funding.
- Massachusetts organizations received 10.2% of all research project grants.
- Massachusetts NIH funding has grown by 48% over the last 10 years while its total funding has increased by 70%.

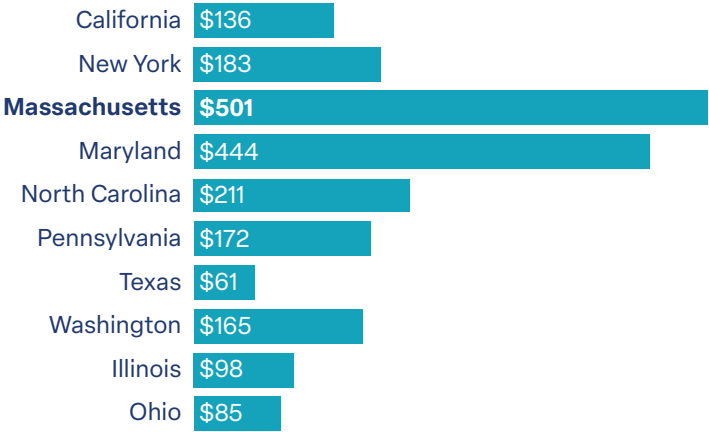


“Massachusetts is home to brilliant scientists solving humanity’s hardest biomedical problems. Their research delivers cures, jobs, and hope. It also brings in federal dollars to the Bay State’s Eds & Meds ecosystem – more per-capita than any other state. Congress should radically increase its funding for peer-reviewed, curiosity-driven research, so that scientists here and everywhere can continue to unveil wonders in this century of biology.”

— **Congressman Jake Auchincloss**
Massachusetts’s 4th Congressional District

State	Number of Awards	Total NIH (National Institutes of Health) Funding
California	9,085	\$5,312,211,239
New York	6,495	\$3,587,207,721
Massachusetts	5,920	\$3,506,447,978
Maryland	2,726	\$2,743,075,600
North Carolina	2,854	\$2,282,364,410
Pennsylvania	4,218	\$2,228,534,071
Texas	3,708	\$1,846,157,473
Washington	1,796	\$1,291,699,502
Illinois	2,368	\$1,233,379,171
Ohio	2,042	\$1,005,799,719
US Total	66,139	\$37,809,370,489

2023 Funding Per Capita



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

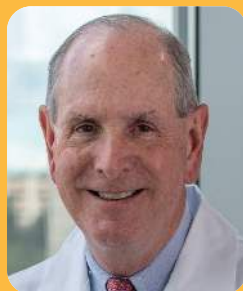
Top SBIR/STTR Awards in 2023

- The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs—America’s Seed Fund—award non-dilutive funding to early-stage startups to advance high-impact, disruptive innovations.
- Massachusetts entities received 11.5% of all SBIR and STTR grants nationally.
- Funding to Massachusetts companies increased by \$8 million from 2022 to 2023.

Organization	Awards	Funding	City
Helixbind, Inc.	7	\$7,041,282	Boxborough
Physical Sciences, Inc	12	\$6,492,330	Andover
Biosensics, LLC	10	\$6,396,980	Newton
Revbio, Inc.	3	\$5,062,544	Lowell
Kephera Diagnostics, LLC	5	\$4,359,007	Framingham
Quell Tx, Inc.	4	\$4,112,786	Cambridge
Reveal Pharma	3	\$4,031,760	Cambridge
Giner, Inc.	4	\$3,018,052	Newton
Ambergen, Inc	3	\$2,970,103	Watertown
Micro-Leads, Inc.	3	\$2,489,353	Somerville
Gel4Med, Inc.	2	\$2,319,996	Brighton
Highland Instruments, Inc.	4	\$2,215,465	Cambridge
Arietis	2	\$1,995,100	Boston
Privo Technologies, LLC	2	\$1,971,956	Peabody
Fluent Biosciences Inc.	2	\$1,921,469	Watertown
Aldatu Biosciences, Inc.	2	\$1,913,058	Watertown
Autoivf, Inc.	2	\$1,885,360	Sudbury
Adeptrix Corporation	2	\$1,870,508	Boston
Altec, Inc.	4	\$1,837,896	Natick
Radiation Monitoring Devices, Inc.	3	\$1,772,087	Watertown

Top Massachusetts-Based, NIH Funded Education and Research Institutes in 2023

- Massachusetts higher education and research institutes received \$1.51 billion in funding from the NIH in 2023, a 2% increase over 2022.
- Massachusetts' share of NIH funding to higher education and research institutes increased from 3.6% to 5%.



“The Commonwealth’s well-earned reputation as a national and international leader in the life sciences, and the presence of world-renowned research universities and institutes, is certainly no coincidence. The rich and vibrant collection of higher education institutions here supports, sustains, and drives our

thriving innovation ecosystem that attracts the best and brightest talent from across the globe who want to be a part of it. A federal commitment to robust research funding ensures that scientific breakthroughs that form the basis for new treatments and therapeutics continue.”

