Massachusetts
LIFE SCIENCES CENTER

Y 2022 Annual Report

Innovation

Business Development

Regionalization

Massachusetts
LIFE SCIENCES CENTER

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Andre Terrell
Executive Business Administrator & Operations Manager

Fiscal Year 2022 Highlights

$12.5 million invested in the Workforce Development Capital Grant program.

$5.67 million total investment in Women's Health, Data Science, and Novel Therapeutics over 11 institutions.

$50 million leveraged in matching funds by recipient institutions and partners through the Research Infrastructure program.

17,441 students served through STEM teacher and professional development program.

1,581 new life sciences jobs through the Tax Incentive program. 28 companies are expanding outside Boston/Cambridge.

Since Inception

$5.3 billion leveraged investments generated in the state.

16,000+ jobs created in Massachusetts through various Center programs.

5,844 college and high school internships funded at more than 960 companies.

261 public high schools and middle schools served through STEM equipment and professional development grants.

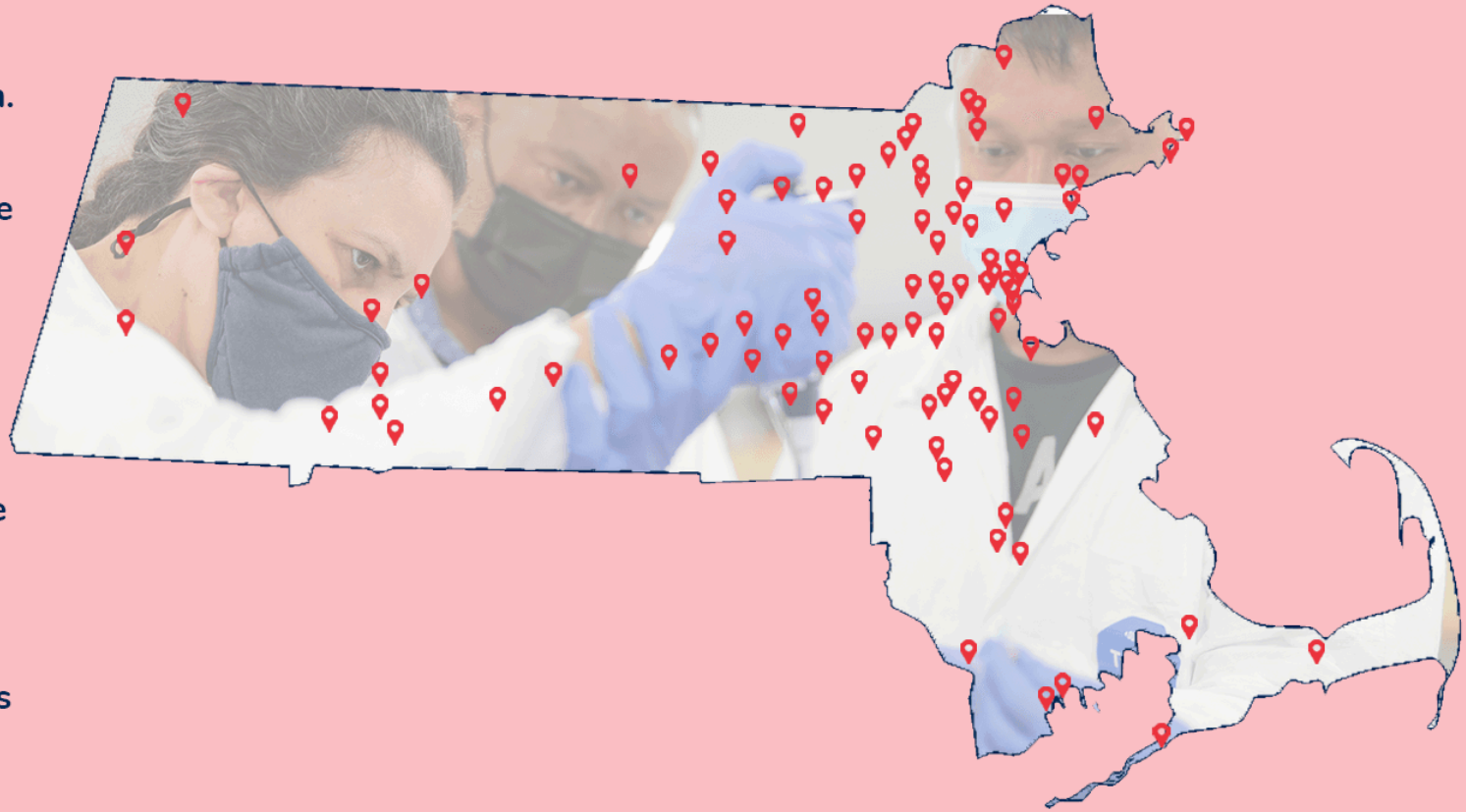
The Bottom Line

Award Amount	Programs	Number of Awards
$572,109,749	Capital Infrastructure and Research Equipment	217
$39,726,823	Company Grants and Loans	120
$28,090,589	Academic Research	53
$189,417,031	Tax Incentives	363
$41,329,705	Internships and Apprenticeships	5,844
$23,335,561	STEM Equipment and Supplies	261
$1,441,000	STEM Professional Development for Teachers	79
$23,904,229	Other Grants	134

Not just a hub, but an ecosystem.

Massachusetts is the capital of life science innovation for the nation and world, home to innumerable partners in industry and academia pioneering the next big innovations. We are not just home to a life sciences hub, but an entire ecosystem. For the MLSC and its partners, growth is about equity paired alongside a regional approach to ensure the benefits of the life sciences are experienced throughout Massachusetts. The featured map showcases MLSC capital (not including STEM Equipment funding) and Tax Incentive awards from inception through June 30, 2022.

This map does not showcase every single investment made by the MLSC, but in many cases, each pin represents multiple awards made to institutions such as UMass Chan Medical School, and companies such as Moderna. The MLSC is here to continue this collaborative momentum, strengthen the partnerships we have built, and seek new opportunities that will further position Massachusetts as the state for the next breakthrough to transform the lives of patients globally.




Massachusetts
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A 5 Star Accredited
From the Desk
of Kenn Turner

Toward a New Level of Excellence

Dear Colleagues:

I write to you approaching year two at the helm of the Massachusetts Life Sciences Center (MLSC). If I could describe my current state of mind after 20-plus months with one word, it would be**...gratitude**. Specifically, I am grateful for the honor of a lifetime to serve as president and CEO of the MLSC. I am grateful for the multitude of external partners we have across the life sciences. I am of course grateful and indebted to my talented and dedicated team members.

I am also grateful for your interest in learning more about our impact as an organization from this past fiscal year. It is hard to encapsulate who we are and what we do into one data point or metric, or a single publication. For me, it all comes down to our central strategy of supporting the discovery, development, and cultivation of the life sciences ecosystem across Massachusetts.

Under my leadership, the Center has implemented a strategic framework that will enable us to reach a new level of excellence for our organization and our Commonwealth. This framework has three main pillars: Innovation, Business Development, and Regionalization. This framework lays out a robust vision. Let me assure you, I am bullish that my team and I, along with our dynamic partners across the ecosystem, are ready to meet the moment.

