

# OFFICE OF PERFORMANCE MANAGEMENT & OVERSIGHT

## FISCAL 2014 ANNUAL REPORT GUIDANCE

The Office of Performance Management & Oversight (OPMO) measures the performance of all public and quasi-public entities engaged in economic development. All agencies are required to submit an Annual Report demonstrating progress against plan and include additional information as outlined in [Chapter 240 of the Acts of 2010](#).

The annual reports of each agency will be published on the Office of Performance Management [website](#), and will be electronically submitted to the clerks of the Senate and House of Representatives, the Chairs of the House and Senate Committees on Ways and Means and the House and Senate Chairs of the Joint Committee on Economic Development and Emerging Technologies.

### Filing Instructions:

The Fiscal Year 2014 report is due no later than **Friday, October 3, 2014**. An electronic copy of the report and attachments A & B should be e-mailed to [James.Poplasky@MassMail.State.MA.US](mailto:James.Poplasky@MassMail.State.MA.US)

### 1) AGENCY INFORMATION

Massachusetts Life Sciences Center

Susan Windham-Bannister, Ph.D

President and CEO

[www.masslifesciences.com](http://www.masslifesciences.com)

1000 Winter Street

Suite 2900

Waltham, MA 02451

### 2) MISSION STATEMENT

Please include the Mission Statement for your organization below.

**The Massachusetts Life Sciences Center (MLSC) is an investment agency that supports life sciences innovation, research, development and commercialization. The MLSC is charged with implementing a 10-year, \$1-billion, state-funded investment initiative. These investments create jobs and support advances that improve health and well-being. The MLSC offers the nation's most comprehensive set of incentives and collaborative programs targeted to the life sciences ecosystem. These programs propel the growth that has made Massachusetts the global leader in life sciences. The MLSC creates new models for collaboration and partners with organizations, both public and private, around the world to promote innovation in the life sciences.**

### 3) PERFORMANCE AGAINST PLAN REPORT

Please provide details on the progress and accomplishments for Fiscal Year 2014 as it relates to the Fiscal Year 2014 Plan submitted by your agency. Plans are posted on the OPMO [website](#) for easy reference. This information should be included as **Attachment A and should include prior year perspective**. In addition to your Performance to Plan Report, Questions 4 through 10 provides guidance on the specific information required under Chapter 240 of the Acts of 2010.

### 4) ACCOUNTING

Please provide financial information for your agency. Below please give a summary of *Receipts and Expenditures* during the fiscal year, and include the *Assets and Liabilities* at the end of the fiscal year. Please include the most recent audited financial report for the agency as **Attachment B**.

	AMOUNT	
Receipts	\$81,115,214	
Expenditures	\$59,070,293	
Assets	\$94,430,832	
Liabilities	\$49,890,984	

### 5) INVESTMENTS OR GRANTS TO BUSINESSES OR INDIVIDUALS

Does your agency make **investments** and/or provide **grants** to businesses or individuals? **Yes X** **No**

If **Yes**, please provide detailed information on investments and/or grants made during FY14 in the **Performance Against Plan Report – Attachment A** section of this report. Information should include the number, nature and amounts of investments made and grants awarded by your agency along with job, investment and/or other economic development impact. Please list the name(s) of the investment and/or grant programs offered by your agency in the space provided below:

Accelerator Loan Program  
Internship Challenge Program  
Capital Grant Program  
Industry Collaborative International Program  
Tax Incentive Program  
Cooperative Research Matching Grant Program  
High School Supplies and Equipment Grants  
Massachusetts Israeli Innovation Partnership  
PLEASE SEE LIST OF ALL PROGRAM AWARDEES, ATTACHMENT B

### 6) DEBT OR EQUITY INVESTMENT DETAILS

Is your agency involved in **debt** or **equity investments** for businesses? **Yes X** **No**

If **Yes**, please provide detailed information on debt and/or equity investments made during FY14 in the **Performance Against Plan Report – Attachment A** section of this report along with job, investment and/or other economic development impact. Please list the name(s) of the debit and/or equity investments programs offered by your agency in the space provided below:

**Accelerator Loan Program**

## 7) LOAN DETAILS

Is your agency involved in **real estate loans, working capital loans, or any other type of loan or guarantee?**

**Yes x** **No**

If **Yes**, please provide detailed information on loan(s) and/or guarantee(s) made during FY14 in the **Performance Against Plan Report – Attachment A** section of this report along with job, investment and/or other economic development impact. Please list the types of loan(s) and/or guarantee(s) offered by your agency in the space provided below:

**Accelerator Loan Program**

## 8) OTHER FORMS OF FINANCING OR FINANCIAL ASSISTANCE?

If your agency provides any other form of financing or financial assistance, please include FY14 details in the **Performance Against Plan Report – Attachment A** section of this report along with job, investment and/or other economic development impact. Please list the types of other forms of financing offered by your agency in the space provided below:

**Accelerator Loan Program**  
**Internship Challenge Program**  
**Capital Grant Program**  
**Industry Collaborative International Program**  
**Tax Incentive Program**  
**Cooperative Research Matching Grant Program**  
**High School Supplies and Equipment Grants**  
**PLEASE SEE LIST OF ALL PROGRAM AWARDEES, ATTACHMENT B**

## 9) PATENTS OR PRODUCTS

Does your agency track **patents** or **products** resulting from agency-funded activities? **Yes X** **No**

If **Yes**, please include details in the **Performance Against Plan Report – Attachment A** section of this report along with job, investment and/or other economic development impact. Please list the agency-funded activities of your agency that promote patent and product advancement in the space provided below:

## Cooperative Research Matching Grant Program

### 10) TECHNICAL ASSISTANCE

If your agency provides technical assistance, please provide detailed information on technical assistance provided during FY14 in **the Performance Against Plan Report – Attachment A** section of this report along with job, investment, and/or other economic development impact. Please list the name(s) of the technical assistance programs offered by your agency in the space provided below:

**3T**Through our information sessions, we offer guidance on the technical effort needed to become an applicant to any of our programs. We explain how to use our portal, how to file paperwork like the Certificate of Good Standing (with SOS and DOR) and we guide companies on how to register as a business in MA. We also provide feedback on applications that were not selected for our programs in hopes of a successful subsequent application.

### 11) MANAGEMENT TEAM

Please confirm that the senior management team listed on your website is accurate and report on any current or pending vacancies and/or replacements.

**The management team listed on the website is accurate. There is an on-going search for a new President and CEO which we expect will be complete at the end of 2014.**

### 12) BOARD OF DIRECTORS

If applicable, please confirm that the board of director information on your website is accurate and provide information on any current or pending board vacancies.

**The Board of Directors listed on the website is correct. There is currently one vacancy left by the departure of Josh Boger that we expect to fill shortly.**

**Attachment A.**

**Goals and Performance Measurements FY 2014**

**Goal 1. Advance Education and Workforce Development for Middle-Skills Jobs**

**High School Equipment and Supplies Grant Program\***

The High School Equipment and Supplies Grant Program enables the purchase of equipment and supplies to train students in life sciences technology and research as well as addresses a funding gap in capital dollars for public vocational and technical schools, public schools in Gateway Cities, and not-for-profit workforce training and educational institutions. Eligible high schools, as well as community-based organizations that serve such high schools, can apply for up to \$250,000 in grant funding by completing an online application. Applicants seeking funding of greater than \$100,000 (but no more than \$250,000) are required to secure matching funds, in cash or as an in-kind donation, for any amount over \$100,000 from an industry partner. In FY 2014 alone, industry partners contributed nearly \$300,000 in matching and in-kind donations as part of the program.

