

Big4Bio

BOSTON

YEAR IN REVIEW

2020



Welcome



2020 will be remembered as the year that everyone would like to forget. But the life sciences sector provided one of the few rays of hope in a very dark time.

Bringing not one but two vaccines to market in less than ten months is an unprecedented, if not

miraculous, feat. Researchers at companies large and small pivoted their diagnostic, vaccine and therapeutic programs to address the challenges of the pandemic. Venture investors stepped up, demonstrating their faith in the industry by more than doubling their investments in Boston life sciences companies.

This report crunches the numbers that tell the story of a sector rising to the occasion. As always, we couldn't do it without our data partners DealForma and JLL. We also thank MassBio for sharing their insights.

Stay tuned to Big4Bio's daily summary of industry newsletters [[Big4Bio.com](#)] to see how the pandemic, hopefully, plays itself out and how the industry moves forward.

A handwritten signature in black ink.

Tilton Little, Executive Director, Publisher
Big4Bio



Industrialist Henry J. Kaiser is remembered for the adage, "Problems are only opportunities in working clothes." Perhaps it is fitting that the man who transformed healthcare delivery coined the phrase that so aptly sums up the life sciences sector in 'the year that has been like no other'.

For the life sciences industry, 2020 delivered both problems and opportunities in spades. Innovation and investment soared as the world confronted a pandemic the likes of which hasn't been seen in a century. Moderna, a previously stealthy Boston biotech company, became a household name. Diagnostics became sexy. Infectious disease therapeutics made headlines.

Crises can create sea-changes. The pandemic has spurred an explosion of innovation that, with hope, will be maintained well beyond the current crisis. But the pandemic has also put a spotlight on the industry that won't disappear after the current crisis. The industry needs to prepare for a new reality where they will be subject to much more public scrutiny.

For more than a dozen years, I have helped life sciences companies take control of their messaging and communicate with stakeholders who sometimes have competing or conflicting agendas. I can help you manage the new realities you may face in the coming year. To learn more, visit [www.KMAandCo.com](#) or email me at cassie@KMAandCo.com.

A handwritten signature in black ink.

Cassie Arnold, Founder
KMA & Company

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Life Science Industry Market Facts

Overview

- Boston saw an increase in the number of life sciences companies, the number of employees and the average salary of those employees in 2020, but it was not enough to keep up with the growth of companies and workforce in San Francisco Bay area, which took the top spot among our Big4Bio markets this year.
- In terms of salary, Boston leads all of the Big4Bio markets, just beating out San Francisco. Thanks to the strength of its academic medical centers, Boston continues to enjoy a big advantage in NIH funding taking in more than twice as much NIH funding as the second-place region, San Francisco.



2,842
Companies



115,942
Employees



\$136,972
Average Salary



5.5%
YOY Increase



23.3%
5-year Employment Growth



23%
5-year
Enterprise Growth



\$2.8B
NIH Funding



27.3m sq ft
Real Estate Inventory



6%
Lab
Vacancy Rate



\$69.31/sq ft (NNN)
Rest per Sq ft

(Data Source: JLL)

Top NIH Recipients (by number of grants)

885

Massachusetts General Hospital

556

Brigham and Women's

338

Boston Children's Hospital

Top Covid-19 Stories

Given the predominance of COVID-19 news coverage in 2020, we have broken out our ranking of the top Big4Bio stories of the year into COVID-19 and non-COVID-19 related stories. As it happens, Moderna tops both lists. Other stories receiving the most click-throughs include a biotech conference that became a superspreader event and the acquisition of Boston-based Alexion by AstraZeneca.

1. COVID-19

Moderna's COVID-19 Vaccine Triggers Immune Response in Older Adults

In August, a phase 1 study of Moderna's COVID-19 vaccine showed that older adults responded well to the experimental vaccine.

[Full Article >](#)

Boston Superspreader Conference Led to Over 300,000 Covid-19 Coronavirus Cases

A new study showed how a February 2020 biotech conference in Boston became a superspreader event.