— **Michael F. Collins, MD, FACP**

Chancellor, UMass Chan Medical School

Organization	Awards	Funding	City
Boston University Medical Campus	292	\$196,551,837	Boston
University Of Massachusetts Medical School Worcester	353	\$178,572,402	Worcester
Harvard Medical School	362	\$175,323,024	Boston
Broad Institute, Inc.	112	\$169,015,353	Cambridge
Harvard School Of Public Health	162	\$150,452,875	Boston
Massachusetts Institute Of Technology	261	\$119,533,252	Cambridge
Harvard University	143	\$83,946,222	Cambridge
Tufts University Boston	148	\$77,188,761	Boston
Boston University (Charles River Campus)	171	\$66,124,443	Boston
Northeastern University	107	\$54,713,945	Boston
University Of Massachusetts Amherst	132	\$46,047,111	Hadley
Brandeis University	82	\$38,906,082	Waltham
Joslin Diabetes Center	37	\$21,129,192	Boston
Boston College	46	\$17,268,539	Chestnut Hill
Schepens Eye Research Institute	35	\$15,771,644	Boston
Charles River Laboratories International, Inc.	5	\$15,202,472	Wilmington
University Of Massachusetts Lowell	22	\$12,331,150	Lowell
Whitehead Institute for Biomedical Research	21	\$10,993,667	Cambridge
Forsyth Institute	24	\$10,760,454	Cambridge
Tufts University Medford	32	\$10,005,906	Boston
National Bureau Of Economic Research	23	\$9,928,767	Cambridge
Worcester Polytechnic Institute	16	\$6,683,438	Worcester
University Of Massachusetts Boston	14	\$6,628,913	Boston
Marine Biological Laboratory	23	\$5,808,403	Woods Hole
Boston VA Research Institute, Inc.	8	\$4,821,486	Boston

Source: NIH, Research Portfolio Online Reporting

Industry Investment

Top NIH-Funded Independent Hospitals in 2023

- Massachusetts independent hospitals received 53% of **all funding** to independent hospitals in 2023 – up from 51% in 2022.
- Massachusetts independent hospitals received 54.2% of **all awards** to independent hospitals in 2023.



“Massachusetts’ greatest export is the treatments and cures delivered to patients who come from around the world with hope for healthier tomorrows. Dana-Farber Cancer Institute is proud to be part of the life sciences ecosystem that discovers, develops, and commercializes therapies, and provides the highest quality

and most compassionate care to those with cancer or other diseases. As a researcher, I am keenly aware of the value of NIH funding for physician-scientists; it fuels their research. It also plays an essential role in assuring that Boston is the global hub of patient-centered innovation.”

— **Laurie H. Glimcher, MD**

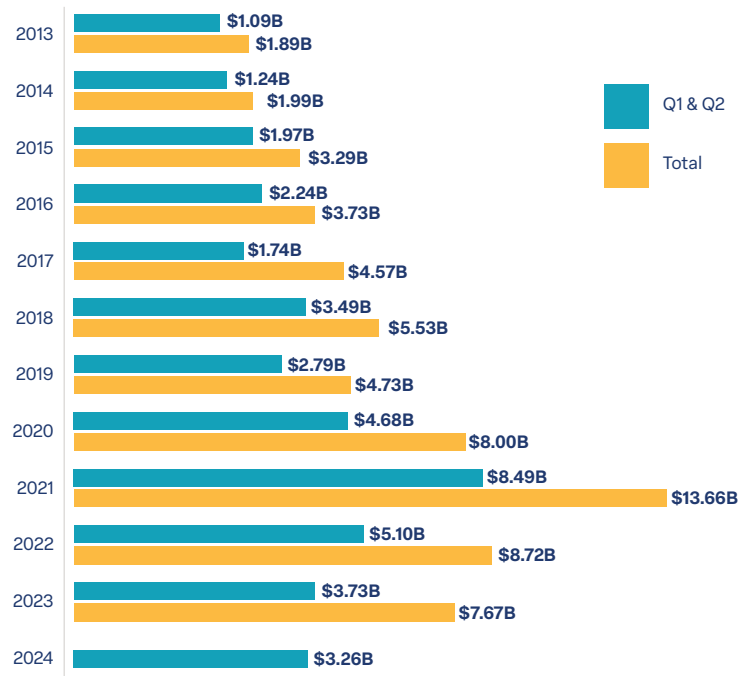
President and CEO, Dana-Farber Cancer Institute

Organization	State	Awards	Funding
Massachusetts General Hospital	MA	1079	\$675,290,582
Vanderbilt University Medical Center	TN	598	\$429,137,303
Brigham And Women's Hospital	MA	676	\$402,980,006
Boston Children's Hospital	MA	439	\$238,774,899
Cincinnati Childrens Hospital Medical Center	OH	311	\$169,625,155
Children's Hospital of Philadelphia	PA	313	\$166,205,625
Dana-Farber Cancer Institute	MA	239	\$163,005,767
Beth Israel Deaconess Medical Center	MA	222	\$126,126,896
Seattle Children's Hospital	WA	152	\$116,047,902
St. Jude Children's Research Hospital	TN	155	\$115,747,062
Cedars-Sinai Medical Center	CA	179	\$102,501,366
New York State Psychiatric Institute DBA Research Foundation for Mental Hygiene, Inc.	NY	112	\$55,055,884
McLean Hospital	MA	77	\$45,331,947
Roswell Park Cancer Institute Corp.	NY	81	\$42,198,208
Rhode Island Hospital	RI	86	\$38,874,543
Children's Hospital of Los Angeles	CA	67	\$35,367,664
Massachusetts Eye And Ear Infirmary	MA	59	\$32,969,806
National Jewish Health	CO	42	\$31,499,396
Lurie Children's Hospital of Chicago	IL	57	\$28,311,862
St. Joseph's Hospital and Medical Center	AZ	18	\$28,299,311
Tufts Medical Center	MA	46	\$27,586,857
Boston Medical Center	MA	58	\$24,916,714
Hackensack University Medical Center	NJ	24	\$20,587,660
Mainehealth	ME	25	\$19,942,006
Miriam Hospital	RI	40	\$16,954,464