- In FY 2014, MLSC expanded eligibility for this program to include Title I schools. It was previously only open to public schools in Gateway Cities and all vocational-technical high schools. [NOTE: In order for a Title I school to be eligible in FY 2015, 30 percent of students must qualify for free or reduced lunch.]
  - # of awards and total amount:  
Nearly \$3.3 million in awards to 35 schools.
  - Geographic distribution of awards:  
The 35 awards were well distributed across the Commonwealth. Awards were made to schools/organizations in every region of the state (see Attachment B).
  - 59 high schools and educational organizations from across Massachusetts applied to the competitive High School Equipment and Supplies program in FY 2014 -- an increase from the 53 organizations and schools that applied in FY 2013.

**Internship Challenge Program\*\***

The Massachusetts Life Sciences Center's Internship Challenge is a workforce development program focused on enhancing the talent pipeline for Massachusetts companies engaged in life sciences. The program facilitates the placement of students and recent graduates who are considering career opportunities in the life sciences in paid internships across the state. Consistent with the MLSC's role as a catalyst in growing the talent needed by the life sciences industry, the program is designed to create hundreds of new internship opportunities each year by enabling small businesses to hire paid interns.

Objectives of the Internship Challenge include expanding the pool of prospective employees who have practical experience, enhancing opportunities for mentoring, enabling more students to explore career opportunities despite the challenging economic environment, and providing students interested in working in the life sciences a peer network through educational and informational networking events.

The number of applicants to, and companies participating in, the Internship Challenge Program is growing as word spreads about the value of this resource. Promoting diversity in the life sciences is a priority for the MLSC in general and within this program, and this is reflected in the mix of interns placed in FY 2014.

- # of applicants to the MLSC Internship Challenge Program:  
3,000, an increase of 31% over FY 2013.
- # of interns placed:  
443, an increase of 3.5% over FY 2013.
- # of sponsor companies:  
241, an increase of 8.6% over FY 2013.
- # of repeat sponsors for the Internship Challenge program:  
169 , an increase of 37.4% over FY 2013.
- # of interns from private institutions – 303 (68%)  
FY 2013: 272 (64%)
- # of interns from public institutions – 140 (32%)  
FY 2013: 156 (36%)
- # of interns from 2-year/certificate programs students – 52 (12%)  
FY 2013: 50 (12%)

- # of 4-year college/universities students – 261 (59%)  
FY 2013: 265 (62%)
- # of Master's students – 130 (29%)  
FY 2013: 113 (26%)

Demographics of interns placed through the program:

- Gender
  - # of female interns – 192 (43%)
    - FY 2013: 201 (47%)
  - # of male interns – 251 (57%)  
FY 2013: 227 (53%)
- Race/Ethnicity
  - # of Asian/South Asian/Asian-American interns – 117 (26%)  
FY 2013: 109 (25%)
  - # of Black (African, African-American, Caribbean) interns – 15(3%)  
FY 2013: 20 (5%)
  - # of Caucasian interns – 240 (54%)  
FY 2013: 228 (53%)
  - # of Hispanic/Latino interns – 26 (6%)  
FY 2013: 20 (5%)
  - # of Multi-Racial/Other – 13 (3%)  
FY 2013: 15 (4%)

Intern respondents' satisfaction with the internship experience:

- 92% of survey respondents indicated that their internship met or exceeded their expectation.
- 89% of intern respondents indicated that their internship has reinforced their interest in working in the life sciences.
- 85% of respondents indicated that their interest in working in a Massachusetts life sciences company has increased.

Sponsors' satisfaction with interns selected and value received through the program:

- 97% of company respondents indicated that their intern(s) met or exceeded their expectations.
- 80% of company respondents were pleased with the caliber of candidates in the MLSC's database.
- 79% of company respondents indicated that the technical skills demonstrated by their intern(s) were comparable to their best hires at this stage in their educational and career development.
- 96% of company respondents participated in the program because it was subsidized.
- 62% of company respondents participated in the program to "test-drive" potential employees
- Number of interns hired by sponsors for FT or PT jobs in MA following the May 2013 to April 2014 internship year: more than 100.

Please see full list of Internship Challenge host companies at Attachment B.

\*\*Internship program fiscal year was from May 1, 2013 to April 30, 2014.

### **STEM Discretionary Grants**

High quality Science, Technology, Engineering and Math (STEM) programs are an important part of producing the highly skilled and educated workforce that life sciences companies demand. MLSC is proud to participate in Governor Patrick's STEM Task Force and to fund innovative STEM-related programs throughout Massachusetts through discretionary grants, as well as the Capital Grant Program, and the High School Equipment and Supplies Grant Program.

MLSC awarded seven organizations grants for STEM programs totaling nearly \$310,000 in FY 2014. The MLSC's intent is to encourage STEM education in K-12 with a focus on demographics that are underrepresented in STEM fields.

A full list of awardees can be found at ATTACHMENT B.

## **Goal 2. Support Innovation and Entrepreneurship, including Ecosystem Accelerator Loan Program**

The Accelerator Loan Program continues to be a critical resource to bridge young companies across the “Valley of Death.” MLSC provides feedback to applicants who are not successful during their first attempt at funding and has recently found that some of these companies are submitting successful applications for funding in subsequent rounds.

MLSC held 2 rounds of the Accelerator Loan Program in FY 2014 and a total of 40 applications were received. Overall, 37 applications were deemed eligible for review. The MLSC’s peer reviewers recommended 21 of these applicants for review by MLSC’s Scientific Advisory Board (SAB). Eight of these companies were then recommended by the SAB for due diligence and review by the Investment Subcommittee of the MLSC’s Board of Directors. Three of these companies were approved for a loan by the full Board of Directors.

Of the 40 applications, 23 were submitted by companies located in cities and towns west of Rt. 128, such as Middleton, Sudbury and Acton; of these, 5 were submitted by companies outside of Rt. 495, including companies in Milford, Amherst and Westford.

A full list of selected Accelerator Loan companies can be found on Attachment B.

#### *Accelerator Awardees Successes in FY 2014*

One of the MLSC’s most exciting success stories of FY 2014 was that two more Accelerator Loan companies, Sample6 and AesRx, repaid their loans early (prior to maturity). To date, the Accelerator Program has invested or committed to fund \$18.7 million in loans to 28 companies, which have generated more than \$180 million in additional equity or acquisition proceeds. Eight (including Sample6 and AesRx) of these have now paid back their Accelerator loans early with interest.

Sample6, Inc. was provided funding of \$750,000 by the MLSC in FY 2013, and paid back its loan early after successfully raising \$11 million in its Series B financing round. AesRx, LLC was provided funding of \$750,000 by the MLSC in FY 2011 to support work on a novel drug for sickle cell anemia, and paid back its loan early after being acquired by Baxter International Inc., a globally diversified healthcare company based in Deerfield, IL.

In addition, AesRx LLC was acquired by Baxter International Inc., a diversified healthcare company based in Deerfield, IL. The Company's lead program, Aes-103, is a potential breakthrough in the treatment of sickle cell disease (SCD). Baxter will now advance that drug candidate, with the goal of commercializing the technology and delivering it to patients.

Consistent with our mission to promote new treatments, therapies and potential cures, the MLSC is seeing exciting new products enabled by our funding enter the market.