[Full Article >](#)

Moderna Announces First Participant Dosed in NIH-led Phase 1 Study of mRNA Vaccine (mRNA-1273) Against Novel Coronavirus

In March, Moderna announced it had initiated its phase 1 trial for a vaccine for COVID-19.

[Full Article >](#)

'The Biological Event Of Our Lives': Boston Biotech Unicorn Dives Into Mass Coronavirus Testing

In November, Boston-based Gingko Bioworks ramped up with an eye to processing thousands of COVID-19 tests a day.

[Full Article >](#)

2. Non-COVID-19

This mysterious \$2 billion biotech is revealing the secrets behind its new drugs and vaccines

In a March article, Science profiled how Moderna's messenger RNA-profiled technology is being used to develop new therapeutics and vaccines.

[Full Article >](#)

AstraZeneca to buy Boston biotech Alexion for \$39 billion

In December, AstraZeneca announced plans to buy Alexion in a bid to bolster its drug portfolio in areas such as the treatment of blood disorders.

[Full Article >](#)

Bristol Myers to lease large Cambridge R&D facility

In August, BMS announced it would join Sanofi, Philips North America and Cerevel Therapeutics in a mixed-use campus in East Cambridge.

[Full Article >](#)

Head of Mass. biotech industry group MassBio to step down

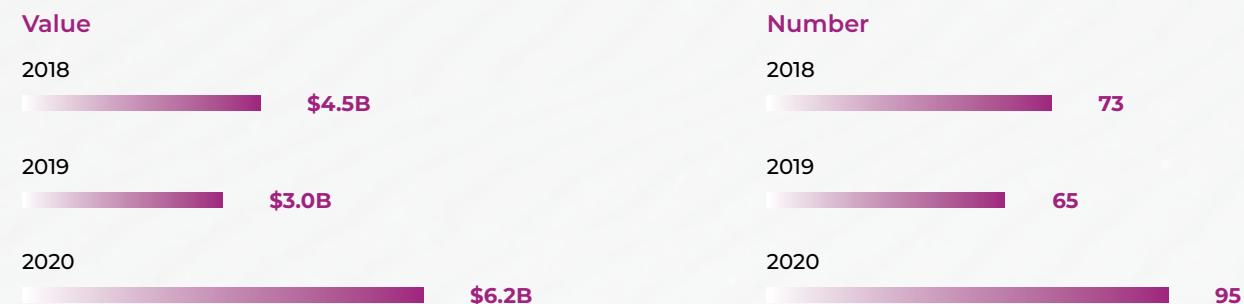
In December, Bob Coghlin announced he would step down from his role leading the Massachusetts Biotechnology Council in early 2021.

[Full Article >](#)

Financings

Venture investment in the U.S. made an impressive recovery in 2020 after a down year in 2019 in terms of both the number of deals and the amount invested. Venture investment more than doubled from just over \$20 billion in 2019 to \$32.3 billion in 2020. However, early-stage rounds continued their gradual slide from \$1.6 billion in 2018, to \$1.5 billion in 2019, to \$1.4 billion last year.

Boston Area Venture Rounds (Biopharma, Medtech, Diagnostics)



All US Healthcare and Life Sciences Venture Rounds



Boston Seed and Series A Rounds (Biopharma, Medtech Diagnostics)



Top three deals

- Bioinformatics company XtalPi raised the largest round of the year in the Boston area. The \$318 million Series C round was completed in September.
- Thrive Early Detection, a cancer diagnostics company, raised \$257 million Series B round in July.
- Atea Pharmaceuticals, an anti-viral company working on an oral treatment for COVID-19, took in a \$215 million Series D round in May.

M&A

The biggest M&A transaction of the year came in mid-December when AstraZeneca announced it would acquire Alexion for \$39 billion in a deal that will augment the British company's portfolio of treatments for rare diseases.