Just this past year, we endeavored to begin accomplishing many of our shared goals, running numerous programs and initiatives, representing more than $80 million. We've supported more than 5,000 internship opportunities. Our Tax Incentive program is set to help create 10,000-plus jobs. And our capital programming remains the envy of the nation, driving innovation from Boston to the Berkshires.

Make no mistake, our mission to support the preeminence of the life sciences in Massachusetts, must continue to be realized, to the benefit of our residents here in the Commonwealth and to patients around the world. From economic development to job creation, to changing the complexion of what our industry looks like, we have much to be proud of, but the work is just beginning.

What was true at the time of our founding holds true now more than ever before—breakthrough science, which has the power to change lives and improve patient outcomes, must be matched by bold and strategic commitment and action by government.

We are in the business of bold. We are ready for the next chapter of the life sciences in Massachusetts.

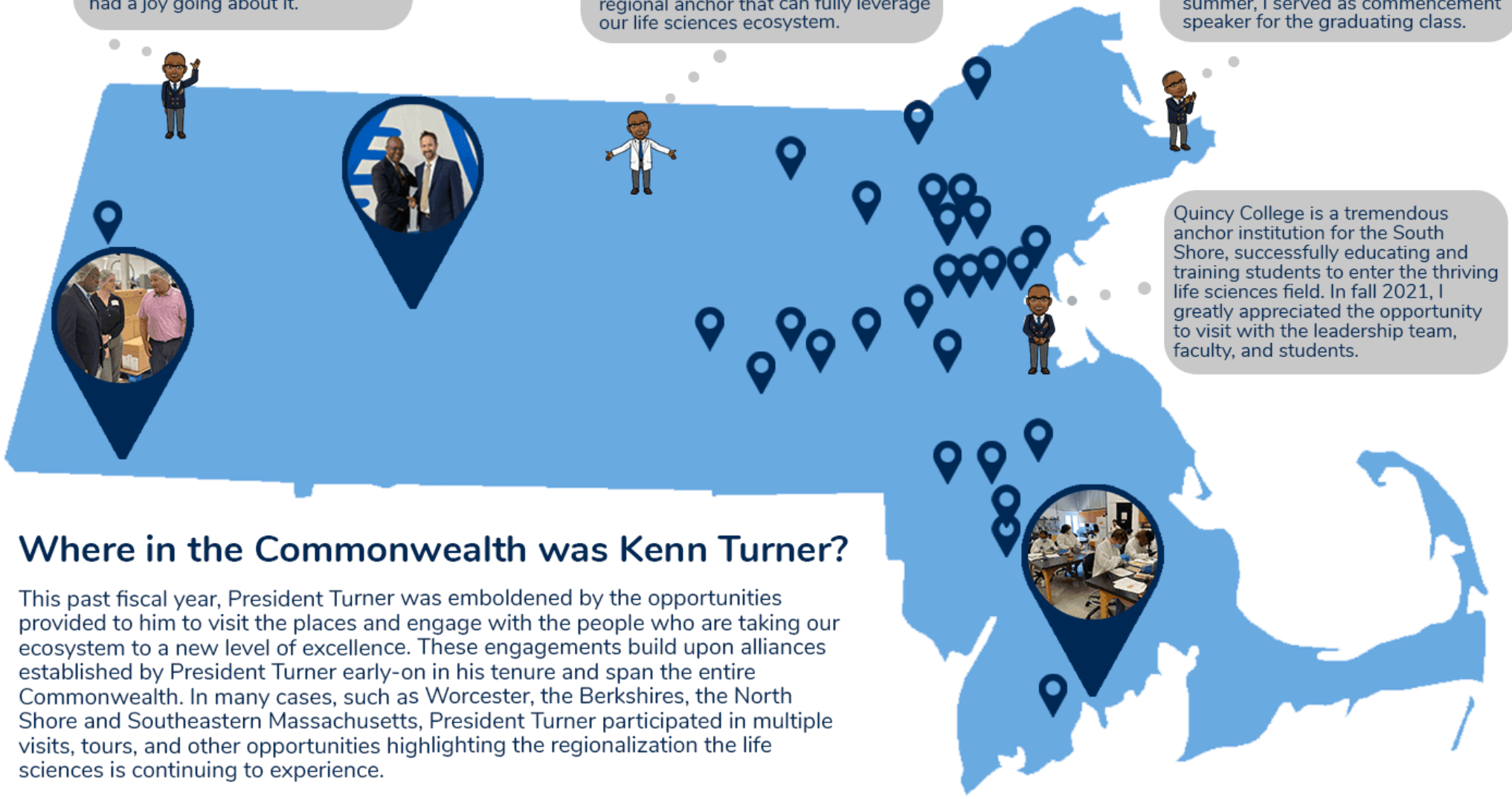
I hope you enjoy this year's annual report. Please reach out to my team and me to further engage as we endeavor to reach new heights.

Kenn Turner
President and CEO
Massachusetts Life Sciences Center

This past May, I had the privilege to spend time with our future workforce during a visit to McCann Technical School in North Adams, MA. During the wide-ranging tour, students seemed not just genuinely interested in being at school, but had a joy going about it.

What I enjoy most about leading the MLSC is not just building upon existing partnerships but creating new ones. This past spring, it was an absolute pleasure for the MLSC team to visit Fitchburg State University, which is uniquely positioned to become a regional anchor that can fully leverage our life sciences ecosystem.

The Gloucester Biotechnology Academy, administered by the Gloucester Marine Genomics Institute (GMGI) trains young adults for professional careers in the life sciences through hands-on training and paid internships. This past summer, I served as commencement speaker for the graduating class.



Quincy College is a tremendous anchor institution for the South Shore, successfully educating and training students to enter the thriving life sciences field. In fall 2021, I greatly appreciated the opportunity to visit with the leadership team, faculty, and students.

Where in the Commonwealth was Kenn Turner?

This past fiscal year, President Turner was emboldened by the opportunities provided to him to visit the places and engage with the people who are taking our ecosystem to a new level of excellence. These engagements build upon alliances established by President Turner early-on in his tenure and span the entire Commonwealth. In many cases, such as Worcester, the Berkshires, the North Shore and Southeastern Massachusetts, President Turner participated in multiple visits, tours, and other opportunities highlighting the regionalization the life sciences is continuing to experience.

The Next Chapter Begins

To continue driving Massachusetts to a leadership position within life sciences, in the spring of 2021, President Turner and the MLSC team engaged key external partners to develop a strategic framework. Project objectives included: 1.) clarifying the MLSC's core value proposition to help ensure the Center remains in a strong position to support economic development and job growth in the dynamic life sciences industry in Massachusetts and 2.) developing a succinct statement of the strategy and priorities for the MLSC's leadership.

In early FY22, the MLSC finalized its strategic framework process. The three key pillars of the strategy include:

Innovation: Supporting key areas such as the next generation of technologies, entrepreneurs, and opportunities for the Center and the Commonwealth to lead.

Business Development: Helping attract, grow, and retain life science companies, while also raising awareness about the robustness of the Massachusetts ecosystem.

Regionalization: Prioritizing geographic equity, and leveraging regional assets of the various life science clusters throughout the Commonwealth, and continuing to drive new and ongoing clusters.