A FY 2012 awardee of funding from the MLSC, Cristcot Inc., released Sephure in FY 2014 the third commercialized product based on a technology developed with the support of an Accelerator Loan. Sephure is a first-of-its kind applicator for suppository medications. This comes after Sanofi acquired Pluromed, Inc., another Accelerator company, and subsequently launched their product LeGoo® in FY 2013, and after Good Start Genetics, Inc. commercialized their pre-pregnancy genetic testing technology in 2012. Good Start has grown from a company with 3 employees to a company of more than 150 in FY 2014, which is one of the Accelerator Loan program's biggest success stories.

Myomo, Inc., a FY 2011 awardee who's mission is to improve function and use of paralyzed limbs in individuals who suffer from debilitating muscle weakness due to stroke, brain injury, ALS, MS, spinal cord injury, or other neuromuscular conditions, commercialized their product in 2012. The MyoPro is focused on providing assistive function for joint motion to improve mobility.

### **International Collaborative Industry Program**

In FY 2014 the MLSC successfully completed the first round of the International Collaborative Industry Program (ICIP). The first round of ICIP created the opportunity for Massachusetts companies to partner with companies in four geographies, Alsace (France), Quebec (Canada), Victoria (Australia), Wallonia (Belgium) and apply for matching grants (\$100,000 minimum to \$500,000 maximum) to support R&D projects.

Joint R&D projects that are selected for awards are funded collectively: each of the awarded companies contributes funding, the MLSC provides a grant to the Massachusetts partner company and the international agency provides a grant to its country partner. MLSC received applications representing companies from each of the four foreign geographies. These projects were jointly

reviewed by the MLSC Scientific Advisory Board (SAB) and expert reviewers in our partner geographies.

At their February 2014 meeting, the MLSC Board of Directors approved awards for four teams, totaling more than \$1 million.

A complete list of awardees can be found on Attachment B.

### **Cooperative Research Grants**

The Cooperative Research Matching Grant Program is designed to promote industry-academic research collaborations, support translational research, and accelerate the commercialization of promising products and services. Not-for-profit academic/research institutions are eligible to apply for grant funding of up to \$250,000 per year over two years, provided that they have secured an industry sponsor for the research which will match MLSC funds on at least a 1:1 basis.

Massachusetts' world-class research institutions play an important role in the life sciences ecosystem in Massachusetts --providing the highly skilled workforce that companies need, and entrepreneurs who are building the companies of the future. In addition, global life sciences companies locate in Massachusetts to have access to our academic institutions. MLSC developed the Cooperative Research Grant to support industry-academic collaborations.

Since 2008, the MLSC has awarded 12 grants under this program, totaling nearly \$6 million. Half of these grants were active in FY 2014. This program was not open for new proposals in FY 2014

One of the continuing research grants, awarded to Massachusetts General Hospital, had a notably successful year. The project, titled "Combined Optical and Mammographic Breast Imaging", aims to develop a stand-alone near-infrared diffuse optical breast scanner that can be used in conjunction with any existing 2D x-ray mammography system to bring functional diagnosis to the clinic. Over the past year, Principal Investigator Qianqian Fang and his team have refined their image registration approach and significantly improved the structural-prior generation with help from industry partner Philips Healthcare. They have also conducted a small population clinical study to validate the robustness and performance of the proposed technique. Meanwhile, the integration of optical images with the Philips IntelliSpace Breast (ISB) system has proceeded in parallel.

## **Small Business Matching Grant Program**

The primary objective of the Small Business Matching Grant Program (SBMG) is to provide grants to commercialization-ready life sciences and technology companies that have received at least the equivalent of a Phase II Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) grant from federal agencies such as the National Institutes of Health (NIH), National Science Foundation (NSF), Department of Defense (DOD), etc.

Target applicants are emerging life sciences companies whose products are production-ready and have high potential for market adoption and penetration, are poised for rapid growth that will create jobs in the Commonwealth, and are positioned for additional financing.

MLSC did not run the SBMG program in FY 2014.

## **Miscellaneous**

- **Business Plan Competitions funded by MLSC**  
MLSC co-sponsored 2 business plan competitions in FY 2014: the Center funded MassChallenge at the “Platinum Level” -- \$100,000 -- and the Massachusetts Institute of Technology was awarded \$10,000 for their business plan competitions, respectively. In FY 2013, MLSC sponsored the same 2 businesses plan competitions.

- **New collaborations, consortia and/or partnerships initiated/funded by the MLSC**

Neuroscience Consortium. The Massachusetts Life Sciences Center (MLSC) launched the second Request for Proposals (RFP) funded by six global biopharmaceutical companies that comprise the Massachusetts Neuroscience Consortium (the “Consortium”). The Consortium, the formation of which was announced in June 2012 at the Bio International Convention, is funding pre-clinical neuroscience research at Massachusetts academic and research institutions. Charter companies included AbbVie, Biogen Idec, EMD Serono, Janssen Research & Development, Merck, Pfizer and Sunovion Pharmaceuticals. Each of the Consortium members contributed equally to the total available first-round project funding of \$1,750,000.

Consortium Members have pooled their resources to fund the identification and validation of novel targets for the symptomatic treatment and modification of chronic and debilitating neurological diseases. First-round proposals were solicited within the primary focus areas of Alzheimer's disease, Multiple Sclerosis, Neuropathic Pain, and Parkinson's disease. Nearly 100 proposals were submitted from universities, medical centers and research organizations from across the Massachusetts.

In July, 2013 the MLSC announced the first seven awards funded by the consortium, including three focused on Alzheimer's, two focused on neuropathic pain, and one each focused on muscular sclerosis and Parkinson's Disease.

Massachusetts-Israel Innovation Partnership. The Massachusetts-Israel Innovation Partnership (MIIP) was first announced in June 2011 at the BIO International Convention in Washington, D.C., and the first joint solicitation for proposals was launched in September 2011 by MATIMOP, the Israeli implementation agency, on behalf of the Office of the Chief Scientist (OCS) in the Ministry of Economy, on the Israeli side and by the three participating Massachusetts agencies: the Massachusetts Life Sciences Center, the Massachusetts Technology Collaborative (MTC) and the Massachusetts Clean Energy Center (MassCEC). Massachusetts and Israeli companies that are engaged in cooperative industrial research and development projects, and that were selected for funding within the MIIP framework, were awarded R&D grants, respectively, by the Office of the Chief Scientist in Israel and the three Massachusetts agencies participating in the program during the first round of MIIP.

In June of 2013, MATIMOP and MLSC announced the second round of grants awarded under the MIIP. The funding authorities in both states recently approved two life sciences research and development (R&D) collaborations between Massachusetts and Israeli companies, with a total R&D budget of over \$2 million. In FY 2014, awardee companies continued to work on their R&D projects.

Convening sessions, roundtables, etc. initiated/funded by MLSC.

MLSC regularly meets with international delegations, convenes meetings with stakeholder groups and attends events that allow MLSC to market our programs. For example, for

each round of the Accelerator, International (IC-IP/MIIT) and Tax Incentive programs, MLSC holds information sessions at locations such as MassBio, MassMedic, the UMass campuses, and other colleges, universities and economic development organizations throughout Massachusetts.

#### Participants in MLSC Peer Review Panel

We have more than 300 Peer Reviewers in our review system.

#### # of repeat participants in the MLSC Peer Review Panel

Once someone volunteers to be a peer reviewer, they are in our system unless they ask to be removed. MLSC calls upon them on a “repeat” basis if their expertise is relevant to the programs we run and the applicants we attract.