The second and third largest deals of the year came in at \$2.15 billion and \$2.1 billion respectively. Exact Sciences announced a deal to buy Thrive Earlier Detection for \$2.15 billion in October. The deal will strengthen Exact Sciences' blood-based multi-cancer screening test platform.

Novo Nordisk's acquisition of Corvidia Therapeutics includes an upfront payment of \$725 million and up to \$1.375 billion in potential milestone payments.

(Data Source: DealForma)

2021 Outlook

From MassBio

At the beginning of 2020, we certainly did not expect to be facing the outbreak of COVID-19. However, despite the catastrophic impact the pandemic has had on the global economy and public health, the resilience of the life sciences industry has never been more profound. As we look ahead to 2021, we continue to face a high level of uncertainty about the pandemic and economic recovery, but there is a renewed sense of opportunity for our industry and patients. I expect we will emerge from 2020 stronger than ever before.

Biotech IPOs

In less than 12 months, the life sciences industry developed two leading candidates for a COVID-19 vaccine. This success and record-breaking speed instilled greater confidence in our industry, further demonstrating its value to investors, patients, and the healthcare system as the entity that will solve the world's greatest unmet medical needs. I expect this to have a lasting impact on biotech IPO valuations in 2021 as more investors continue to recognize this critical role.

In Massachusetts, we saw double the number of biotech IPOs in 2020 compared to 2019. I predict the IPOs from Massachusetts biotech companies will continue to be successful as our industry doubles down on efforts to address some of the toughest medical challenges in the world, but we must also consider how many of these investors are in it for the long-haul. On [Episode 4 of MassBio's State of Possible Podcast](#), Jeremy Levin, Chairman & CEO, Ovid Therapeutics points out that when the market rises a host of new investors will come in, but the minute there is an issue they are the first to walk away. After all, biotech funding is not for the risk-averse.

COVID-19 Vaccine Pipeline

Despite the vaccine frontrunners who have already begun distributing COVID-19 vaccines or expected to do so by year's end, there will still be a market for the numerous candidates still in development. Dr. Anthony Fauci recently stated that all Americans could be vaccinated by spring 2021, but developing countries likely will not receive enough vaccine doses until [2023 or 2024](#). No one or even two companies can produce enough vaccines to inoculate the global population in one year, so we expect there will continue to be a growing market for COVID-19 vaccines. It's also possible that certain vaccines will work for certain populations, requiring more options. And, given the speed at which these vaccines have been developed, long-term immunity remains uncertain, creating market potential for booster shots.

The Future of Vaccine Investment

COVID-19 is not and will not be the last pandemic, but we hope it has revitalized the importance of vaccine investment. The public is more aware of the value of vaccines than ever before, which could result in increased interest and demand for vaccine research in other disease areas and viruses. Both leading COVID-19 vaccine candidates rely on mRNA technology, which hasn't been used for vaccines before, and have reported efficacy of roughly 95%. This will likely evolve the role of mRNA in vaccine development moving forward.

Equity, Diversity, and Inclusion

One of the more positive outcomes I expect from this pandemic is a long overdue push to embrace and improve equity, diversity, and inclusion (ED&I) in our industry and across the country. COVID-19 has disproportionately affected minority populations, spotlighting health inequities that have plagued the healthcare system for decades. I expect more companies will react to this and work to rebuild trust with these populations by improving access to quality healthcare, diversifying clinical trials, and creating clear pathways for employees from diverse backgrounds in the life sciences to reach leadership positions. This year, MassBio expanded its [ED&I initiative](#) and we look forward to working with our vast membership in 2021 and beyond to create lasting change in the life sciences.

This was one of the most disruptive years we've ever seen, but there is a light at the end of the tunnel and science will lead us toward it. As the biopharma industry continues to innovate in incredible ways, we must embrace the success that has come out of this pandemic and learn from our mistakes. There is a real opportunity to build biomanufacturing facilities next year and into the future so we can capitalize on the potential ahead and mitigate future supply chain disruptions. Through this, we can help sustain the legacy of the life sciences and look forward to the next five years, which, without a doubt, will be greater than the last five. 2021 will not be without its challenges, but the future for patients and our industry is brighter than we could have ever imagined.

