



Office of Performance Management Oversight (OPMO)

**Massachusetts Life Sciences Center (MLSC)
FY2020 Report**



Agency Mission

- **Mission:** Our mission is to ensure that the life sciences in Massachusetts remains the most dynamic, verdant ecosystem of its kinds in the world. These investments create jobs and support advances that improve health and well-being. Through our investments, programs, collaboration and partnerships, the MLSC is committed to creating jobs and economic impact, and supporting scientific advances that will improve the health and well-being of patients across the world.
- **Contribution to Partnerships for Growth:** The Massachusetts Life Sciences Center is committed to strategically investing resources to support life science business competitiveness and to training a robust and diverse life sciences workforce to meet industry demand. Our broad array of programs exhibit the Center's core value of advancing equitable opportunities and employing regional economic development strategies that complement the unique strengths of regions within the state. Through our STEM education, equipment and support funding, along with our experiential learning initiatives we actively align our workforce training with life sciences employer needs and support the growth of Massachusetts' innovation economy.



Agency Goals

- **Agency Goal 1:** Increase investments in innovation infrastructure and maintain cutting-edge capabilities of previous capital investments.
- **Agency Target for Goal 1:** Deploy up to \$36M (in new and previously committed projects) in community-accessible capital grants to research universities, academic medical centers, research institutions and incubators for life sciences lab equipment, facilities, and other scientific infrastructure in the areas of biomanufacturing, neurology, microbiome, and big data; and STEM education grants to Massachusetts public school districts to advance life sciences education at middle and high school levels.
- **Results of Goal 1:** Disbursed \$26M of capital grants to 45 institutions across the Commonwealth and businesses providing COVID-19 PPE manufacturing support; completed 3 STEM education grants to Massachusetts public school districts in Boston, Lawrence, and Brockton and awarded 2 more to Salem and Chelsea school districts.
- **Agency Goal 2:** Increase educational and workforce development opportunities that lead to jobs in the life sciences.
- **Agency Target for Goal 2:** Creation of over 500 paid college internships with over 200 companies throughout the Commonwealth.
- **Results of Goal 2:** Created 513 internships with 285 companies



Agency Goals

- **Agency Goal 3:** Expand the pipeline of out-of-state relocation prospects and accelerate native business growth and development of early stage companies.
- **Agency Target for Goal 3:** Of secured business prospects, target 50% within Rte. 128, 50% outside of 128; 50% biopharma, and 50% MedTech; at least 50% with a manufacturing component.
- **Results of Goal 3:** Supported 20 businesses (54%) expanding outside of Rt. 128 through MassTAG and Tax Incentive Program.
- **Agency Goal 4:** Spur regionalization by incentivizing commercial investment in areas of high growth potential; Stimulate placemaking by identifying and promoting the strengths of regional assets.
- **Agency Target for Goal 4:** At least 50% attainment of jobs committed. Ensuring that incentives are returned to Department of Revenue for those companies who did not meet the compliance requirements.
- **Results of Goal 4:** As of June 30, 2020 the total jobs created and retained from all awards (active and completed) totaled 8,162 jobs, 65% attainment over the award total. Companies who failed to meet the minimum compliance threshold were terminated and funds are returned to the Commonwealth.



Agency Goals

- **Agency Goal 5:** Cultivate an integrated ecosystem and foster sector convergence. Enhance the network of industry partners to develop a robust and streamlined system of innovation, commercialization and production.
- **Agency Target for Goal 5:** Competitive awards of up to \$1.437M in seed stage and translational startup companies targeting key areas, which include investing in women-led companies (5 investments totaling \$437,500) and working with regional partners to invest in 4-6 companies (totaling \$1M) in target regions across the Commonwealth.
- **Results of Goal 5:** Competitive awards totaling \$1.2M was approved in FY20 to seed stage and translational startup companies: \$512,500 was approved to 6 women-led companies through the MassNextGen program (MLSC funding was supplemented by Takeda Pharmaceuticals, King Street Properties, Sanofi, and Johnson & Johnson Innovation); \$750,000 were approved to be invested to 3 businesses in Worcester, where MLSC investments were leveraged by regional investing partners.