### **Goal 3. Support Regional Economic Development through Infrastructure Investments**

#### **Capital Grant Program**

The Capital Program provides grants for capital projects that enable and support life sciences workforce development and training, research and development, commercialization and/or manufacturing in Massachusetts. Applicants are academic organizations, research institutions, research hospitals, business incubators and other non-profit organizations. MLSC recognizes that investment in capital projects and infrastructure is required to create and sustain the attributes that make Massachusetts attractive to innovation clusters such as life sciences.

MLSC’s Capital Program fills critical capital infrastructure needs across the Commonwealth and builds regional capabilities that enable life sciences-driven economic development. The geographic reach of this program is significant and the job creation, particularly in the trades, has been very positive. In addition, the creation of unique capital resources for life sciences research, development, commercialization and manufacturing contributes greatly to the life sciences ecosystem in Massachusetts.

- # and type of applicants to the MLSC capital grant program  
51 entities (public and private colleges and universities, research institutions, hospitals, economic development groups, etc.) from across Massachusetts submitted eligible

applications to the competitive Capital Grant program in FY 2014. Of these applications, the MLSC's Board of Directors approved eleven new Capital Program projects, three new planning grants and four follow-on awards to an existing project in FY 2014. In addition, funding was also approved for 4 earmarked projects. Capital funds awarded in FY 2014 totaled nearly \$47.3 million.

#### **Goal 4. Increase Ease of Doing Business**

Making sure Massachusetts is as business friendly as possible is important to MLSC and the life sciences sectors. In order to attract companies, from small start-ups to large international companies, we seek to coordinate with state agencies and trade associations to speak with one voice and show companies that Massachusetts is a great place to do business.

- # of collaborations with other quasi-public agencies, state agencies and stakeholder organizations that result in job creation in MA:

MLSC collaborates extensively with MOBD, Mass Development, MOITI, and Mass Econ. With these close collaborations, we feel the "team Massachusetts approach" does enhance the likelihood of job creation. We also work with cities and towns throughout Massachusetts where the combined efforts most definitely increase the likelihood of company growth. We also work with the Massachusetts Technology Collaborative at the intersection of life sciences and ehealth. Finally, we work extensively with the trade associations such as MassBio and MassMedic which has further allowed us to create jobs in Massachusetts by showing that both the public and private sectors are working together towards the same goals.

#### **Goal 5. Address our Cost Competitiveness**

##### **Tax Incentive Program**

In order to expand life sciences-related employment opportunities, promote health-related innovations and stimulate research and development, manufacturing and commercialization in the life sciences, the Massachusetts Life Sciences Center offered tax incentives in 2014 to companies engaged in life sciences research and development, commercialization and manufacturing in

Massachusetts. The Life Sciences Initiative authorizes the MLSC to award up to \$25 million in tax incentives each year. The primary goal of the program is to incentivize life sciences companies to create new long-term jobs in Massachusetts. To qualify, companies must receive certification from the MLSC

MLSC's Tax Incentive Program has helped create and retain thousands of jobs in Massachusetts. At the same time, MLSC understands the need to protect public resources. Therefore, to minimize risk, the Tax Incentive Program has strong recovery measures that return funds to the Commonwealth if a company does not create or sustain the jobs to which they committed.

- # of companies applying for tax incentives:  
MLSC awarded \$24 million in tax incentives to 32 life sciences companies in FY 2014. Forty-two companies applied. Outcome of the FY 2014 awardees will not be known until January 2015. Generally, the award per committed job is \$20,000 to \$25,000.

## **Goal 6. Create/Retain Jobs**

### **Overall Data**

- Nearly 2,900 construction jobs\*\*\*
- Over 4,200 permanent jobs\*\*\*

\*\*\*These numbers are based only on direct investment by the Center and do not include the NAICS Code Analysis conducted by Barry Bluestone and Adam Clayton-Matthews in their report, "Life Sciences Innovation as a Catalyst for Economic Development," (Attachment C) which captured the broad impact of the life sciences initiative on job creation within Massachusetts. It also does not include 2013 Tax Program awardees' job growth or the jobs numbers for the Massachusetts Biomanufacturing Accelerator at UMass Dartmouth. The Dukakis Center released new figures this past year demonstrating that Massachusetts is now #1 per-capita in life sciences employment, with more than 113,000 life sciences jobs statewide.

In addition, jobs created in FY 2014 are likely a result of awards from FY 2013 or before.

- MLSC dollars authorized in FY 2014:

\$82 million, including the Tax Program.

- Funds leveraged with MLSC funds:

The MLSC has committed or invested \$539 million since its inception. This funding has leveraged \$1.7 billion in additional, non-MLSC funding.

### **Growing Jobs through Company Attraction**

FY 2014 was a banner year for company attraction and expansion. In partnership with the state's industry associations, MassBio and MassMEDIC, and with sister agencies in state government, the MLSC continued to work with companies large and small from across the world, helping to organize numerous grand openings and press announcements for new or expanding life sciences companies in Massachusetts (see list below). As part of our recruitment and collaboration strategy, the MLSC participated in trade missions to Canada, Japan, Singapore, Mexico, Panama, Israel and the United Arab Emirates in FY 2104. In addition, members of the MLSC Marketing and Communications and Business Development teams attended trade shows in Germany, Houston, Washington D.C. and Japan.



- Scotland-based BioOutsource, a global leader in biologics contract testing and BioSimilar characterization for the biopharmaceutical industry, announced that the company will be expanding their U.S. presence, opening a new lab facility in Massachusetts in 2015.



- Boston Biomedical, Inc., a subsidiary of Japanese life sciences leader Dainippon Sumitomo, officially opened its new headquarters in Cambridge.



- Cryogenetics, based in Norway and the world leader in fish reproduction products and services, opened a new laboratory in Woburn.



- Halifax Biomedical Inc. (HBI), a Nova Scotia based company that specializes in precision assessment of spine and joint-replacement micro-instability, opened its first US office at the Cambridge Innovation Center in Cambridge.



- Intellimedix is an Atlanta-based company devoted to developing and applying novel methods to accelerate the discovery of new treatments and cures, with a focus on epilepsy and other neurological disorders. The company celebrated the opening of its new research lab in Cambridge's Kendall Square.



- InviCRO, LLC, a leading provider of imaging services and software solutions in the drug discovery and development market, opened its new office and laboratory in Boston's Innovation District.



- Moderna Therapeutics, the pioneer in developing messenger RNA (mRNA) Therapeutics™, announced the company's expansion to a new facility in Cambridge's Kendall Square, a move that adds nearly 50,000 square feet of office, laboratory and manufacturing facilities to Moderna's operations in Massachusetts.



- MPR Associates specializes in medical, diagnostic and laboratory devices, as well as in consumer product design and development. MPRs' Product Development Group established a Massachusetts presence with a 3,300-square-foot facility in Chelmsford. MPR is headquartered in Washington DC.



- Neuroelectrics, a neuroscience devices designer, manufacturer and provider based in Spain, announced the opening of its first U.S. office, located in the Cambridge Innovation Center (CIC) in Cambridge.



- Oncovision, an innovative medical imaging technology company from Valencia, Spain, announced the opening of its U.S. subsidiary, Oncovision, Inc., located in Boston.



- Ornim Medical, an Israeli medical technology company, announced its decision to open its U.S. headquarters in Foxboro. Ornim's arrival was a direct result of Governor Patrick's recent trade mission to Israel.



- PerkinElmer, Inc., a global leader focused on improving the health and safety of people and the environment, officially opened a new Center for Innovation in Hopkinton.