Summary

2020 saw record levels of investment and innovation. It also saw a divisive presidential election, economic turmoil, and a social justice awakening.

After a year like 2020, it seems foolhardy to make predictions, but here goes. A Biden administration should bring healthcare and drug pricing reform, now informed by the experience of the pandemic. That will be a focus on the resilience of both our healthcare delivery system and pharmaceutical and device supply chain. The concept of 'equity' will play a prominent role in all policy decisions.

The life sciences sector may not enjoy the unprecedented levels of funding it saw in 2020, but the momentum of the last year should ensure investment remains at historically high levels. Generalist investors who have avoided the sector in the past will be more comfortable as a result of all of the visibility the sector and the nuts of bolts of drug development and commercialization has received during the pandemic.

But that increased visibility brings its own challenges. A bright light has been shown on the 'sausage making' of clinical trials and drug development. Going forward stakeholders from politicians to administrators to patients will expect and demand more visibility into, and influence over, how therapies are developed and brought to market.

Year-in-Review Data and Information Partners





Wow, what a year thinking back over the past 12 months. As a company we quickly went into an action as the world around was in such a state of upheaval. So, I thought I would share some of our year's accomplishments and how remarkable it's been.

After we shut down the office on March 12th, we moved seamlessly into virtual mode without missing a beat. One thing we did almost immediately was to create and sustain a community of leadership in thought and action. On March 18th, one week after our shut down, we began weekly town halls to create an environment for peers to share ideas on how to navigate the challenges. We continued our tradition of holding monthly Clinops breakfasts and moved our Speaker Series virtual. The growth and collaboration in our community was astounding. Over the course of the past 8 months, we held 35 virtual events with over 3000 attendees as we shared insights on navigating the pandemic!

We created a new offering to respond to the pandemic supporting our clients who were impacted by the clinical trials interruption. We have been working with leading clients who have embraced the goal of resilient clinical trials with a focus on data access and analytics, decentralized trial technology and services, and risk management, and we joined Decentralized Trial & Research Alliance as a founding member to bring technology into mainstream practice.

Our clients sought our expertise on more than 30 COVID related programs and efforts, and our work has paved the way for 6 FDA approvals this year alone, bringing new treatments for multiple types of cancers, cardiovascular, ultra-rare and rare diseases to patients without treatment.

Our efforts will never stop as we continue to support our community and push innovation forward!

Laurie Halloran
CEO, Halloran Consulting

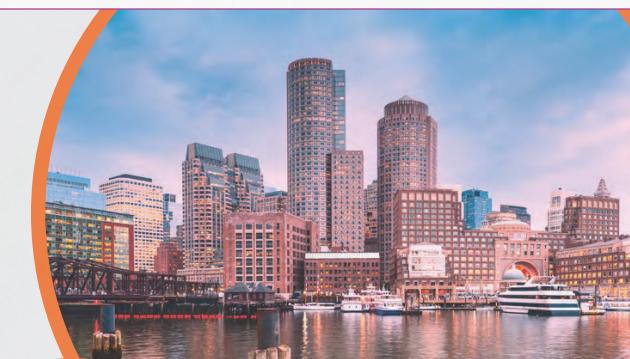


In Mid-2021 **Explora BioLabs** Comes to BOSTON

Pre-built, Ph.D.-staffed, regulatory-compliant vivarium space and services: in mid-2021, Explora BioLabs brings its 16+ years of Vivarium-as-a-Service™ expertise to Boston biotechs.

Explora's turnkey OnDemand vivarium solutions allow for studies to be initiated in as little as two weeks—faster than the nearest competitor.

Boston biotechs, come see what your West Coast colleagues have been raving about!



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