The foundational pieces catalyzing this framework are workforce and diversity, equity, and inclusion, with a laser focus on leveraging the opportunity that can be offered to us in an area such as biomanufacturing and helping companies bring their product to the market. Finally, the Center's efforts are underpinned by making data driven decisions on its funding, leveraging the power to collaborate and convene, and the continuation of the Massachusetts Life Sciences Initiative.

Upon finalizing the strategic framework, President Turner and his team began raising awareness and implementing the roadmap for the Center with key partners and at significant convenings held throughout the Commonwealth. This community engagement continues into the present to ensure the Center's strategic outlook is embraced and crystalized.

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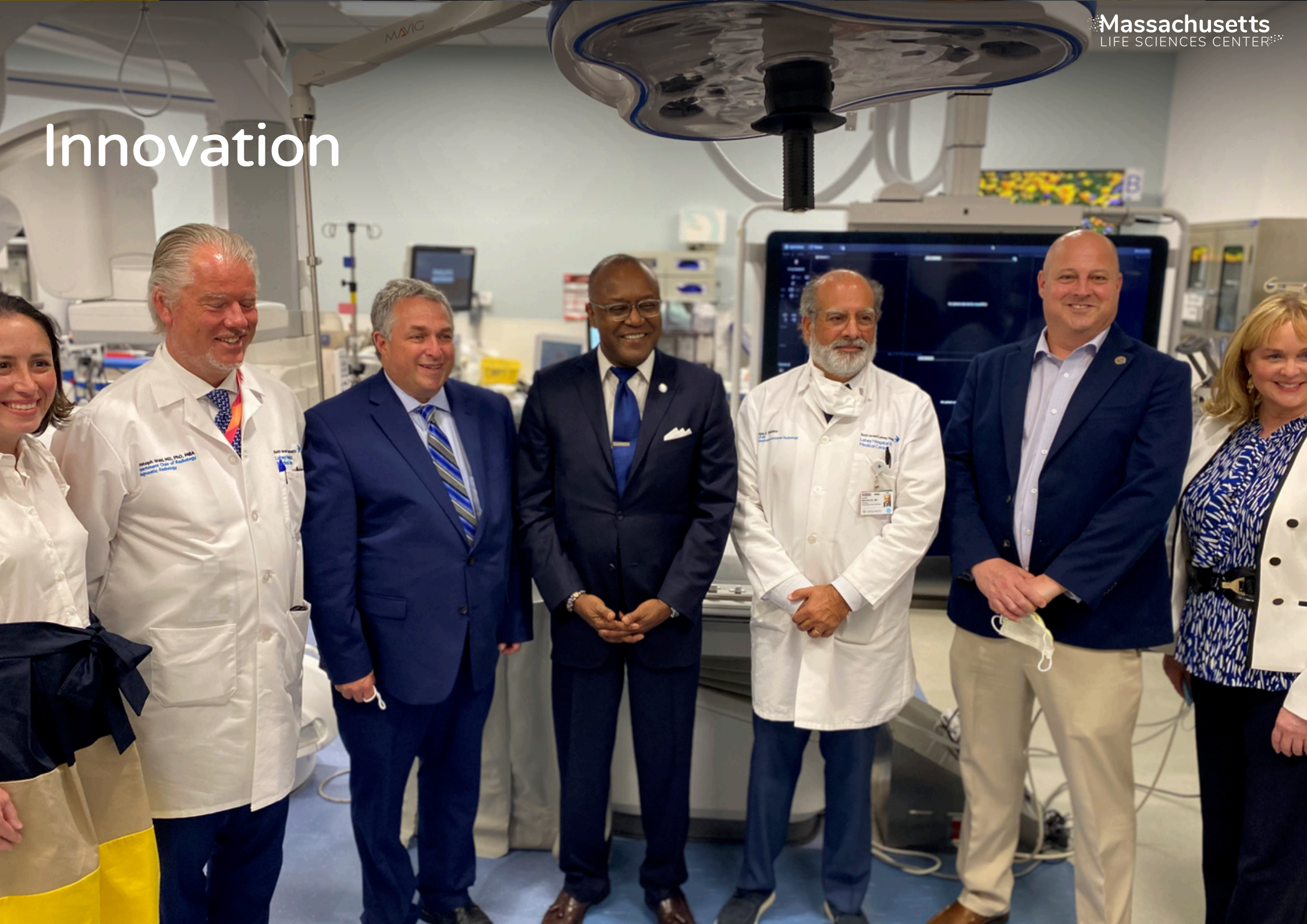
Innovation



MassNextGen: 5 Years of Shifting the Paradigm

The Impact

$120M	raised in follow on funding
$1.4M	dollars deployed
40+	coaching sessions
44	additional people employed
21	companies in portfolio
11	companies have raised a seed or series A financing round

Early-stage companies are the foundational piece to the Commonwealth's global leadership in the life sciences. Yet, underrepresentation and bias toward women at all levels in the life sciences has real consequences not only for individual careers but for new innovative therapeutics for patients.

In 2018, the MLSC launched the Massachusetts Next Generation (MassNextGen) Initiative with one goal in mind, to shift the paradigm to build a diverse ecosystem with equal representation. With the support from sponsors, MassNextGen became a five year, more than $2 million commitment to ensure greater gender parity.

Over those five years, awardees of the program received a year-long customized package of support, which included non-dilutive grant funding and access to a network of seasoned professionals from the life sciences ecosystem helping them to refine their business strategies and effectively raise capital. In addition, the program fostered an organic community of entrepreneurs where awardees could collaborate with like-minded leaders sharing experiences, ideas, and a sense of belonging.

Minmin Yen

The CEO and Co-Founder of Phage Pro, worked on developing a bacteriophage product to combat household transmission of cholera during her thesis research. PhagePro was founded to both continue this work and develop phage products for emerging markets. Their initial target is cholera; by taking an oral product that offers immediate protection, families of patients infected with cholera will be able to take care of their loved ones without fear while also curbing outbreaks in the community. Since becoming a MassNextGen awardee, Dr. Yen has increased her full-time headcount to four employees, expanded her footprint at Tufts Launchpad, and raised $3.4 million in funding. Learn more.

Ready for Who's *Nexxt*

After five successful years, the MLSC knows there is more to be done but with a more inclusive focus. Beginning in 2023, the MLSC and its sponsors will launch the next five years of MassNextGen to all entrepreneurs that identify as but not exclusive of: Female; Black, African American, or Afro Caribbean; Hispanic, Hispanic American, or Latinx/Latin; Indigenous, Native American, or First Nation; Asian American, Pacific Islander, or Native Hawaiian; Transgender, Queer/Non Binary, Nonconforming/Agender; Living with visible disability, Living with invisible disability, or Neurodiverse; Veteran.

Thank you to our champions!

The MLSC welcomed Mission BioCapital and LabCentral Ignite as the two newest sponsors of the MassNextGen program. Mission BioCapital will be providing $100,000 in award money to one or more selected awardees.

This program would not be possible without the support and partnerships of our coaches and sponsors. Your generosity has expanded opportunities for female entrepreneurs and their research, ultimately impacting global health. On behalf of the entrepreneurs, the MLSC, and the entire ecosystem, thank you!