Source: NIH, Research Portfolio Online Reporting

Venture Capital Investment: Massachusetts-Headquartered Companies, Q1 and Q2, 2024

- The \$3.26 billion of venture capital (VC) invested in Massachusetts-headquartered companies in Q1 and Q2 of 2024 is a 12.6% drop from the first half of 2023, and the lowest total since 2019.
- Massachusetts-headquartered biopharma companies received 21% of US funding—down from 32% last year—second only to California (45%). New York was third at 9%.
- R&D programs of companies receiving VC funding were focused on oncology (34%), central nervous system (CNS) (12%), and anti-infectives (11%).



Source: Pitchbook, July 2024



“Despite headwinds in the financing market, Massachusetts’ culture of innovation keeps the state at the forefront of the biotech industry. Companies here have access to immense resources, from universities conducting groundbreaking research to a broad network of experienced professionals. Looking to 2025, biotech investors will seek fiscally disciplined companies that can

navigate today’s more discerning environment, and are built on promising science with clear line of sight to value inflection points. The most successful companies are led by focused teams that demonstrate the ability to weather market fluctuations, while leveraging pharmaceutical partnerships as key sources of capital and value creation.”

— **Abbie Celniker, Ph.D.**

Partner, Third Rock Ventures

Top VC Financing Rounds for Massachusetts-Headquartered Companies, Q1 and Q2, 2024

- Ninety-five Massachusetts companies received 95 rounds of funding in Q1 and Q2, down from 109 rounds over the same time frame last year. The average funding round was \$34.3 million, up from \$34.2 million and higher than the national average (\$28.8 million).
- The average seed round for Massachusetts companies was \$10.3 million – down from \$10.5 million.
- The average Series A round was \$57.8 million – up from \$50.9 million.
- In a signal that data-backed investments are still the focus of investors, the average post-Series A round grew to \$119.7 million – up from \$106.5 million.

Organization	Series	Funding Amount (in millions)	City
Zenas BioPharma	Series C	\$200	Waltham
Upstream Bio	Series B	\$200	Waltham
Sionna	Series C	\$182	Waltham
Cerevance	Series B	\$163	Boston
Obsidian Therapeutics	Series C	\$161	Cambridge
FogPharma	Series E	\$145	Cambridge
Diagonal Therapeutics	Series A	\$128	Cambridge
NextPoint	Series B	\$123	Cambridge
Inari	Series F	\$103	Cambridge
Alzheon	Series E	\$100	Framingham
Seaport Therapeutics	Series A2	\$100	Boston
Alys Pharmaceuticals	Seed Round	\$100	Boston
Comanche Biopharma	Series B	\$90	Concord
Exsilio	Series A	\$82	Boston
Kenai Therapeutics	Series A	\$82	Cambridge
Pi Health	Series A	\$73	Cambridge
Progentos Therapeutics	Series A	\$69	Watertown
Delphia	Series A	\$67	Cambridge
Nocion Therapeutics	Series B	\$62	Watertown
Remix Therapeutics	Series C	\$60	Watertown

Source: Pitchbook, July 2024

Location of VC-Backed Companies, Q1 and Q2, 2024

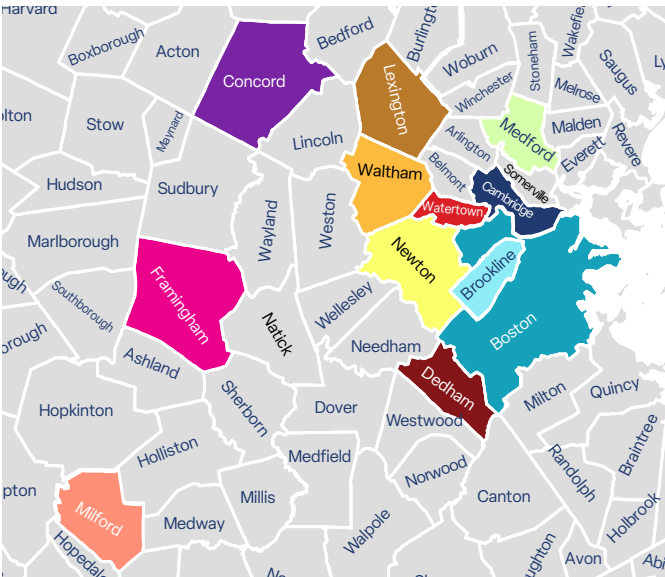
- Sixty-five percent of VC funding in Q1 and Q2 went to companies outside of Cambridge.
- Up from 55% in the first half of 2023.
- 12 municipalities had 1% of the funding – up from 8 last year.