COVID-19 Response Programs

- **Program Description:** To address the immediate impact and need of the COVID-19 pandemic, The Center moved swiftly to bring its resources, expertise, and investments to the table. In partnership with academic and industry partners, the Center allocated funding to support two efforts: the first (Massachusetts Manufacturing Emergency Response Team (M-ERT)) supports MA-manufacturers to scale operations to produce PPE and other critical items for the Commonwealth; the second effort (Massachusetts Consortium of Pathogen Readiness (MassCPR) focuses on supporting novel research from academia to combat the disease and prepare for future outbreaks. *NOTE: These are additional programs MLSC developed in FY20 in response to the Coronavirus pandemic and were not in the original OPMO FY20 Plan.*
- **Program Budget:** \$10M (\$5M Capital and \$5M Investment Fund)
- **Partnerships for Growth Goal Alignment:** Business, Community
- **COVID – 19 Response: Yes**
- **Fiscal Year Goal 1:** Directly invest in companies and academic research institutions who are filling a critical unmet need during the COVID-19 pandemic through the manufacturing and production of PPE and other critical items, in addition to furthering novel research.
- **Fiscal Year Target 1:** Deploy up to \$10M (\$5M Capital and \$5M Investment Fund) to companies and research institutions to address the pandemic
- **Results of Goal 1:** Awarded up to \$6.3M (\$3.96M for M-ERT and \$2.33M for MassCPR) to address the immediate and ongoing needs of the pandemic



Competitive Capital Program

- **Program Description:** Provide grants for capital programs that enhance the Commonwealth's collaborative life sciences ecosystem by investing in human capital for current and future workforce needs; developing technological innovations that deliver higher outcome, lowering cost therapies to patients and leading the convergence revolution in digital health, biopharma, medical device and engineering.
- **Program Budget:** \$29M
- **Partnerships for Growth Goal Alignment:** Business, Community, Workforce
- **COVID – 19 Response:** N/A



Competitive Capital Program

- **Fiscal Year Goal 1:** Increase investments in innovation infrastructure and maintain cutting-edge capabilities of previous capital investments.
- **Fiscal Year Target 1:** Deploy \$2M in community-accessible capital grants to research universities, academic medical centers, research institutions and incubators for life sciences lab equipment, facilities, and other scientific infrastructure in the areas of biomanufacturing, neurology, microbiome, and big data.
- **Results of Goal 1:** Over \$10M of capital grants was awarded to 11 research institutions, universities, and an incubator in FY20 (majority of spending to start in FY21) for scientific innovation infrastructure. 13 projects from prior years are currently still active. Some examples of completed projects include:
 - UMASS Lowell (FY17 Round) for construction of laboratories at Francis College of Engineering's Biomedical Engineering Program. Program opened in Fall 2018, newly renovated Perry Hall opened in January 2019 to host several biomedical engineering lab classes. In the Fall 2019 the number of labs and classes quadrupled.
 - Dana Farber Cell Manipulation Core Facility (FY17 Round) continued to experience growth in 2019. At least 17 external institutions and companies used the facility to manufacture for commercial purposes.



Competitive Capital Program

- **Fiscal Year Goal 2:** Invest in innovation to sustain Massachusetts' prominence in education and commercial endeavors in the life sciences.
- **Fiscal Year Target 2:** Invest up to \$1M in STEM equipment education grants to Massachusetts public school districts to advance life sciences education at middle and high school levels.
- **Results of Goal 2:** \$282,122.45 was awarded to two districts serving a total of ten schools (five each). A third school district is under consideration for FY21. Funding enables the purchase of STEM equipment, materials, supplies, technology, and teacher professional development for economically disadvantaged public middle and high schools.