Katya Mantrova, M.D., Ph.D.,
Director of Industry Strategy and Investments

Katya Mantrova on Strengthening our Entrepreneurial Community

"Entrepreneurs are change agents that turn new ideas into successful businesses. This exciting and risky process requires a variety of skills, experiences, and knowledge. Start-up companies with people from different backgrounds and cultures get the diversity of thought to be considered when brainstorming and problem-solving. A diverse team also provides a more extensive range of experiences and skills essential to growing a business. But entrepreneurial companies don't operate in a vacuum and need a community that understands their specific challenges and perspectives and intentionally acts to cultivate them. Therefore, a diverse pool of mentors, coaches and investors is imperative for entrepreneurial success. That is why our vision is to expand the MassNextGen initiative and contribute to strengthening the Commonwealth's entrepreneurial community." Connect with Katya: Email or LinkedIn

Translatable Opportunities: Massachusetts Building the Pipeline Toward Leadership in Women's Health

The Center launched its Women's Health Initiative in 2020 to turn the tide against the severe lack of organized capital and incentives around a coordinated Women's Health approach. With continued strategic investment in this area, Massachusetts is poised to become the leader in the Women's Health space. The current programs offered through the Initiative focus on increasing the number of translatable opportunities in women's health at Massachusetts research institutions.

This year, the MLSC ran two programs, the Women's Health program, which provides capital funding toward collaborative projects that aim to improve the discovery, technical innovation, and/or analysis of datasets to answer pressing life science questions around women's health. The Center awarded $748,114 to Brigham and Women's Hospital and Industry partner, Genetech, for their research on the multiomic multiple sclerosis brain.

The First Look Awards supports early translational research performed by faculty and at a Massachusetts not-for-profit research institution. The Center awarded $150,000 in grant funding to support three projects at UMass Chan Medical, Harvard University, and Brigham and Women's Hospital.

Next year, in addition to new rounds of its capital programming and First Look Awards, the MLSC will relaunch its Women's Health Innovation Grants that target innovations that have translational potential, preliminary supporting data, but still require a key set of proof-of-concept experiments prior to attracting a commercial partner or spinning out into a new company.

The current and future programming portfolio will focus on increasing the number of translatable opportunities in women's health at Massachusetts research institutions.

> **"Innovation is a foundational pillar of our ecosystem as we remain focused on providing strategic investment toward the next generation of researchers, technologies, and opportunities for Massachusetts to lead. The Life Sciences Center is incredibly proud to support our cutting-edge research institutions and accelerate collaboration between academia and industry."**

Kenn Turner
MLSC President and CEO

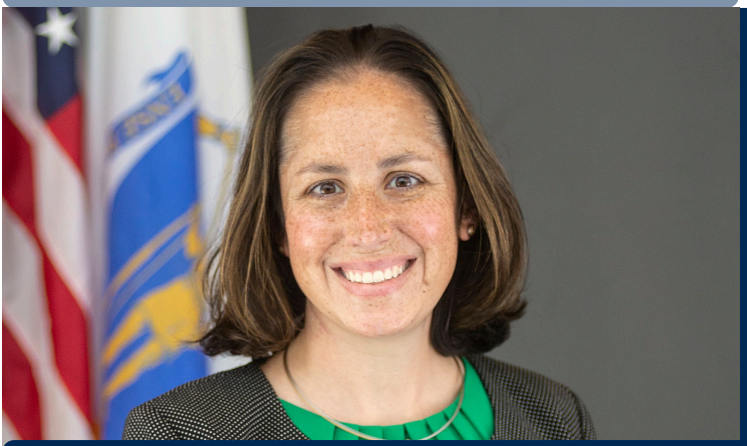
Women's Health Initiative By The Numbers

Since FY20, MLSC funding has catalyzed:

- **26 projects** targeting unmet needs in women's health market
- **$7.2 million** MLSC funding for developing infrastructure, **$3 million** MLSC funding for translational research
- **$8 million** matched funding with 10+ industry partners
- **15** Massachusetts institutions funded

This includes Elizabeth H. Stover, MD, PhD, Physician/Assistant Professor of Medicine, of Harvard Medical School. A FY21 Innovation Grants awardee, Dr. Stover's project is developing an implantable microdevice to measure drug responses in ovarian cancer patients. Industry partner, Kibur Medical, will develop the microdevice for commercial use. Numerous clinicians, research nurses, research coordinators, regulatory staff, lab staff worked on the project. Dr. Stover also received a Department of Defense Ovarian Cancer Research Program Pilot Award totaling $250,000 in additional funding.

FY20 Women's Health capital awardee Michael Busa, PhD, Director of the Center for Human Health & Performance at UMass Amherst, is seeking to create a novel, non-invasive, non-pharmalogical device-based system to treat hot flashes, which affects 80 percent of women. The project team has completed all milestones of the project and finalized the data collection phase of the research. They have enrolled 60 participants with 53 completing the data collection. Four publications have resulted from access to the MLSC-funded equipment through this effort.



Carla Reimold, Ph.D.
Vice President of Industry Strategy and Investments

Carla Reimold on the Importance of Investing in Women's Health

"Women's Health has long suffered from a lack of innovation and investment. The MLSC is working hard to provide the tools and funding to advance solutions for conditions which solely, disproportionately, or differently affect women. We've created three programs to address technologies at differing stages of maturity. It is our belief that in sponsoring more early-stage work, technologies can be advanced to such a stage that existing companies may partner, or they could be spun-out into new Massachusetts companies where they can thrive in our vibrant ecosystem. With time, we hope to drive development of meaningful therapies, diagnostics, and devices to improve the health and well-being of patients worldwide."

Connect with Carla: Email or LinkedIn

Investing in the Ecosystem's Most Pressing Research and Infrastructure Needs

Since its inception, the MLSC has administered an open, competitive capital program to provide grants for projects that support the life sciences ecosystem in Massachusetts. In more recent years, to continue to serve the needs of the ecosystem, the Center designed its capital programming with added focus areas such as therapeutics delivery and data science. This enables MLSC funding to further drive innovation in these sectors, as well as industry and academic collaboration. Since 2018, more than 60 industry partners have collaborated with MLSC awardee institutions on capital projects across Massachusetts.

In the latest round of capital programming, the MLSC awarded more than $33 million in funds to support 17 projects through the Research Infrastructure program, the Novel Therapeutics Delivery program, and the Bits to Bytes program.

Since the Center's inception, the MLSC has invested more than $570 million towards more than 220 capital projects throughout the Commonwealth. These projects have leveraged an additional $1.4 billion in funding.

Research Infrastructure: invests in innovative infrastructure across Massachusetts that is in high demand from both academic and industry scientists.

Novel Therapeutics Delivery: fosters the development of novel technologies and techniques for the delivery of existing or innovative therapies by partnering on projects at the intersection of engineering, biology, chemistry, and medicine.

Bits to Bytes: grants for scientific projects that generate and analyze large datasets to answer pressing life sciences questions, and to attract and train data scientists in the Commonwealth.

The Strongest Life sciences Sector is a Diverse One

The current times call for embracing the ideals of diversity, equity, and inclusion, while also leveraging the absolute best of what our Commonwealth is and can be. That's why in Massachusetts, we know that the strongest life sciences sector is a diverse one.

The MLSC was proud to support the United Negro College Fund's (UNCF) Ernest E. Just Life Sciences Initiative with a $50,000 discretionary grant to create internship opportunities in the Boston-area for students enrolled in Historically Black Colleges and Universities (HBCUs). The E.E. Just Initiative provided students an opportunity to spend 10 weeks interning at various participating host companies from small to large size life sciences companies. Additionally, students received free housing at a local university, a professional mentor and guidance, training, and a welcoming community of peers and leaders. Above all, students gained valuable experience and a network of professionals to pave a path for a fulfilling career in the life sciences.