“What the life sciences industry does is take someone who has a dire diagnosis or a rare disease and give them hope for more time. It also gives cities and towns an opportunity to be part of that life-changing work while reaping economic benefits. I’ve seen it at the Gloucester Marine Genomics Institute, where they are training next gen biotech workers, discovering revelations about human treatments by learning about marine life DNA, and serving as an anchor for economic development in the Cape Ann region. Ensuring that the Commonwealth lengthens our lead globally means lengthening the lives of patients.”

— **State Representative Ann-Margaret Ferrante**
5th Essex District, Co-Chair, Massachusetts Life Sciences Caucus

MA VC Investment by Municipality



Municipality	Total \$ Invested (in millions)	% of MA Total
Cambridge	\$1,147	35%
Boston	\$688	21%
Waltham	\$645	20%
Watertown	\$301	9%
Framingham	\$136	4%
Concord	\$90	3%
Milford	\$42	1%
Lexington	\$25	1%
Dedham	\$24	1%
Medford	\$24	1%
Newton	\$24	1%
Brookline	\$23	1%
Other	\$90	3%
Grand Total	\$3,260	100%

Source: Pitchbook, July 2024

Massachusetts-Headquartered Biopharma IPOs (Initial Public Offerings), Q1 and Q2, 2024

- Two Massachusetts-headquartered biotechs went public in the first half of 2024, matching the total for all of 2023.
- Seventeen companies went public nationally in the first half of 2024, just below the 19 that went public all of last year.
- The XBI index closed at \$92.71 on June 28, 2024, a dramatic increase from its lowest point in 2023: \$64.12 on Oct 27, 2023.



Location	Date	Deal Size	Initial Price Per Share	Price Per Share at Close on 6/30/24:	%	NASDAQ
Burlington	2/2/24	\$110M	\$15	\$4.47	-70%	GUTS



Location	Date	Deal Size	Initial Price Per Share	Price Per Share at Close on 6/30/24:	%	NASDAQ
Boston	6/7/24	\$136M	\$17	\$23.26	37%	RAPP



“Rapport is proud to be a part of the renaissance in CNS that is being driven by patient need. What we have been able to put before investors and now shareholders are a strong pipeline in precision neuromedicine and tangible progress in our clinical programs, and just as important, a talented team with a track record of success. That’s the recipe that matters right now. Though the public market for biotech remains in flux, transformational science always finds a way to advance because patients desperately need more effective treatments.”

— **Abe Ceasay**
CEO, Rapport Therapeutics

Top Massachusetts Biopharma Mergers and Acquisitions, Q1 and Q2, 2024

- Through Q2 of 2024, 17 Massachusetts companies have been acquired for a disclosed total of \$28.9 billion. Both numbers are up from 11 deals for \$10.5 billion over the same time period in 2023.
- Through Q2 of 2024, Massachusetts companies have acquired 16 companies for a disclosed total of \$9.73 billion. Both numbers are up from 7 deals for \$649 million over the same time period in 2023.

MA HQ Companies Acquired in Q1 and Q2, 2024

Aquiring Company	Target Company	Amount
 Bristol Myers Squibb	 KARUNA THERAPEUTICS	\$13.8B
abbvie	immunogen	\$10.1B
 ONO PHARMA	 deciphera	\$2.4B
 GSK	AIOLOS BIO	\$1.4B
 NOVARTIS	IFMDUE 	\$835M
abbvie	celsius	\$250M

MA HQ Companies Making Acquisitions in Q1 and Q2, 2024

Aquiring Company	Target Company	Amount
 VERTEX	 ALPINE ImmuneSciences™	\$4.9B
 ThermoFisher SCIENTIFIC	 Olink	\$3.1B
 Biogen	 HI-Bio	\$1.15B
 BRUKER	nanoString 	\$392.6M
 Tome BIOSCIENCES	 Replace Therapeutics	\$185M

Licensing Agreements Involving Massachusetts-Based Companies, Q1 and Q2, 2024

- Massachusetts-based companies were involved in 18 licensing deals in Q1 and Q2 of 2024 for a total value of \$14.8 billion, with upfront cash payments of \$596.5 million.
 - A majority of these deals are made to access pre-commercial innovation happening in Massachusetts-based companies.
- For comparison, in the first half of 2023, there were 16 licensing deals for a total value of \$8.7 billion, with upfront cash payments of \$513.5 million.
- In all of 2022, just 11 licensing deals were entered into for a total value of \$9.8 billion.

Company A	Company B	Deal Value (millions)	Upfront Payment (millions)
F. Hoffmann-La Roche Ltd.	Moma Therapeutics Inc.	\$2,066	\$66
Bristol-Myers Squibb Co.	Repertoire Immune Medicines Inc.	\$1,865	\$65
F. Hoffmann-La Roche Ltd.	Ascidian Therapeutics Inc.	\$1,842	*
Novartis Pharma AG	Voyager Therapeutics Inc.	\$1,300	\$120
Sanofi	Fulcrum Therapeutics Inc.	\$1,055	\$80
F. Hoffmann-La Roche Ltd.	Remix Therapeutics Inc.	\$1,042	\$30
Avenzo Therapeutics Inc.	Allorion Therapeutics Inc.	\$1,040	\$40
Xyphos Biosciences Inc.	Kelonia Therapeutics Inc.	\$875	\$40
Merck KGaA	C4 Therapeutics Inc.	\$756	\$16
Gilead Sciences Inc.	Xilio Therapeutics Inc.	\$648	\$44
Eli Lilly and Co.	QurAlis Corporation	\$622	\$45
Almirall SA	Eloxx Pharmaceuticals Inc.	\$473	\$3
Tenacia Biotechnology (Shanghai) Co. Ltd.	Praxis Precision Medicines Inc.	\$279	\$15
HilleVax Inc.	Chengdu Kanghua Biological Products Co. Ltd.	\$271	\$15
Rhythm Pharmaceuticals Inc.	LG Chem Ltd.	\$245	*
Janssen Biotech Inc.	Elektrofi Inc.	\$173	\$18
Pepper Bio, Inc.	G1 Therapeutics Inc.	\$135	\$0
Tome Biosciences Inc.	Genevant Sciences Ltd.	\$114	*
		\$14,800	\$597