- Sanofi, the global biopharma giant, opened a new 112,000-square-foot Global Research and Development facility near Kendall Square in Cambridge.



- Sarepta Therapeutics, Inc., originally from Washington, a developer of innovative RNA-based therapeutics, announced the opening of its new global headquarters in Cambridge's Kendall Square.



- Japanese companies MBL International Corporation and SCIVAX USA, INC. announced the official opening of a new 3,000 square-foot shared wet laboratory in Woburn.



- Swedish Orphan Biovitrum AB (Sobi) announced that the Company has decided to establish its North American operations in Waltham.



- Takeda broke ground on a new 250,000 square foot facility in Cambridge.



- Velesco Pharma, which focuses on early-stage drug development projects, expanded operations with the opening of a new business development office at the Quincy Center for Innovation.



- Vertex Pharmaceuticals opened a new 1.1 million square foot global headquarters in Boston.



- Xenetic Biosciences, Inc., a biopharmaceutical company formerly headquartered in the UK focused on developing next-generation biologic drugs and novel oncology therapeutics, announced the opening of its new corporate headquarters and research and development facility in Lexington. Xenetic's arrival was a direct result of Governor Patrick's trade mission to the U.K. in 2011.
- ZS Genetics, developer of a Third-Generation DNA sequencing platform, expanded its Bay State presence with the opening of a new facility in Wakefield.



## **Fiscal Year (FY) 2013 Annual Report**

**“Investing in the State of Innovation”**

# MASSACHUSETTS LIFE SCIENCES CENTER



**To:** Governor Deval Patrick  
Secretary of Administration and Finance Glen Shor  
Senate President Therese Murray  
Speaker of the House Robert DeLeo  
State Comptroller Martin Benison  
Clerk of the Senate William Welch  
Clerk of the House of Representatives Steven James

*By forward: House and Senate Committees on Ways and Means and the Joint Committee on Economic Development and Emerging Technologies*

**From:** Susan Windham-Bannister, Ph.D.

**Date:** September 27, 2013

**Re:** FY 2013 Annual Report of the Massachusetts Life Sciences Center

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The Massachusetts Life Sciences Center (MLSC) respectfully submits this Annual Report detailing our operations and accomplishments during FY 2013.

We are the hub of the Commonwealth's thriving life sciences community and proudly serve as stewards of the \$1 billion Massachusetts Life Sciences Initiative, which proposed by Governor Deval Patrick in 2007, and passed by the state legislature and signed into law in June 2008. At the mid-point of this initiative, thanks in large part to the investments made by the Center in scientific research, company formation and growth, workforce development and infrastructure, Massachusetts has emerged as the global leader in the life sciences. The life sciences sectors are the fastest-growing industry in our state, and we are adding jobs faster than any other state.

This report and the accompanying FY 2013 Audit Report are submitted in fulfillment of the requirements mandated by the General Court pursuant to the MLSC's enabling statute of the Massachusetts General Laws, Chapter 23I (formerly Section 7, now Section 15), as amended by Chapter 130 of the Acts of 2008. Financial statements are contained in the accompanying FY 2013 Audit Report by McGladrey LLP.

As always, we appreciate your continued interest and support.

Sincerely,

A handwritten signature in blue ink that reads "S Windham-Bannister".

Susan R. Windham-Bannister, Ph.D.  
President & CEO

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## Massachusetts: The Global Leader in Life Sciences

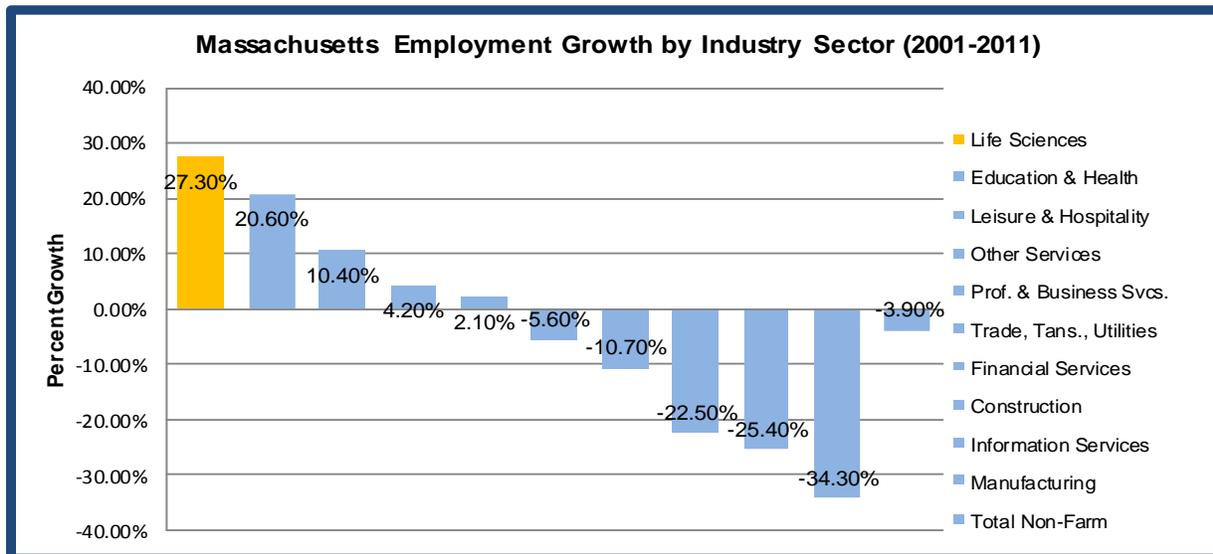
Five years ago Massachusetts was a recognized leader in the life sciences, but the state faced stiff competition, both domestic and international. Inaction would have diminished our leadership position – with negative repercussions for our state's reputation, as well as our economy.

At the 2007 BIO International Convention, Governor Deval Patrick took bold action by proposing the Massachusetts Life Sciences Initiative, a 10-year, \$1 billion investment to enhance the state's leadership in the life sciences, and to strengthen the life sciences as the engine for sustained growth in the Commonwealth. This initiative was enacted by our State Legislature in June 2008, and the Massachusetts Life Sciences Center (MLSC) was charged with its implementation.

Since then, the MLSC has become the hub for all sectors of the state's life sciences community – academic institutions, academic medical centers, and industry sectors that include biotechnology, pharmaceuticals, medical devices, medical diagnostics and bioinformatics.

The MLSC has not only been investing in innovation. It has also been *innovating* - developing new funding models, programs, tools and collaborative partnerships that spur economic growth, create jobs, catalyze innovation and accelerate the commercialization of promising treatments, therapies and cures that hold great potential for improving human health. In keeping with our role to help build a 21<sup>st</sup> century economy in Massachusetts, the MLSC has also been investing aggressively to prepare a diverse and inclusive workforce with the right skills to match the needs of our innovation sectors.

According to a recent Boston Foundation report released in March 2013, *Life Sciences Innovation as a Catalyst for Economic Development: The Role of the Massachusetts Life Sciences Center*, authored by noted Northeastern University economists Barry Bluestone and Alan Clayton-Matthews, the MLSC has played a key role in making Massachusetts the recognized global leader in life sciences. At the mid-point of the 10-year Life Sciences Initiative, thanks in large part to the investments made by the MSLC in scientific research, company formation and growth, workforce development and infrastructure, the life sciences are the fastest-growing industry sectors in our state, and Massachusetts is adding life sciences jobs faster than any other state in the U.S.