In the initiative's first year, 23 students were welcomed to Boston. The MLSC was honored to support six students through the Center's Internship Challenge program. These students interned at TripleRing Technologies, LabCentral, AngieX, and GelMedix.

UNCF was one of eight deserving organizations to receive a discretionary grant. In total, the MLSC dispersed $350,000 to support the life sciences ecoystem across Massachusetts.


Massachusetts
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Toward the Creation of 10,000+ Jobs Across the Commonwealth

This past June, the MLSC proudly represented the Commonwealth of Massachusetts at the first in-person BIO International Convention since before the pandemic in 2019. With our partners at MassBio and industry and academic leaders, the State of Possible booth welcomed roughly 1,100-plus attendees to learn why Massachusetts has the number one thriving life sciences ecosystem. Over a three-day span, the booth held five panel discussions including the announcement of the MLSC's 2022 Tax Incentive awardees.

President and CEO, Kenn Turner, announced $24.2 million in tax incentive awards to 36 life sciences companies, expecting to create 1,581 new life sciences industry jobs in the Commonwealth. The Tax Incentive program is offered to companies engaged in life sciences research and development, commercialization, and manufacturing in Massachusetts, providing incentives to companies of all sizes looking to expand their efforts by creating new, long-term jobs in Massachusetts.

Out of the 36 companies receiving tax incentive awards, 28 companies—accounting for 77 percent of the new jobs—are expanding outside of Boston and Cambridge. Since the MLSC's reauthorization in 2018, 80 percent of jobs committed through the MLSC's Tax Incentive program are located outside of Boston and Cambridge. Since the Center's inception, life sciences companies expanding across Massachusetts have committed to the creation of more than 10,000 jobs through this program.

> "The Commonwealth must maintain its competitive advantages as a global leader in the life sciences and these investments demonstrates Massachusetts leadership in accelerating companies' ability locate and expand here in our Commonwealth."

Administration and Finance Secretary Michael J. Heffernan and MLSC Board Co-Chair

The Return of the Ribbon Cutting: A Year to Remember in Expansions

If you blinked this past fiscal year, you may have missed an announcement from a major Massachusetts life sciences employer celebrating new expansions, increased job growth, and advancements to improve patient outcomes. As everyone aimed to return to safe in-person events, the fiscal year offered a number of opportunities to celebrate Massachusetts companies continuing their growth trajectory.

Soon after it went public via a SPAC deal valued at $17.5 billion, Ginkgo Bioworks announced plans to expand its presence at a new Seaport lab building with plans to fully occupy a new 219,000-square-foot life-sciences building at the former Au Bon Pain headquarters.

In February 2022, Eli Lilly and Company announced the launch of the Lilly Institute for Genetic Medicine and an investment of approximately $700 million to establish a state-of-the-art facility at a new site in the Boston Seaport. This investment is part of the company's strategy to advance RNA based therapeutics.

In May 2022, Vertex Pharmaceuticals announced plans to build another 344,000 square foot facility in the Seaport to support the company's continued rapid growth, in particular the expansion of its cell and genetic therapies programs. According to the company, by 2025 Vertex will occupy 1.9 million square feet of real estate in the Seaport across five sites.

This past June, Takeda signed a 15-year lease with BioMed Realty for an approximately 600,000 square feet state-of-the-art facility, enabling the company to create a purpose-built R&D facility with laboratories of the future featuring modern design elements and upgraded technology to support the company in its efforts to advance innovation for patients.

> "This expansion is a sign of our deep commitment to Boston and the larger Massachusetts innovation ecosystem."
>
> Jeffrey Leiden, M.D., Ph.D.,
> Executive Chairman at Vertex

This is in addition to earlier this year when BioLife Plasma Services, part of Takeda, announced the opening of a new plasma center in the communities of Worcester and Medford, to help meet the urgent and growing demand for therapies developed from plasma.

Also in June, Sanofi announced the opening of the company's new campus at Cambridge Crossing. The campus, consisting of two buildings totaling 900,000 square feet, is designed to enhance collaboration between R&D, Medical, and the Specialty Care business unit, among others, to accelerate the development of transformative treatments for patients.

Bayer AG also celebrated the opening of its new Research and Innovation Center at Kendall Square. The 62,100-square-foot facility houses a new center of precision molecular oncology research equipped with state-of-the-art laboratories and offices for the development of novel targeted cancer therapies for patients.

Even immediately following the close of the fiscal year Servier, Thermo Fisher Scientific, and CRISPR Therapeutics celebrated significant expansions, from Boston to Plainville.

Angel Momentum: Programming Continuing to Spur Early-Stage Funding

"From my perspective, the MLSC Angel Investor Tax Credit program was a strong additional motivator for a subset of our seed round investors. I also believe that the benefits of the program likely led to some investors to increase the size of their investment. Fundraising is often about momentum, and any reason on top of a solid core investment is beneficial to the process."

Dan Deardorf, CEO of Glycologix

This past fiscal year, the MLSC continued to offer its Angel Investor Tax Credit program to investors interested in funding early-stage companies engaged in life sciences research and development, commercialization, and manufacturing in Massachusetts. The program provides a taxpayer investor a credit of 20 percent of the qualifying investment, or 30 percent if the business is located in a gateway municipality, in a business that has no more than $500,000 in gross revenues in the year prior to eligibility.

Credits are available up to $50,000 in any one taxable year for qualifying investments of up to $125,000 per qualifying business per year and up to $250,000 in cumulative qualifying investments for each qualifying business.

To ensure the Massachusetts' ecosystem remains favorable for investors, we are proud to offer this new Angel Investor Tax Credit to encourage investment throughout the Commonwealth and in our gateway municipalities. We are confident that such investments will create jobs, build a robust workforce, support women and minority-led companies, and propel the development of new therapies, devices, and scientific advancements that are improving patient health and well-being.

Leveraging nearly $450,000 of Center investment, 96 angel investors made $2.9 million in investment to 19 Massachusetts companies. A distinct benefit of the program is that many of the companies receiving angel investment are enterprises located in MLSC-funded incubators, including Mansfield Bio-Incubator and North Shore InnoVentures, and have benefitted from additional MLSC programming.

For Dan Deardorf, CEO of Glycologix, he most certainly saw the program as providing motivation and momentum for angel investors to close in on their investment in his company.

Glycologix operates out of North Shore InnoVentures in Beverly, MA and is a user of the MLSC Internship Challenge. Dan and his team are developing a biopolymer platform for the protection and repair of soft tissues with a current focus on Interstitial Cystitis/Bladder Pain Syndrome (IC/BPS). A disorder of the bladder, IC/BPS impacts as many as 10 million in the United States, predominantly women, according to the company.

A Home-Grown Company Helping Save Lives Every Day

At the start of the COVID-19 pandemic, there was one life-saving medical device that was in high demand but in short supply: ventilators. In these early days, ventilators offered patients with Acute Respiratory Distress Syndrome (ARDS) – the main cause of death among COVID patients – the best chance of survival.