* The upfront payments were not initially available through the data source.

Source: GlobalData Plc via Locust Walk (deal value of more than \$50 million)

Note: Companies in BOLD are located in Massachusetts.

Drug Development Pipeline

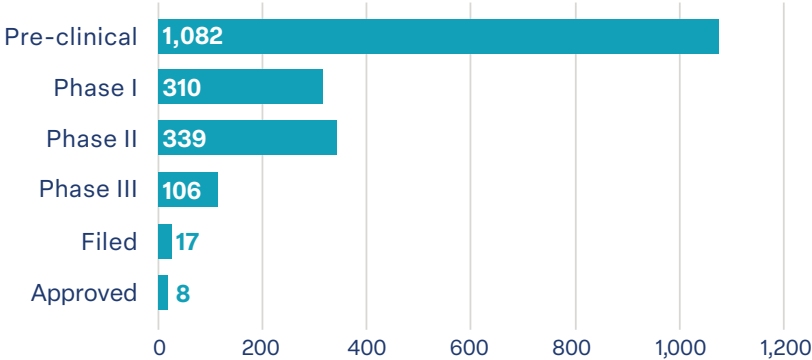
Drug Development Pipeline

Total Pipeline

- The drug pipelines of Massachusetts-headquartered companies make up 15.2% of the US pipeline and 6.4% of the global pipeline—up from 14.9% and down from 6.5%, respectively, in last year’s report.
- The most common therapeutic areas of the Massachusetts pipeline are oncology 35%, CNS 15%, and anti-infectives 9%.

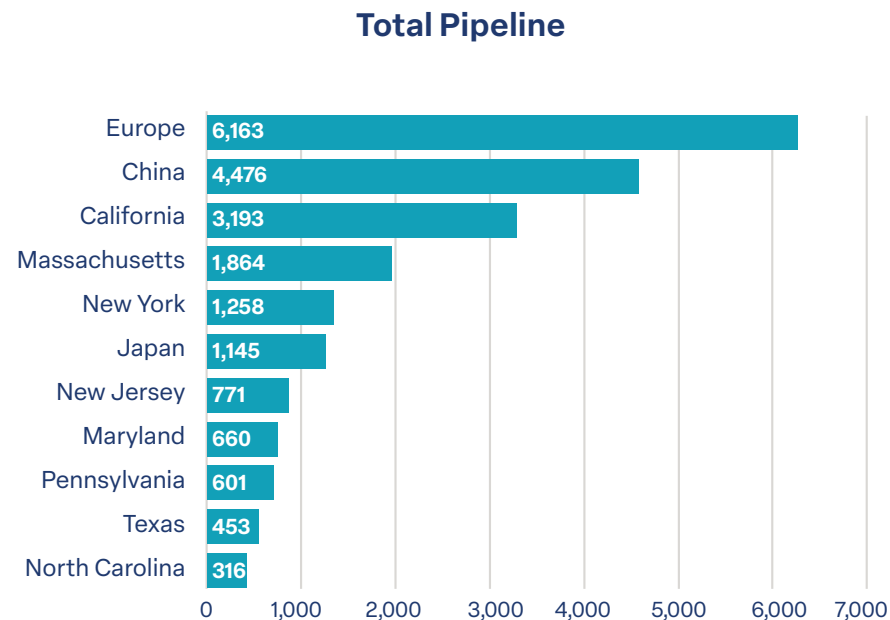
Therapeutic Category	% of Massachusetts-Headquartered Drug Pipeline
Oncology	35%
Central Nervous System	15%
Systemic Anti-infectives	9%
Various	6%
Gastro-Intestinal	6%
Immunomodulators	6%
Musculoskeletal	5%
Sensory Organs	4%
Respiratory	4%
Cardiovascular	3%
Blood	3%
Endocrine	2%
Dermatology	2%
Genito-Urinary	2%
Grand Total	100%

MA-Headquartered Company Pipeline by Phase



Source: Evaluate, July 2024

Regional Comparison



Source: Evaluate, July 2024



“There is no better place in the world to invest in biotech innovation than here in Massachusetts. We have seen so many vital advances in medical science that are transforming the way that we can treat disease coming out of the Commonwealth. We choose to make Massachusetts our home because of the talent and know-how from the local academic communities, trade schools, and surrounding biotechnology companies, the financial support of the Boston-based investment community, and the supportive environment fostered by the state. These attributes make me incredibly optimistic about the long-term future of our extraordinary biomedical ecosystem.”