Sources: B. Bluestone and A. Clayton-Matthews, *Life Sciences Innovation as a Catalyst for Economic Development: The Role of the Massachusetts Life Sciences Center* (March 2013)

## A Clean Sweep!

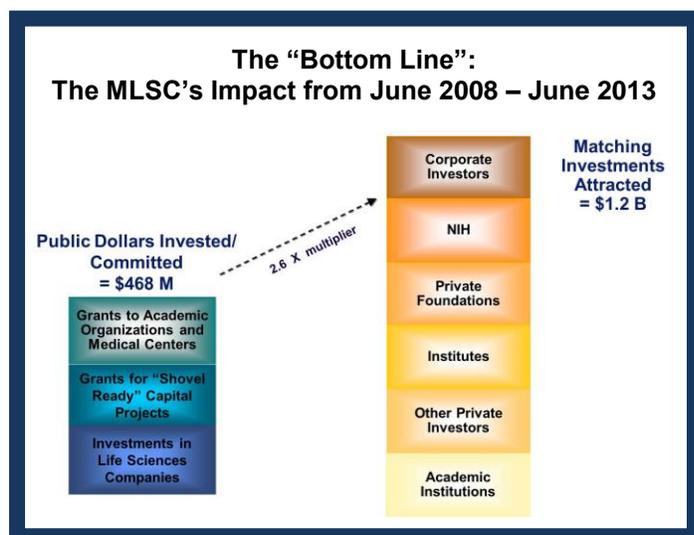
The Bluestone report also put forward a new growth theory for innovation-based economies, under which large companies are attracted to a region based on the presence of innovative, small, early-stage companies that they can acquire, partner with or license technologies from. Large companies want a front row-seat to the innovation that is happening in the early-stage environment. The report cited the MLSC's investments in early-stage companies as a critical factor in the MLSC's success at attracting major global companies to expand and invest in Massachusetts. This year marked a major milestone in those efforts -- with the announcement by Roche of plans to acquire Constitution Medical Investors and to make Boston their Center of Excellence in Hematology, all 10 of the world's largest biopharma companies now have a presence in Massachusetts. It's a clean sweep!

As Bluestone and Clayton-Matthews observe:

What is special about the Massachusetts Life Sciences Initiative is that it focuses explicitly on increasing the rate of innovation by encouraging a higher rate of research and development (R&D) in the life sciences and helping small firms in this supercluster convert basic research into marketable products and services. New growth theory posits this activity is the very fountain of economic growth.... And here is the key to understanding the central role of the MLSC. While the large firms can easily exist without the MLSC, the small life sciences firms need the Center...In this environment, the MLSC has become an important investment partner for smaller life sciences firms providing them with funds for translational research and development...This tends to help keep them in the Commonwealth and not chasing investment funds in other regions. Because these minnows stay here, Big Pharma has settled here from all over the world to be near them. The result has been extraordinary output and employment growth.

The MLSC's company recruitment efforts have continued to bear substantial fruit, with nearly 30 companies, large and small, announcing plans to expand within or into Massachusetts during FY 2013. Examples include Swiss pharma giant Roche, Israel-based medical device company ARGO, and Foundation Medicine, a native Massachusetts biotechnology and MLSC portfolio company. The MLSC partnered with many of these companies to support their integration into the state's life sciences community – hosting ribbon-cutting events, organizing press announcements, helping with networking, and generally promoting a high level of awareness.

## The Bottom Line



The MLSC's investment strategy is based on public-private collaboration and high leverage on public tax dollars. The Center uses a portfolio of investment programs to fill gaps across the cycle of life sciences innovation and commercialization, and incentivize matching private capital. Since 2008, the MLSC has directly invested or committed nearly \$468 million and leveraged over \$1.2 billion in third-party investment. In other words, for every \$1 of taxpayer money that the MLSC has invested, Massachusetts has attracted nearly \$3 in additional, outside investment – creating a portfolio of more than \$1.6 billion in public-private investments in the state's life sciences ecosystem that would not have existed without the Life Sciences Initiative.

The MLSC makes its awards based on competitive solicitations and a rigorous, transparent review process that draws on multi-disciplinary experts from the life sciences sectors across the state. This ensures that all investments are evaluated on the basis of merit and "relative best use" of the

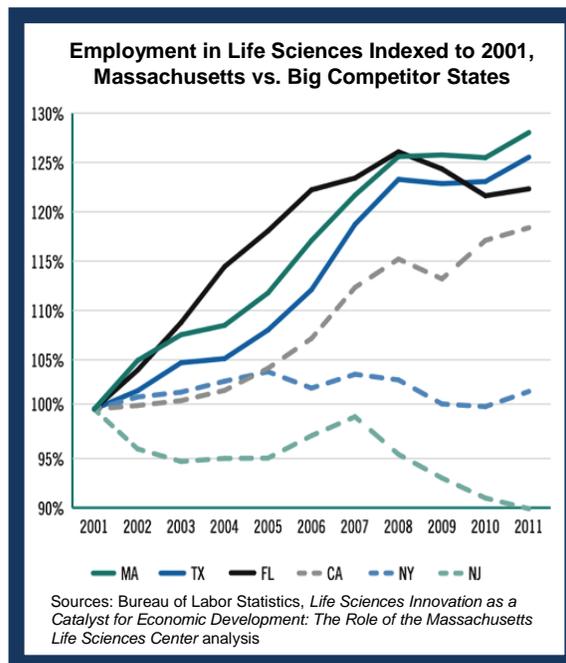
Commonwealth's funds. The broad scientific, investment, business and legal expertise that informs the MLSC's decisions enables us to make the types of smart, strategic investments that attract matching investment capital and highly leverage the public dollars that have been entrusted to the MLSC. Dr. Bluestone referred in his impact report to the role of experts in the MLSC's decision-making process as the MLSC's "secret sauce."

## Creating Jobs, Driving the Life Sciences Ecosystem's Growth

According to the Bluestone report, the MLSC's investments are making a measurable impact on job creation and economic growth for the life sciences sectors in the Commonwealth. The report confirms that the life sciences sectors are the fastest-growing industry cluster in Massachusetts. The researchers found that since the launch of the Life Sciences Initiative in 2008, Massachusetts has overtaken all competitor states in its rate of life sciences job creation.

As a result, The Commonwealth's life sciences sectors have risen to number one in the nation in terms of per capita employment, with close to 14,300 jobs for every one million residents. According to the Bluestone report, jobs in the life sciences carry an average salary of \$91,809.

The new jobs being created in the life sciences require diverse skills and educational attainment. According to the Bluestone report's findings, 74 percent of the jobs created through the MLSC's Tax Incentive Program in 2010 required a B.A. or less, including 26 percent that require less than a B.A. This validates the role that the life sciences play in creating broad economic opportunity, and further validates the Center's investments in workforce development at all skill levels and in all regions of the state.



## Investment Portfolio: An Overview



The MLSC's investment portfolio reflects the organization's strategy to ensure a strong supporting platform for innovation in Massachusetts. The MLSC's strategic targets for investment focus on academic institutions, the pipeline of early stage companies, workforce development, infrastructure and new models of collaboration.