National Institute for Innovation in Manufacturing Biopharmaceuticals Project Call



- **Program Description:** The National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL) is a public-private partnership dedicated to advancing biopharmaceutical manufacturing innovation. The organization is comprised of companies from large pharma, as well as small-to-medium enterprises. Additionally, non-profit partners from academia, institutes, and the state/federal government round out the program membership. Project Call 2.3 is a multi-stage process, comprised of initial concept paper submissions, invitations to submit a full proposal, followed by vetting of the proposals by both the MLSC and NIIMBL. The MLSC will provide funding for capital equipment, and these funds will be matched by NIIMBL and the project teams.
- **Program Budget:** Up to \$5.2M from MLSC, to be matched by NIIMBL and member groups
- **Partnerships for Growth Goal Alignment:** Business
- **COVID – 19 Response:** N/A

National Institute for Innovation in Manufacturing Biopharmaceuticals Project Call



- **Fiscal Year Goal 1:** Drive innovation in biomanufacturing technologies by providing capital investment to further leverage government and industry dollars.
- **Fiscal Year Target 1:** Technical reports submitted by awardees will describe research and development efforts on industry-relevant equipment purchased under this grant mechanism. Technical reports will be reviewed on a quarterly basis for all active NIIMBL projects. A summary will be compiled of number of patents filed, number of scientific publications, and number of FTE's working on the project.
- **Results of Goal 1:** While it is still too early for most projects to have outside users or scientific advancements, 1 group (UML) had 2 users from an outside university spend 40 hours on their asset.
- **Fiscal Year Goal 2:** Develop biomanufacturing workforce training programs through non-profit/industry partnerships.
- **Fiscal Year Target 2:** Generate online and in-person training modules to train students, as well as existing workers, across the Commonwealth in new techniques that are in demand at biomanufacturing facilities throughout Massachusetts.
- **Results of Goal 2:** As of March 2020, WPI had attendees from Shire (now Takeda) for both their in-person and online portions of the SPIDER course. The team is developing a strategy for the next round of course offerings.



Building Breakthroughs Capital Call

- **Program Description:** The Building Breakthroughs Capital Call was designed to provide grants for capital projects that support biomanufacturing innovation, including improvements to upstream/downstream processing, production of cell and gene therapies, monoclonal antibodies, and small molecules, quality and safety, and storage/stability, in the Commonwealth.
- **Program Budget:** \$2.8M
- **Partnerships for Growth Goal Alignment:** Business
- **COVID – 19 Response:** N/A
- **Fiscal Year Goal 1:** Foster collaboration and innovation in biomanufacturing technologies
- **Fiscal Year Target 1:** Develop and optimize biomanufacturing processes by investing capital funds in project team awardees consisting of non-profit and industry partners
- **Results of Goal 1:** All 4 awards from FY19 have signed their Agreements with MLSC. Projects are underway.



Bits to Bytes Capital Call

- **Program Description:** Provide grants for capital projects that generate and analyze large datasets to answer pressing life science questions, and to attract and train data scientists in the Commonwealth.
- **Program Budget:** \$2.5M
- **Partnerships for Growth Goal Alignment:** Business
- **COVID – 19 Response:** N/A
- **Fiscal Year Goal 1:** Foster collaboration between industry and academic research institutions on big data projects for life sciences.
- **Fiscal Year Target 1:** Monitor that collaborations are successful and industry matching is provided to hire data scientists to work on the funded projects.
- **Results of Goal 1:** All 9 awards from FY19 have signed their Agreements with MLSC. Projects are underway. One team has already reported a publication in the prestigious journal, Nature Communications.



Other Projects

Berkshire Innovation Center

- **Program Description:** Earmark grant for design, construction and development of a life science incubator building known as the Berkshire Innovation Center together with its fit-out and equipment at the William Stanley Business Park in the City of Pittsfield.
- **Program Budget:** \$4.0M
- **Partnerships for Growth Goal Alignment:** Business, Workforce
- **COVID – 19 Response:** N/A
- **Fiscal Year Goal 1:** Ensure project is completed
- **Fiscal Year Target 1:** Ensure project is completed
- **Results of Goal 1:** Construction was completed in November 2019 and Certificate of Occupancy was issued. The BIC has successfully attracted 28 members and is actively recruiting more.