A home-grown Massachusetts company, ZOLL Medical, knew they had the power to help save lives. ZOLL develops a range of emergency-care devices and related software, including products for defibrillation and cardiac monitoring, CPR feedback, circulation enhancement, supersaturated oxygen therapy, and therapeutic temperature management. Ventilators are a relatively small part of its business.

However, when the U.S. Department of Health and Human Services (HHS) called in March 2020 to ask ZOLL how many ventilators it could supply, and how quickly it could do so, the company leaped into action.

ZOLL swiftly increased its ventilator production by more than 25 times normal output. Within six months, ZOLL delivered more than 20,000 ventilators to HHS – the single largest order in the company's history.

The Chelmsford-based company is quick to acknowledge the strength of the Massachusetts ecosystem and the ability to tap into the abundance of resources only a life sciences ecosystem like ours can offer.

ZOLL is a global company with a footprint in more than 140 countries. Yet it all starts at home, as the company values having their headquarters here in the Commonwealth. It is part of the strong foundation that enables them to continue growing their R&D and manufacturing base.

On the biopharma front, according to MassBio, Middlesex County, which includes Chelmsford, saw impressive employment growth in both manufacturing (15.5 percent) and R&D (17.3 percent) from 2020 to 2021.

"The combination of being close to great schools that encourage intellectual curiosity – including the nearby UMass Lowell and Middlesex Community College – and being an easy drive to world-renowned hospitals and research institutions is powerful," said Lynn Hersey, head of Corporate Human Resources at ZOLL. "We have access to a talent pool with a work ethic and resiliency that is unmatched."

Over the past three years, ZOLL has been a recipient of the MLSC Tax Incentive program. In that same three-year span, ZOLL has grown their cumulative headcount by 25 percent in the state and has provided more than 75 internships and co-ops to Massachusetts college students.

Helping Industry Navigate Workforce Needs

Team Massachusetts is made up of several collaborative government agencies, quasi-public entities, and independent nonprofit organizations (MLSC, the Commonwealth of Massachusetts, MassDevelopment, MassEcon, Massachusetts Technology Collaborative, MassBio) that work together to meet the needs of the life sciences industry in Massachusetts.

Whether providing talent, advisory or direct capital assistance, the MLSC works as a close partner to our portfolio companies to ensure that they have the resources they need to succeed in Massachusetts.

To that end, the MLSC is excited to share an early version of a new resource of two and four-year academic institutions, vocational technical high schools, and non-profit organizations that provide training opportunities to enhance the talent for life sciences companies throughout Massachusetts.

Our partners are at the ready as trusted advocates with comprehensive knowledge of the Massachusetts economic development landscape, to assist you as you begin to grow your business in Massachusetts.

Instructions

Click on the interactive google map above to enlarge. To learn more about a specific partner and obtain contact information, click on any of the icons.

The dropdown in the top left corner will show a list of all the partner allowing you to filter by one of the categories.

As Companies Grow, Their Talent Must Grow With It

We know life sciences employers are striving through an unprecedented labor market. The success of the life sciences in the Commonwealth and the launch of the Massachusetts Life Sciences Center can be tied back to our number one resource—our people. This hallmark of our ecosystem will only continue to strengthen.

Massachusetts has the most prepared, well-educated talent pipeline in the nation with the highest percentage of adults in the nation with a bachelor's degree or higher, and the highest percentage with an advanced degree. Massachusetts also leads the nation in STEM degrees conferred annually.

.To help meet industry needs, the MLSC and our partners in government are standing up support in: **immediate hiring**, **pipeline programs to address skill gaps**, and **employer incumbent training**.

Immediate hiring: Helping you hire individuals for job openings with candidates available in labor force

Pipeline programs to address skill gaps: Helping you hire individuals with specific credentials not available in labor force today

Employer incumbent training: Helping design and fund company specific training for existing workers

Jeanne LeClair
Senior Director of Business Development and Workforce Partnerships

Jeanne LeClair on Workforce and the Role the MLSC Plays in Driving the Pipeline
"The emphasis I think we place on workforce is two-fold. First, the life science companies in Massachusetts that move innovation forward rely on a talented workforce to do the science, the development, and the manufacturing that keep this industry so dynamic. Second, creating additional opportunities for workers and communities who have not previously been as engaged in the life sciences allows us to bring the whole Commonwealth along as the industry grows and continues to create long-term, meaningful careers that help people—the workers and the patients they serve. We've been proud to be able to step up this year and support the workforce pipeline in new creative ways that connect companies directly with training providers and schools, to meet the needs of today and prepare for tomorrow." Connect with Jeanne: Email or LinkedIn

Massachusetts
LIFE SCIENCES CENTER

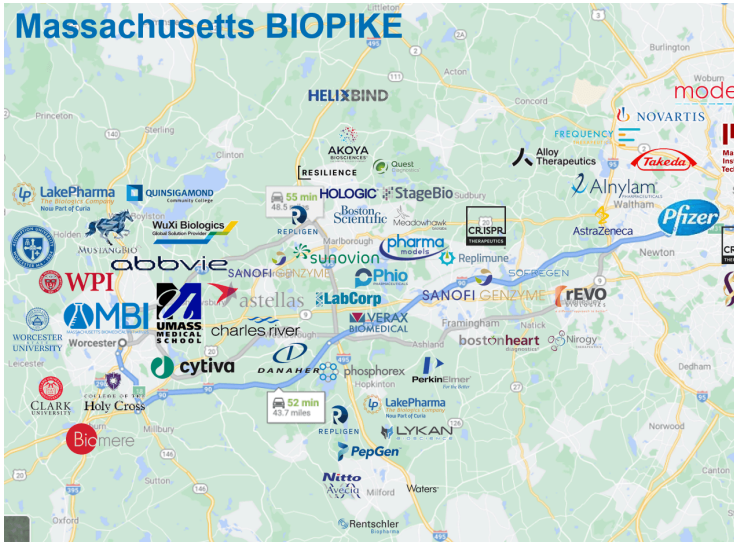
Regionalization

At The Center of It All: ‘Woomentum’ Takes Hold

“Worcester isn’t up and coming. It’s already here.”

These words from MBI President and CEO Jon Weaver ring true for anyone following the headlines, but more importantly for those collaborating on the ground seeing the growth, opportunity, and innovation taking hold in Worcester. *Woomentum* is not just a turn of phrase used by those in the know. According to CBRE’s *Life Sciences Research Talent 2022* report, Worcester ranked 15th among CBRE’s top 25 life sciences research talent clusters.

The city and the broader Central Massachusetts life sciences cluster is home to a growing number of life sciences enterprises and more than a dozen colleges and universities, including UMass Chan Medical School and Worcester Polytechnic Institute (WPI). This past fiscal year, Quinsigamond Community College partnered with Massachusetts Biomedical Initiatives (MBI) and AbbVie, to deliver an innovative entry-level Biomanufacturing On-Ramp Workshop designed to encourage more people to enter the biomanufacturing industry pipeline.



Since its inception, the Massachusetts Life Sciences Center has committed more than $140 million toward life sciences growth in Worcester. This includes support for the Worcester Public Schools system, numerous infrastructure and research capital grants to institutions such as WPI and Quinsigamond Community College, and job creation incentives at companies like Wuxi Biologics and Mustang Bio.