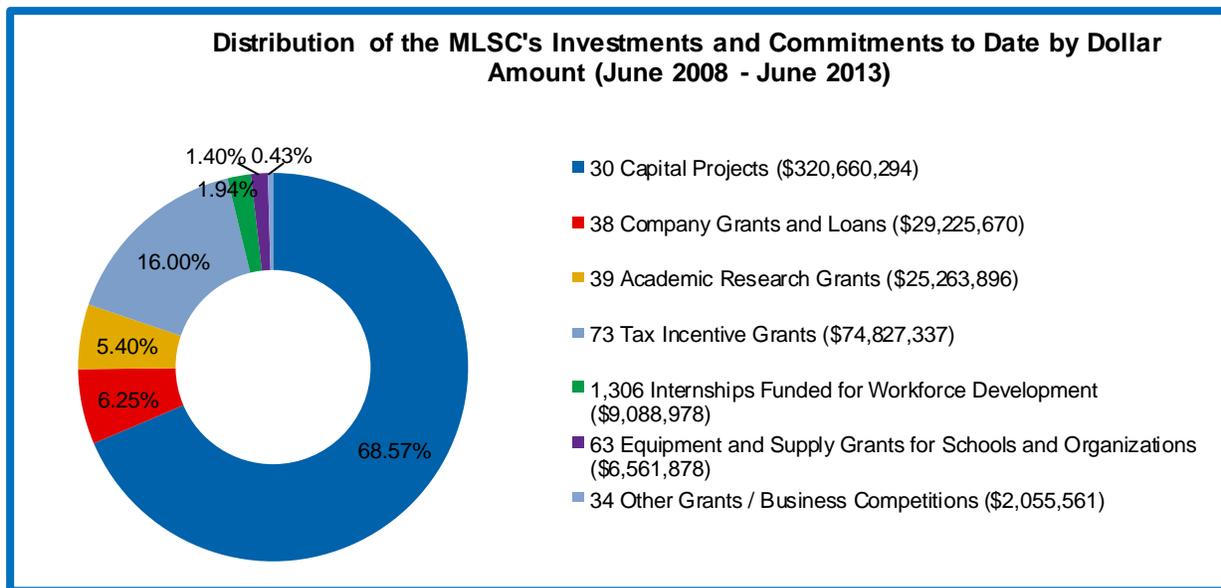
Highlights of the MLSC's new commitments in FY 2013 include nine new capital projects, grants or loans to eight early-stage companies and tax incentive awards to 24 companies. The MLSC currently manages a portfolio of over 450 individual grants, loans and tax incentives.

The MLSC also plays an important role as a convener, promoting collaboration within the state's life sciences community and between Massachusetts and national and

global life sciences communities. The MLSC brings members of the life sciences ecosystem together through new models of collaboration and partnership.

One of the MLSC’s most exciting success stories is the creation of the Massachusetts Neuroscience Consortium. This is a pioneering model of collaboration designed to accelerate success in pre-clinical research by leveraging the strength of industry giants in the neurosciences and the rich research environment in Massachusetts. The Consortium was announced at the 2012 BIO International Convention. Charter sponsors of the Consortium are Abbott (Abbvie), Biogen Idec, EMD Serono, Janssen Research & Development LLC (Johnson and Johnson), Merck, Pfizer and Sunovion Pharmaceuticals Inc.(a Daiinippon Sumitomo Pharmaceuticals company). The Consortium announced its first solicitation for research projects in September of 2012, and received nearly 100 applications for funding. In June of 2013 the Consortium awarded its first seven grants to support pioneering neuroscience research in the areas of Alzheimer’s, Parkinson’s, Multiple Sclerosis and neuropathic pain.

The MLSC is very proud of its achievements during the first five years of the Life Sciences Initiative. The MLSC looks forward to further enhancing Massachusetts’ life sciences community and to enabling Massachusetts’ ongoing contributions to the health and well-being of the global community.



## Investing in Infrastructure

The MLSC is committed to ensuring that there is a strong supporting platform for innovation in Massachusetts. This includes funding the creation of novel resources that companies and researchers will be able to find only in Massachusetts. Half of the resources committed via the Life Sciences Initiative (\$500 million of the total \$1 billion) are dedicated to capital projects. The MLSC’s investments in infrastructure are funded through the MLSC’s capital fund, which expended \$53.9 million in FY 2013 as part of the state’s overall capital plan.

In support of the MLSC’s economic development mission, a key priority of the MLSC is to use capital dollars to accelerate life sciences-driven economic development across the Commonwealth by engaging and building on the strengths of the different regions. Many of the MLSC’s capital projects are designed to ensure that institutions and regions across the state have the necessary infrastructure to be “life-sciences ready.”

The MLSC's Board of Directors approved nine new Capital Program projects, eight new planning grants and one follow-on award to an existing project in FY 2013, totaling more than \$135 million, including more than \$109 million for projects located in Western Massachusetts, ordered below from the highest to lowest amount invested:

- **The University of Massachusetts Amherst** was awarded a grant of \$95 million, the MLSC's largest grant to date. The grant for UMass Amherst will fund construction to fit out and equip a substantial portion of the university's new \$157 million Life Sciences Laboratories. This building will house three new research centers led by faculty and dedicated to partnering with life sciences and precision manufacturing companies in Western Massachusetts to develop innovative products and services. The three centers are:
  - Personalized Health Monitoring, focused on developing nanotechnology and large dataset management to improve health care through low-cost, wearable, wireless sensors that analyze patient data continuously in real time. This center will bring bio-sensor technology, nanotechnology, new polymer and manufacturing techniques, "big data" and information technology together to design, develop and test the next generation of wearable bio-sensors and healthy lifestyle applications. Biomanufacturing firms, medical device makers, big data analysts and other health care industry partners will produce prototypes, test them and assess manufacturing feasibility.
  - Bioactive Delivery, focused on discovery and application of new drug, agricultural and "nutriceutical" compounds. This center will draw on discoveries and research by UMass Amherst faculty who, for example, develop synthetic molecules that can fight infection in new ways and design all-natural formulations for delivering oil-soluble vitamins and other nutrients in food products.
  - Models to Medicine, focused on translating basic protein research by UMass Amherst experts into new therapeutic targets. This center will capitalize on an explosion of discoveries over the past 10 years that suggest that a variety of protein dysfunctions play a role in Alzheimer's, Parkinson's, cancer and infectious diseases.
- **University of Massachusetts Dartmouth** was awarded a \$6 million grant in December 2012 to support the Massachusetts Accelerator for Biomanufacturing (MAB). The MLSC previously provided \$14.6 million in capital funding to the school to fund the MAB in 2011. The university will use the funds to increase the MAB's capacity, including the fitting-out of four independent production suites with equipment for client services and workforce development.
- **The Pioneer Valley Life Sciences Institute (PVLISI)** was awarded a grant of \$5.5 million to support a joint venture between Baystate Medical Center in Springfield and UMass Amherst. The grant for PVLISI, located adjacent to Baystate Medical Center's main campus in Springfield's North End, will support the development of a new Center of Innovation in Health Informatics and Technology, focused on advancing public/private-sector partnerships and incubating innovative technology solutions developed by start-ups and larger, more established vendor firms in areas such as population health management, health care quality, "big data" analytics and mobile health.
- **Harvard Medical School** was awarded a \$5 million grant to create a Laboratory of Systems Pharmacology that will serve as a multidisciplinary scientific incubator with the goal of providing better clinical trial information in the drug development process. The lab aims to tackle an incredibly important problem in a new way by using multiple measurements such as proteomics and advanced



*Dr. Len Zon and Dr. George Daly show Lieutenant Governor Timothy Murray and Massachusetts Life Sciences Center President & CEO Dr. Susan Windham-Bannister the zebrafish lab space at Boston Children's Hospital.*

imaging combined with extensive computational analyses and model building and testing to understand drug action. Visiting scientists from the FDA and local drug companies, together with investigators from Dana Farber, Massachusetts General Hospital, Brigham and Women's Hospital, Tufts, MIT and Harvard, will be involved in this novel effort.