Internship Challenge

- **Program Description:** The Internship Challenge is a year-round workforce development program focused on enhancing the talent pipeline for life sciences companies in Massachusetts. The program creates hundreds of new internship opportunities each year for college students and recent graduates who are considering career opportunities in the life sciences by enabling startups and SMEs to hire paid interns. Companies with 100 or fewer employees are eligible to receive reimbursement of up to \$8,160 per intern based on \$17/hour for three months. The program also helps employers find the talent they need by providing access to an online platform with a searchable application database.
- **Program Budget:** \$3,700,000
- **Partnerships for Growth Goal Alignment:** Business, Workforce
- **COVID–19 Response:** Interns were permitted to work remotely as of March 2020. Several host companies pivoted to work on COVID-19 diagnostics and/or treatments.



Internship Challenge

- **Fiscal Year Goal 1:** Enable life science SMEs to hire paid college interns.
- **Fiscal Year Target 1:** Creation of over 500 paid college internships with over 200 companies throughout the Commonwealth.
- **Results of Goal 1:** Created 513 internships with 285 companies.
- **Fiscal Year Goal 2:** Provide industry-based hands-on experiential learning opportunities for college students, preparing them for entry-level employment in the life sciences.
- **Fiscal Year Target 2:** At least 100 interns hired for part or full-time employment at the conclusion of their internship.
- **Results of Goal 2:** At least 80 interns reported to be hired post-internship by their host company at this time.



High School Apprenticeship Challenge

- **Program Description:** The program creates new internship opportunities for high school students by subsidizing intern stipends for small life sciences companies and academic researchers to enable them to hire paid interns. The program also helps connect employers with students through an online platform and facilitates direct placements for students that participated in an MLSC-sponsored pre-internship lab-training program. The training program is currently available for under-represented minority or economically disadvantaged students residing in metro-Boston, Brockton and New Bedford, and takes place over several weeks either after school or during the summer.
- **Program Budget:** \$600,000.00
- **Partnerships for Growth Goal Alignment:** Business, Workforce
- **COVID – 19 Response:** N/A



High School Apprenticeship Challenge

- **Fiscal Year Goal 1:** Provide innovative biotech/lab training for underserved high school students to prepare them with skills needed for an internship opportunity.
- **Fiscal Year Target 1:** At least 50 high school students participating in the training program.
- **Results of Goal 1:** 65 students participated in lab training programs.
- **Fiscal Year Goal 2:** Provide paid internship opportunities for high school students to work in academic research labs or life sciences companies throughout the Commonwealth.
- **Fiscal Year Target 2:** At least 100 high school interns hired throughout the Commonwealth.
- **Results of Goal 2:** 170 students from 68 different high schools interned with 54 life sciences companies and research institutions.

STEM Equipment & Professional Development Grants



- **Program Description:** Awards grant funding to school districts to enable the purchase of STEM equipment, materials, supplies, technology, and provide teacher professional development for economically disadvantaged public middle and high schools. Funding allows schools to prepare students with the technical skills needed for life sciences careers. Funding for teacher professional development ensures that educators receive the training needed to effectively use newly acquired equipment and technology.
- **Program Budget:** \$1.15M
- **Partnerships for Growth Goal Alignment:** Workforce
- **COVID – 19 Response:** N/A
- **Fiscal Year Goal 1:** Increase access to STEM equipment, curriculum, & professional development in order to advance life sciences education at middle and high school levels.
- **Fiscal Year Target 1:** Invest up to \$1.15M in STEM education through grants to Massachusetts public school districts.
- **Results of Goal 1:** Awarded a total of \$282,122.45 to two districts serving a total of ten schools (five each).