“Worcester serves as a model for our Commonwealth on how we can endeavor to build out the life sciences on a regional basis," said MLSC President & CEO Kenn Turner. "Right at the center of this cluster is MBI. We are very proud to partner with Jon Weaver and his team and support MBI’s growth and bold vision."

A highlight of the fiscal year took place in May when Lt. Governor Karyn Polito, MBI, and the MLSC kicked-off the expansion of MBI's Biomanufacturing Center by breaking through a wall in the existing space. The expansion will add 10 new Biomanufacturing Labs to support early-stage clinical companies in process development and early-stage manufacturing. The facility will also include 10 new support offices on a second floor overlooking the labs. The MLSC invested $3 million from its Research Infrastructure program to help fund the expansion, which is estimated to cost approximately $5 million.

"MBI represents the power of public-private partnerships to unlock new opportunities that create jobs, spur economic development, and strengthen burgeoning areas of our economy such as biomanufacturing."

Mike Kennealy
Massachusetts Housing and Economic Development Secretary and Co-Chair of the MLSC Board of Directors

The initial StartUp & ScaleUp projects, which opened in mid-2020 and included 28 lab spaces, were fully occupied within 10 months and have already served 26 companies that have raised nearly $150 million and created 111 jobs in the past two years.

At the time of the "breakthrough" event, MBI also announced that it purchased the 50,000 square foot building and an adjacent 7,000 square foot building from the Coghlin family as part of MBI's long term commitment to fostering the life sciences industry in Central Massachusetts. The unique StartUp & ScaleUp model at MBI bridges the gap between incubator and commercial market spaces for early-stage, growing companies, freeing up space in the incubator for new, promising companies to enter the pipeline. By adding additional capabilities to support early clinical stage companies, the expansion will help more startup companies bring products to patients and build on Worcester's growing biomanufacturing market.

From MBI to Polar Park to the Reactory, Worcester and its surrounding communities remain a central anchor to Massachusetts's thriving life sciences ecos.

Community-First: Building A STEM Workforce

The MLSC partnered with UMass Dartmouth through the High School Apprenticeship Challenge to offer internships to eight New Bedford High School students. Students have the opportunity to gain experience in fields such as bioengineering and biotechnology.

The High School Apprenticeship Challenge facilitates and funds paid internships for underrepresented and low-income high school students throughout Massachusetts. During this 10-week program, students work on a life science experiment that uses equipment similar to what is used in a college or industry laboratory.

This program also offers a pre-internship laboratory training program for select school districts that provides rigorous biotechnology/biomedical and professional skills development.

This year, the MLSC provided more than $85,848 to support the Brockton and New Bedford cohort, now totaling $1,979,834 since 2019. Students go on to have paid internships in life science institutions such as the Forsyth Institute, the Dana Farber Cancer Institute, the Ragon Institute, and Massasoit Community College.

A total of 361 students have participated in the High School Apprenticeship Challenge since it began in 2016.

"The program is a great way to strengthen the partnership with MLSC and NBHS and designed to promote the STEM workforce within the community. I also feel it is critical that UMass Dartmouth is a resource for the New Bedford High School students in this program because we are accessible but often unknown to the inner city students."

Dr. Tracie Ferreira
Chairperson and Associate Professor in the Department of Bioengineering, UMass Dartmouth

Transformational Opportunities, from Boston to the Berkshires

The life sciences can offer transformational educational and career opportunities to people throughout our Commonwealth. This includes the Cape and Islands, which saw three awardees receive funding through the Center's STEM Equipment and Professional Development Grant program and its Workforce Development Capital Grant program.

In total, the MLSC Board of Directors approved 39 grants totaling more than $14.6 million for the two programs. President Turner joined Lt. Governor Karyn Polito for the announcement of the awards during a visit to the Massachusetts Maritime Academy, an awardee of the Workforce Development Capital Grant program. Mass Maritime is receiving $750,000 to create and outfit a Phase I Instrumentation, Operation and Controls engineering laboratory which will modernize, upgrade, and renovate existing resources specifically supporting each of Mass Maritime's three undergraduate engineering degrees.

Cape Cod Community College is receiving more than $220,000 through the Workforce Development Capital Grant program. Bourne Public Schools is receiving more than $120,000 through the STEM Equipment & Supplies Capital Grant program.

The funding will support new and expanded STEM curricula at 40 schools and enhance and expand industry-aligned training programs at 22 institutions. More than 25,000 students will receive enhanced training and education opportunities that will better prepare them for exciting careers in the life sciences and in other STEM fields.

> "By investing in training and educational opportunities in regions across Massachusetts, including here on the Cape and Islands, we are preparing students for meaningful careers and positioning the entire state to leverage the growth of the life sciences and other STEM industries."
>
> Lt. Governor Polito

Growth Trajectory: Chen Dong's Journey from Intern to Data Scientist at Olaris, Inc.

Olaris, Inc., founded in 2014 by Elizabeth "Liz" O'Day, Ph.D., aims to revolutionize how we diagnose and treat patients with life threatening diseases. Put simply, its goal is to "get the right therapy to the right patient at the right time". In 2018, Olaris was an inaugural awardee of the MLSC's Massachusetts Next Generation Initiative (MassNextGen), a competitive program for women-led life sciences companies.

Olaris is now based in Framingham, Massachusetts as part of the thriving MetroWest life sciences cluster. Its growing team includes Chen Dong, who after interning with Olaris and receiving his master's degree in bioinformatics, joined the company full-time as a Data Scientist.

Chen played a key role in Olaris' recent study on Parkinson's Disease. Research shows that nearly 1 in 3 people with Parkinson's are misdiagnosed. Moreover, many patients do not receive a diagnosis until after they have lost the majority of their dopamine-producing brain cells. The study demonstrates Olaris' use of metabolites to create a signature of Parkinson's development in patients with a genetic link. Improving understanding of what changes in the metabolome of patients with Parkinson's offers significant potential for improving the patient diagnostic journey.

Chen's internship was made possible through the MLSC's Internship Challenge, which enhances the talent pipeline for the Massachusetts life sciences industry by creating hundreds of new internship opportunities each year for college students and recent graduates interested in life sciences careers.

As a data scientist at Olaris, Chen develops and optimizes data analysis pipelines and tools for the team. He works closely with the metabolite science team to find "Biomarkers of Response" to enable clinicians to make optimal treatment decisions. Chen also had the privilege of presenting Olaris' breast cancer research findings at international conferences such as the San Antonio Breast Cancer Symposium (SABCS).

2021 - 2022 Year		Since Inception in 2009
483	internships funded	5,300+
253	companies have participated	930+
80	different academic institutions represented	250+

Eye-Opening Opportunities at Boyd Tech

The engineering “itch” runs in the family for Joe Aberdale. The son of an engineer and math teacher, mechanical engineering fit like a glove for Joe while earning his degree at Western New England University and now on his current career trajectory. The Great Barrington native interned for two summers at Lee-based Boyd Technologies before starting with the company full-time in 2021 in the Engineering department.

Joe is a Process Engineer at Boyd Biomedical and describes his experience as eye-opening to what his career could be. He also greatly appreciates the camaraderie and culture from the top down at Boyd Tech. The company has been one of the highest users of the MLSC Internship Challenge since the program’s inception. Joe doesn’t take any single day for granted. Like so many residents of Western Massachusetts, community is everything. Joe is grateful for the opportunity to live, learn, and build his career in the region he calls home.