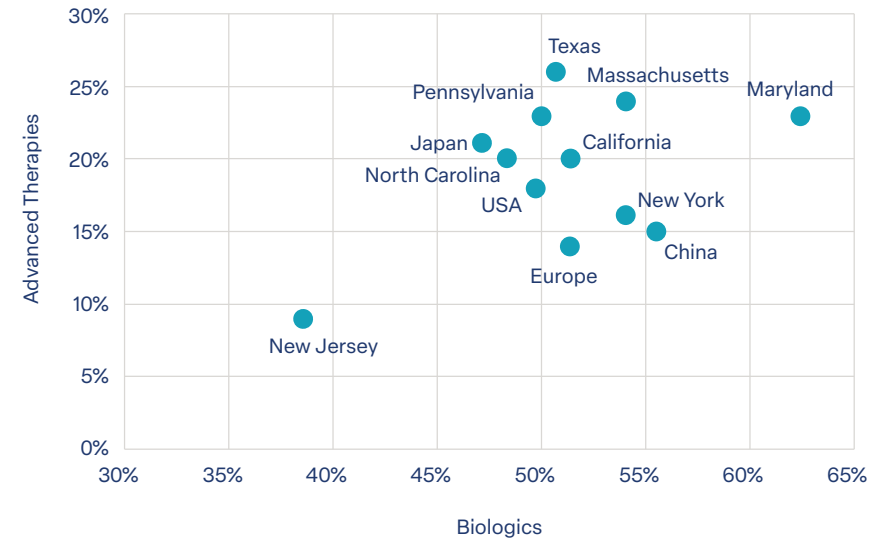
— **Yvonne Greenstreet, MBChB**
CEO, Alnylam Pharmaceuticals

Drug Development Pipeline

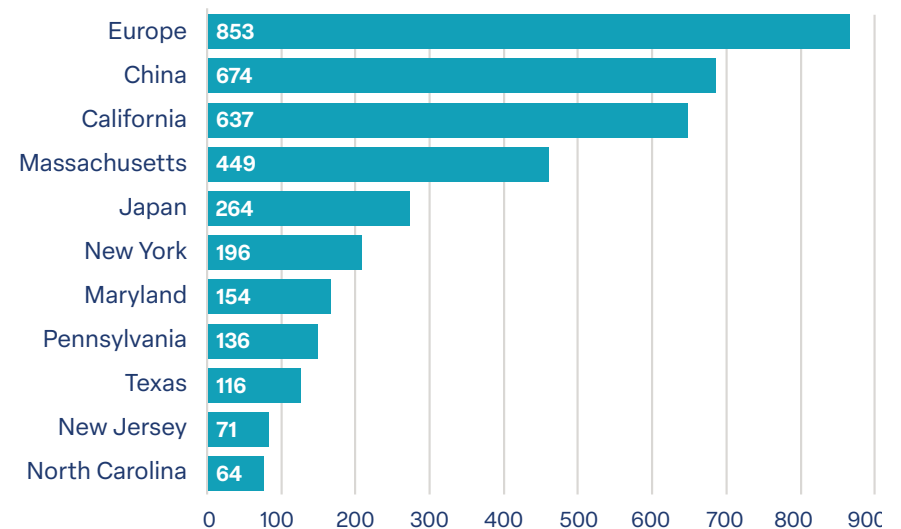
Total Advanced Modalities in Pipeline

- Massachusetts has a higher percentage of advanced therapies in its pipeline than any direct competitor, including the self-proclaimed 'Cellicon Valley' (Pennsylvania).
- With a strong pipeline in biologics, specifically advanced therapies, Massachusetts is primed for continued expansion into biomanufacturing.

Advanced Modalities and Biologics as a Percentage of Total Pipeline



Total Advanced Modalities in Pipeline



Real Estate and Regionalization

Jobs By County

- Though manufacturing jobs were down statewide and across several counties, Worcester County continued to see an increase (11.8%), boosting its case to be a national hub for drug production.
- The substantial 19.6% increase in R&D jobs in Suffolk County demonstrates the growth of the biopharma clusters in Boston’s Seaport and other neighborhoods.



Essex

	2022	2023	Change	% Change
R+D	1,226	1,243	17	1.4%
Biomfg	1,064	975	-89	-8.4%



Middlesex

	2022	2023	Change	% Change
R+D	44,306	45,896	1,590	3.6%
Biomfg	4,462	4,316	-146	-3.3%