Massachusetts Next Generation Initiative (MassNextGen)

- **Program Description:** MassNextGen is a five year >\$2 million commitment to ensure greater gender parity in the next generation of life science entrepreneurs. Increasing the number of diverse, successful entrepreneurs is in the best interest of the life sciences industry. Each year, following a competitive application process, women-led early-stage life science companies will be awarded a year-long customized package of support. This includes non-dilutive grant funding and access to a network of seasoned Executive Coaches from the life sciences ecosystem to refine their business strategies and effectively raise capital. The program launched during FY20 will represent the third program round of the MassNextGen initiative. During this year at least \$437,500 of non-dilutive capital will be available to be distributed to winners of the competitive process, made available through donations from corporate sponsors and additional allocation from the MLSC's Board of Directors. Additional in-kind support and coaching from an illustrious network of seasoned entrepreneurs and life science investors will be available to the winners. In the previous two program rounds, five women led companies have been honored each year.
- **Program Budget:** \$437,500
- **Partnerships for Growth Goal Alignment:** Business, Workforce
- **COVID – 19 Response:** N/A



Massachusetts Next Generation Initiative (MassNextGen)

- **Fiscal Year Goal 1:** Increase visibility of female entrepreneurs in the life sciences investment community to aid in the elimination of gender bias that many women face when attempting to secure funding.
- **Fiscal Year Target 1:** Host both an announcement event and a pitch event to showcase the female entrepreneurs awarded through this program. Have at least 30 investors, BD professionals, and other key stakeholders present at each event. Through the program the women will have at least 15 additional meetings per company outside of offered programming. In total, companies will raise at least \$1 million.
- **Results of Goal 1:** In June 2019 we hosted an announcement event at the Sanofi offices in Cambridge. There were approximately 80 attendees at this event including investors, BD professionals, and other stakeholders. Due to the COVID-19 pandemic we were unable to host a pitch event. In addition, to offered programming the awardees met with coaches outside of this and made connections with those coaches networks. Awardees from this year were able to raise in total more than \$3 million. Awardees from previous years were able to raise in total more than \$4 million.
- **Fiscal Year Goal 2:** Execute coaching sessions for women entrepreneurs that are attended by individuals with a wide range of expertise and that cover a wide range of topics related to fundraising and business plan development.
- **Fiscal Year Target 2:** 6 coaching sessions with at least three coaches present at each session and at least one additional expert present.
- **Results of Goal 2:** Throughout the year we were able to host six coaching sessions with an average of 6.8 coaches present. At each session there were additional individuals present with expertise in the topic being discussed.



Massachusetts Life Sciences Center Seed Fund

- **Program Description:** With the assistance of a \$300,000 federal grant over the next 3 years, provided by the Office of Innovation and Entrepreneurship's Regional Innovative Strategies Program, the MLSC intends to launch a Seed Fund investing in in early stage life science companies located outside of the Greater Boston area. Increasing the number of early stage life science companies planning to grow and stay in communities outside of Greater Boston will catalyze the growth currently seen in Lowell, Worcester, Springfield and other areas of Western Mass. These communities all have the foundations of an innovation infrastructure with significant research institutions and incubators, but lack the robust investment support of Boston and Cambridge.
Investments will be provided in the form of a convertible notes between \$50,000 and \$250,000 per company. In addition to the investment, the MLSC will likely serve as a board observer, provide support to foster growth for the company, and increase visibility of the company's innovation and the region's resources.
- **Program Budget:** Up to \$1M
- **Partnerships for Growth Goal Alignment:** Business, Community
- **COVID – 19 Response:** N/A



Massachusetts Life Sciences Center Seed Fund

- **Fiscal Year Goal 1:** Launch the Seed Fund
- **Fiscal Year Target 1:** Develop plan for operationalizing the fund including hiring consulting services to assist with sourcing and diligencing investment opportunities from key regions, marketing the fund to key partners and companies, and develop diligence protocol and documents.
- **Results of Goal 1:** The MLSC launched the Seed Fund in May 2019 with \$1M of investable capital in 3 opportunities. The Center is contracting with MassVentures (then, MTTC) to help diligence opportunities of the Seed Fund. The Center has leveraged partnerships to hold office hours in the Seed Fund's pilot regions and to also market the fund.
- **Fiscal Year Goal 2:** Up to 50 investment opportunities and make initial investments.
- **Fiscal Year Target 2:** Deploy up to \$1M in convertible notes to promising and innovative technologies located in gateway cities
- **Results of Goal 2:** The Seed Fund received 78 applications, provided a number of feedback calls, and heard pitches from nearly 20 companies. After performing deep due diligence, the Center's Board of Directors allocated three \$250,000 investments, utilizing 75% of available funding for the first year.