> “I wake up every day where I want to be. I’m working for who I want to work for and I am helping people. What I do for a living, at 23 years old, has a direct impact on society.”

Joe Aberdale
Process Engineer, Boyd Biomedical

Ryan Mudawar
Vice President of Education and Workforce Programs

Ryan Mudawar on Diversifying our Life Sciences Ecosystem in Massachusetts
"The MLSC has created thousands of internship opportunities across the Commonwealth, with a particular focus on increasing access for underrepresented and non-traditional students. The Internship Challenge offers an incentive in the form of additional subsidized internships for companies that hire community college and other two-year/certificate students. We also helped launch Project Onramp, an initiative which secures internship placements for first-generation students. More recently, we partnered with UNCF to pilot a new program that welcomes a cohort of students from HBCUs and minority-serving institutions to the Boston area for internships. Our High School Apprenticeship Challenge, which includes an after-school training program and paid internships, seeks to close the opportunity gap by serving students from low income schools that would not otherwise have access such experiences." Connect with Ryan: Email or LinkedIn

Appendices

FY 2022 Financial Summary

Statement of Net Position as of June 30, 2022

Current assets:	
Current assets	$63,119,285
Noncurrent assets	$3,334,077
Capital assets	$40,879
Total assets	$66,494,241
Liabilities:	
Current liabilities	$32,635,959
Noncurrent liabilities	$2,405,702
Total liabilities	$35,041,661

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Net position:

Statements of Revenues, Expenses and Changes in Net Position

July 1, 2021 - June 30, 2022

Revenues and expenses:	
Operating revenues	$37,576,764
Operating expenses	$(46,598,986)
Operating loss	$(9,022,222)
Nonoperating revenues	$77,267
Capital contributions	$10,000,000
Increase (decrease) in net position	$1,055,045

The complete audited financial statements are available on the Massachusetts Life Sciences Center website: or you can request a copy by calling 781-373-7777 or emailing.

FY 2022 Investments: Awards and Programs Approved by the MLSC Board of Directors

Month/ year	Awards	Program	Headquarters/ Work Performed	Total
Aug-21	Latino STEM Alliance, Inc.	CEO Discretionary	Boston	$32,500
Sep-21	The Possible Project	CEO Discretionary	Cambridge	$50,000
Sep-21	United Negro College Fund	CEO Discretionary	New Bedford	$50,000
Sep-21	Boston Children's Hospital - Additional Funding	Novel Therapeutics Delivery	Boston	$37,979
Oct-21	Education Development Center (EDC)	CEO Discretionary	Waltham	$50,000
Oct-21	FY21-22 Internship Program - Additional Funding	Internship Challenge	Various - Statewide	$1,200,000
Oct-21	Adaptilens, LLC	MassNextGen	Chestnut Hill	$1,000
Oct-21	AOA Dx, Inc.	MassNextGen	Cambridge	$1,000
Oct-21	InnoTech	MassNextGen	Lowell	$1,000

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MassNextGen is also supported by funds from Takeda, King Street Properties, Sanofi Genzyme, and Mintz.

Certified Life Sciences Companies

List of Certified Life Sciences Companies as of June 30, 2022

Company	Location
149 Medical, Inc.	Worcester
Abiomed, Inc.	Danvers
Adaptilens, LLC	Chestnut Hill
Agilent Technologies, Inc.	Chicopee
Alloy Therapeutics, Inc.	Lexington
Allurion Technologies	Natick
Alnylam Pharmaceuticals, Inc.	Cambridge
Amorphex Therapeutic Holdings, Inc.	Andover
Amsel Medical	Cambridge
Anodyne Nanotech, Inc.	Medford
AOA Dx, Inc.	Cambridge

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FY 2022 Board Approved Angel Investor Tax Credit Recipients

Tax Payer/Investor	Qualifying Business	Location
R. Williams	Amorphex Therapeutic Holdings, Inc.	Andover
A. Epstein	Amstel Medical Corporation	Cambridge
J. Stafford	Amstel Medical Corporation	Cambridge
L. Burns	AOA Dx, Inc.	Cambridge
P. Chaudhry	AOA Dx, Inc.	Cambridge
J. Conley	AOA Dx, Inc.	Cambridge
J. Epstein	AOA Dx, Inc.	Cambridge
B. Littauer	AOA Dx, Inc.	Cambridge
D. Powdermaker	AOA Dx, Inc.	Cambridge

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Capital Awards from Inception through June 30, 2022

Program	Grantee	Infrastructure Related Project	Total Award	Year of Award	Status at End of FY 2022
Capital Program	Bay Path College	Planning Grant	$50,000	FY 2013	Completed
Capital Program	Bay Path University	Equipment for Workforce Training	$499,996	FY 2015	Completed
Capital Program	Baystate Health	Clinical Trials Unit	$3,949,912	FY 2019	Completed
Capital Program	BayState Medical Center	Health Informatics and Technology Innovation Center (HITIC)	$5,500,000	FY 2013	Completed
Workforce Capital	Benjamin Franklin Cummings Institute of Technology	Biotechnology Program	$749,936	FY 2022	Ongoing
Capital Program	Berkshire Community College	Equipment for Workforce Training	$499,998	FY 2015	Completed
Capital Program	Berkshire Innovation Center	Life Sciences Incubator - Berkshire Innovation Center (BIC)	$11,970,000	FY 2018	Completed
Capital Program	Beth Israel Deaconess	Creating a Large Clinically Annotated Dataset			

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College and High School Internship Program Diversity Statistics

1. Total funds expended on high school internships:	$210,717.15
2. Total funds expended on college internships:	$2,919,337.44
3. Number of students participating in the internship programs from each high school, school district, college and university in the Commonwealth:	Provided as a separate appendix.
4. Percentage of high school internships awarded to minority students attending schools where at least 80% of the student population is eligible for free or reduced lunch:	63% of interns (51 out of 81 respondants) identified as a race other than Caucasian and attend a low-income high school (defined bu MLSC as having at least 25% of students meeting the MA DESE "low income" designation).

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Internship Host Organizations

Organization	Location
149 Medical, Inc.	Worcester
3CC | Third Culture Capital	Boston
AAV Gene Therapeutics	Beverly
Abpro Labs	Woburn
Abveris Antibody	Canton
Access Vascular, Inc.	Woburn
Accure Health, Inc.	Boston
Adeptrix Corp.	Beverly
AdMeTech Foundation	Boston
Admetsys Corporation	Boston

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High School Interns by School and District

High School	Interns
Abby Kelley Foster Charter High School	2
Academy of the Pacific Rim Charter Public School	1
Assabet Valley Regional Technical High School	1
Attleboro High School	1
Blackstone Valley Regional Vocational Technical High School	1
Blue Hills Regional Technical School	1
Boston Community Leadership Academy	1
Boston International Newcomers Academy	2

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College Interns by Academic Institutions

College/University	Interns
Babson College	2
Boston College	7
Boston University	31
Brandeis University	3
Bridgewater State University	3
Brown University, RI	1
Bucknell University, PA	1
Bunker Hill Community College	3
Cape Cod Community College	1
Clark University	2
Colby College, ME	2

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Massachusetts
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Thank you for reading.

Fiscal Year 2022 Annual Report

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