Norfolk

	2022	2023	Change	% Change
R+D	1,567	1,696	129	8.2%
Biomfg	1,056	1,003	-53	-5.0%



Suffolk

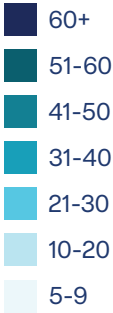
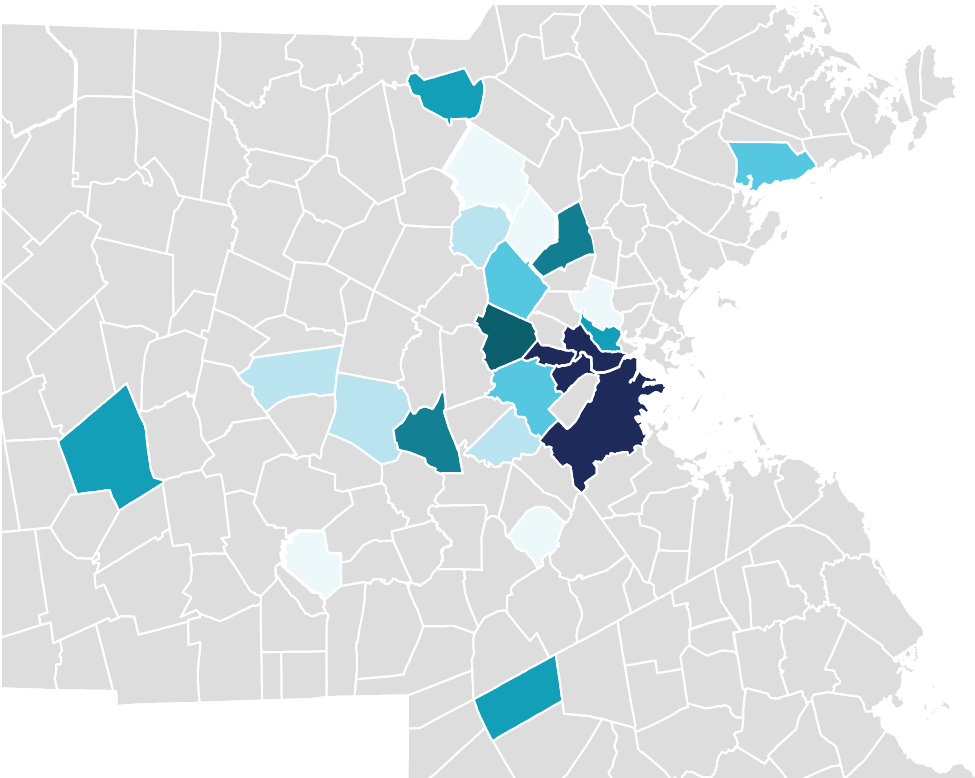
	2022	2023	Change	% Change
R+D	11,139	13,320	2,181	19.6%
Biomfg	884	616	-268	-30.3%