Milestone Achievement Program

- **Program Description:** The Milestone Achievement Program (MAP) is designed to address the needs of early-stage life sciences companies by providing grant funding to execute critical, value-creating technical milestones. This program aims to fill a gap within the existing funding environment to enable early stage companies to attract additional follow on funding. The MAP awards proposals of up to \$200,000 in non-dilutive grants to MA companies who propose to complete a technical milestone, which has been informed by investors and/or board members.
- **Program Budget:** \$2.0M
- **Partnerships for Growth Goal Alignment:** Business
- **COVID – 19 Response:** N/A
- **Fiscal Year Goal 1:** Continue to monitor awardees for compliance with program
- **Fiscal Year Target 1:** Continue to monitor awardees for compliance with program
- **Results of Goal 1:** All ten FY19 awardees are progressing towards their stated milestones. To highlight a few accomplishments, one awardee, Versatope Therapeutics received a \$17.9M grant over five years to develop its influenza vaccine designed to protect against multiple strains using extracellular bacterial vesicles. Another awardee, UrSure, recently announced its acquisition to OraSure Technologies, a PA-based company which develops, manufactures, and markets point-of-care diagnostic devices.



Tax Incentive

- **Program Description:** In order to expand life sciences related employment opportunities, promote health-related innovations and stimulate research, development, manufacturing and commercialization in the life sciences, the Massachusetts Life Sciences Center offers tax incentives to companies engaged in life sciences research and development, commercialization and manufacturing in Massachusetts. The primary goal of the program is to incentivize life sciences companies to create new long-term jobs in Massachusetts.
- **Program Budget:** 19,500,000
- **Partnerships for Growth Goal Alignment:** Business, Workforce
- **COVID – 19 Response:** N/A



Tax Incentive

- **Fiscal Year Goal 1:** To incentivize life sciences companies to create new long-term jobs in the State.
- **Fiscal Year Target 1:** At least 50% attainment of jobs committed. Ensuring that incentives are returned to Department of Revenue for those companies who did not meet the compliance requirements.
- **Results of Goal 1:** As of June 30, 2020 the total jobs created and retained from all awards (active and completed) totaled 8,162 jobs, 65% attainment over the award total. Companies who failed to meet the minimum compliance threshold were terminated and funds are returned to the Commonwealth.
- **Fiscal Year Goal 2:** To spur regionalization by incentivizing companies to create new long-term jobs in various geographic areas of the Commonwealth.
- **Fiscal Year Target 2:** At least 40% of awards are made to companies outside of Boston and Cambridge
- **Results of Goal 2:** In the current round of the Tax Incentive Program, awards were made to 18 companies out of 35 who are expanding outside of Boston and Cambridge. (51%)

Massachusetts Transition and Growth Program (MasTAG)



- **Program Description:** Competitive grant program to encourage out-of-state and ex-US companies to establish new operations in MA.
- **Program Budget: Up to \$2,695,000**
- **Partnerships for Growth Goal Alignment:** Workforce
- **COVID – 19 Response:** N/A
- **Fiscal Year Goal 1:** Attract out-of-state and de novo companies that address specific strategic gaps and identified needs in the life sciences ecosystem.
- **Fiscal Year Target 1:** Recruit at least 1 new company developing novel products or providing contract services to establish a presence in Massachusetts.
- **Results of Goal 1:** Signed agreements with two companies providing much-needed contract development and manufacturing services
- **Fiscal Year Goal 2:** Incentivize job creation in key growth areas
- **Fiscal Year Target 2:** 15 net new jobs created
- **Results of Goal 2:** 26 net new jobs created