Worcester

	2022	2023	Change	% Change
R+D	2,656	2,793	137	5.2%
Biomfg	2,369	2,648	279	11.8%

Density of MassBio Membership of Life Sciences Companies

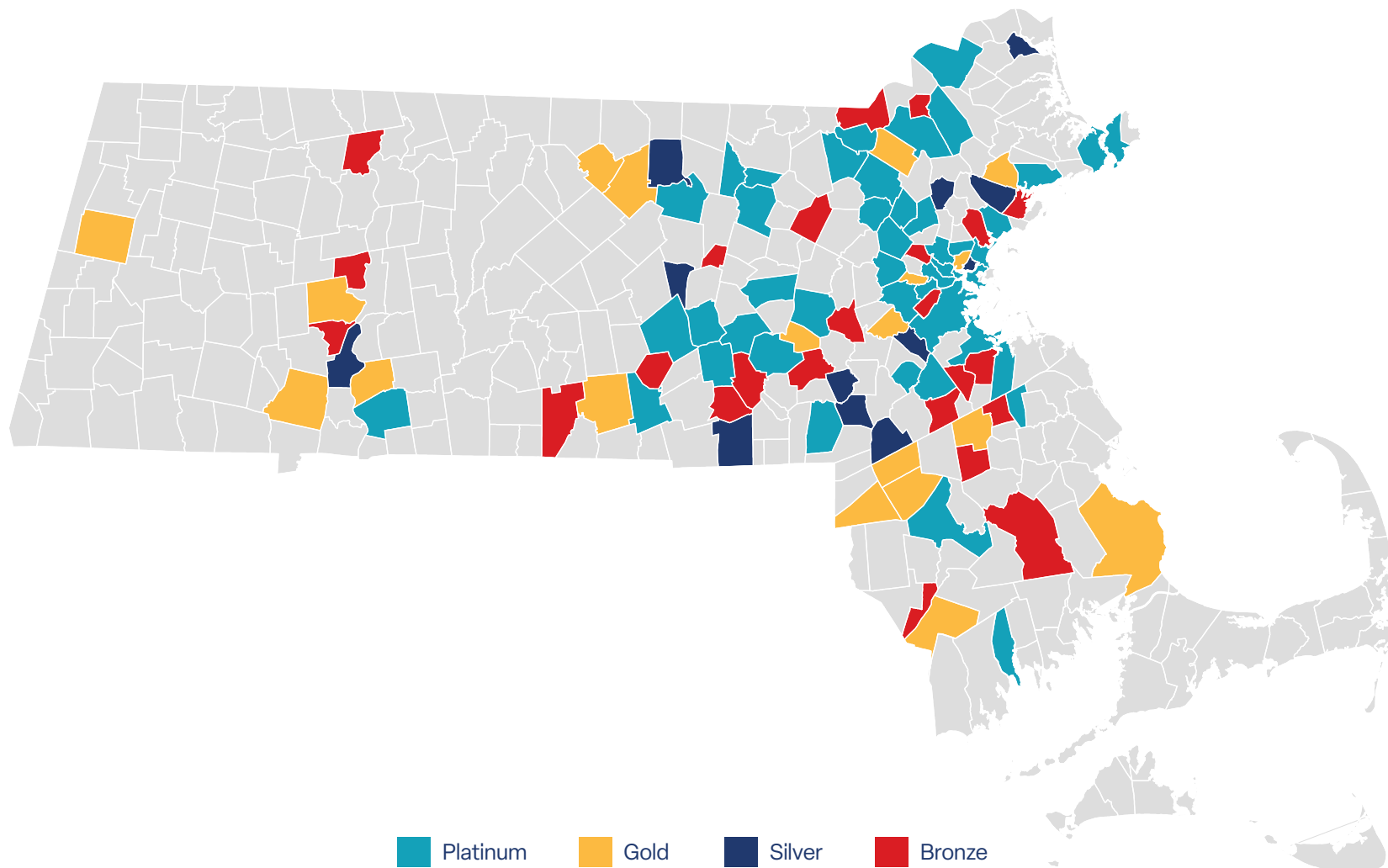


Cambridge	377	Lexington	26
Boston	154	Beverly	24
Watertown	66	Bedford	14
Waltham	57	Needham	11
Natick	48	Framingham	10
Woburn	47	Marlborough	10
Lowell	39	Billerica	8
Worcester	39	Burlington	7
Mansfield	37	Milford	6
Somerville	34	Medford	5
Newton	28	Norwood	6

BioReady® Communities

- BioReady® is a rating system developed by MassBio to determine a municipality's readiness to host biotechnology facilities based on the community's zoning practices and infrastructure capacity.

- BioReady® rates these communities in four tiers from Bronze to Platinum.
- Currently, 95 of Massachusetts' 351 cities and towns are BioReady®: 40 Platinum, 20 Gold, 11 Silver, and 24 Bronze.



www.massbio.org/bioready

Total Life Sciences and GMP Inventory

- Total lab and manufacturing space in Massachusetts has grown to 62.1 million square feet (SF).
- Though vacancies have reached an all-time high, additional supply was needed after availability bottomed out at an all-time low of 0.7% just two years ago.
- Having optionality has allowed companies to lease space that is more appropriate for their needs and stage of business growth.
- Construction is underway on between 5 and 11.8 million SF of R&D space and an additional 850,000 SF of GMP space.



"In 2024, Boston's Seaport continues to be a focal point for biopharma innovation and organizational growth, underscoring Massachusetts' global prominence in the field. We've seen ribbon cuttings for new corporate headquarters and research institutes, groundbreakings for existing corporate residents doubling down on space, and relocations both domestic and international.

These strategic moves highlight a shift towards establishing and growing innovation hubs in vibrant, amenity-rich neighborhoods instead of traditional corporate campus settings, offering companies a distinct advantage in attracting top talent. The increasing focus by the most innovative research and development organizations on employee-centric, lifestyle-oriented, transit-rich neighborhoods is a critical competitive advantage for Massachusetts."

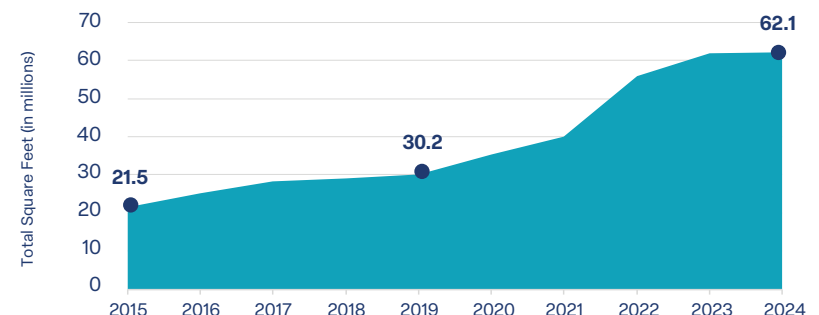
— Yanni Tsipis

SVP, Development-Fenway/Seaport, WS Development

Largest Leases of 2023

Tenant	Town	Type	Size (SF)
SmartLabs	Cambridge	Lab	172,000
Dicerna (Novo Nordisk)	Waltham	Lab	166,000
Orbital Therapeutics	Cambridge	Lab	166,000
GSK	Cambridge	Lab	155,000
Vericel	Burlington	MFG	120,000
Alexion Pharmaceuticals, Inc.	Cambridge	Lab	70,409
Astellas	Cambridge	Lab	63,000
Voyager Therapeutics	Lexington	Lab	61,307
Editas	Cambridge	Lab	59,783
Alexion	Cambridge	Lab	59,161
Portal Innovations	Boston	Lab	58,000
Kiniksa Pharmaceuticals	Lexington	Lab	55,924
CubicPV	Bedford	Lab	53,000
Lyra	Waltham	Lab	52,000
Eterna Therapeutics	Cambridge	Lab	52,000
Area Therapeutics	Cambridge	Lab	49,898
Arena BioWorks	Cambridge	Lab	47,649
Visterra	Waltham	Lab	43,736
Evolved by Nature	Needham	Lab	42,779
Saliogen	Lexington	Lab	42,092
Lantheus Medical	Bedford	Lab	41,000
Eyepoint	Northbridge	MFG	40,000
Ocular Therapeutics	Bedford	MFG	20,445

Total R+D and Manufacturing Square Footage



About MassBio

MassBio's mission is to advance Massachusetts' leadership in the life sciences to grow the industry, add to the healthcare system, and improve patient lives. MassBio represents the premier global life sciences and healthcare hub, with 1,700+ 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

MASSBIO

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.

For more information, contact **Ben Bradford**, Head of External Affairs,
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