- **LabCentral** was awarded a \$5 million capital grant to support the establishment of state-of-the-art facilities and services for emerging life sciences companies in Cambridge. LabCentral will use the grant funding to build a life sciences laboratory to facilitate the creation of startup biotech companies close to the centers of innovation located in Kendall Square. Startups will be able to rent small amounts of lab space in lieu of having to invest in their own larger-scale wet labs. LabCentral is projected to create more than 30 construction jobs and more than 500 new science jobs in startup companies operating at the facility over the next 10 years.
- **The Massachusetts Green High Performance Computing Center (MGHPCC)** was awarded \$4.5 million. This investment will build on an infrastructure for large-scale data analysis that is already in place in Holyoke and was created by a strong partnership among academia, industry and the Commonwealth. Boston University, Harvard University, MIT, Northeastern University and the University of Massachusetts have teamed with Astra-Zeneca, Pfizer, Merck, Merrimack Pharmaceuticals, EMC and IBM, among others, to create this computing resource. MLSC funding will allow the MGHPCC to create a cloud-based resource for data-driven biology.
- **The Forsyth Institute** was awarded a \$4.1 million capital grant for a newly-created Forsyth Center for Salivary Diagnostics (FCSD). The grant will support the construction and equipping of the FCSD, a facility that will seek to revolutionize the way disease testing is performed.
- **Boston Children's Hospital** was awarded a \$4 million grant. This grant will support the establishment of the Children's Center for Cell Therapy (CCCT), including new equipment and facility renovation that will allow additional cell culturing facilities and a robotics area designed to perform highly specialized chemical screening on stem cells. The CCCT will be a specialized center focused on developing novel stem cell therapies for untreatable or incurable diseases.
- **Holyoke Community College (HCC)** was awarded \$3.8 million in funding to expand its capacity for life sciences-related research and data analysis. It will use this money to support the renovation of 13,000 square feet of lab space and the creation of a Center for Life Sciences. This will include a clean room for the biological sciences, which will be the only clean room in Western Massachusetts to support training for students, faculty and industry partners.
- **Northern Essex Community College (NECC)** was awarded a grant of \$1.2 million. NECC plans to build a new lab at its Lawrence campus and to renovate lab spaces at both the Haverhill and Lawrence campuses. NECC offers an Associate's degree in Laboratory Science that is focused on training laboratory technicians to work in the analytical chemistry and biotechnology fields. Since the program's inception three years ago, enrollment has tripled. The Laboratory Science Program is currently supported by a National Science Foundation Advanced Technological Education grant that enabled the purchase of equipment and supplies, the fostering of collaborations with regional industry, and partnerships with regional K-12 schools.



*Governor Deval Patrick is joined by representatives from Western Massachusetts awardee organizations, Holyoke Mayor Alex Morse and Holyoke Community College students at the Feb. 28th MLSC capital grant announcement.*

- **Quinsigamond Community College**, located in Worcester, Massachusetts, was awarded \$310,000. QCC's grant will be used to update 2,000 square feet of outdated lab space. After renovations, this space will be equipped with new technologies to serve as a state-of-the-art scientific laboratory for the school's biotechnology and related programming. This new space will enable the college to increase its current program offerings and double the number of students enrolled in biotechnology and biomedical engineering courses from 100 to 200 over the next three years. This expanded capacity to serve students will allow Quinsigamond to better respond to local labor market conditions and employer needs.
- **Bunker Hill Community College (BHCC)** was awarded \$200,000 to support the expansion of its biotechnology program by expanding its laboratory capabilities and enriching its curriculum. "The equipment purchased with this generous grant will help train more students for high-demand jobs in the expanding biotechnology industry in Greater Boston. Our goal is to help meet regional workforce needs while ensuring that our students will be competitive in this critical job market," said BHCC President Mary L. Fifield.
- **Springfield Technical Community College (STCC)** was awarded \$150,000, which will be used to update its equipment and labs to align with the needs of life sciences companies. MLSC funding will allow STCC to conduct a study to identify the most appropriate equipment that will best deliver a life sciences education leading to employment in the field.
- **Quincy College** was granted \$100,000 to develop its new Certificate of Science program in Biotechnology and Compliance and purchase new state-of-the-art equipment for biomanufacturing.
- **Pittsfield Economic Development Authority (PEDA)** was awarded a \$55,000 planning grant to support a research project at the William Stanley Business Park in Pittsfield. The business park is the site of a proposed Berkshire Life Sciences Center, a 20,000-square-foot facility on former General Electric (GE) property that is managed by the Pittsfield Economic Development Authority (PEDA).
- **Bay Path College** in Longmeadow was awarded a planning grant of \$50,000. It will enable the college to engage key stakeholders from the life sciences industry, workforce development, and educational institutions to identify the capital needs and other resources needed to fully implement an initiative in the life sciences.
- **Middlesex Community College (MCC)** was awarded a \$50,000 planning grant. MCC plans to complete a comprehensive planning study to identify the best approach for expanding its biotechnology facilities. This will include a clean room to support increased enrollment and workforce development, education and training.
- **Regis College** was awarded \$50,000 to enhance the college's life sciences training programs. Regis College educates a highly diverse, first-generation student body challenged by higher education costs. This planning grant will enable the college to develop studies that will further identify what types of life sciences resources would be most beneficial for its students. MLSC funding will also allow Regis College to plan a much-needed transformation of its life sciences building into an efficient, state-of-the-art facility to prepare its students for employment in the life sciences industry.

The MLSC received 41 applications in FY 2013 for infrastructure projects from across the state through the Center's second annual competitive solicitation. In FY 2014, the Capital Project Matching Grant program will provide up to \$35 million in funding for life-sciences-related capital projects around the state.

FY 2013 Active Awards			
Project	Award Amount	Year of Award	Status at End of FY 2013
Framingham Wastewater and Pumping Station	\$12.9 million	FY 2009	Completed
Marine Biological Laboratory in Woods Hole	\$10 million	FY 2009	Completed
Tufts/Cummings School of Veterinary Medicine, NE Regional Biosafety Lab in Grafton	\$9.5 million	FY 2009	Completed
Albert Sherman Center at UMass Medical School	\$90 million	FY 2010	Completed
Worcester Polytechnic Institute/Gateway Park	\$5.15 million	FY 2010	Completed
UMass Boston/Dana Farber Center for Personalized Cancer Therapy	\$2 million	FY 2011	Ongoing
UMass Dartmouth Biomanufacturing Center	\$20.6 million	FY 2012	Ongoing
Dana Farber Molecular Cancer Imaging Center	\$10 million	FY 2012	Ongoing
Joslin Translational Center for the Cure of Diabetes	\$5 million	FY 2012	Ongoing
Museum of Science "Hall of Human Life"	\$5 million	FY 2012	Ongoing
UMass Lowell Emerging Technologies and Innovation Center	\$10 million	FY 2012	Ongoing
UMass Dartmouth Advanced Technology Manufacturing Center (ATMC)	\$11.4 million	FY 2012	Planned for FY15
LabCentral	\$4.96 million	FY 2013	Ongoing
UMass Amherst Life Sciences Laboratories	\$95 million	FY 2013	Ongoing
The Pioneer Valley Life Sciences Institute	\$5.5 million	FY 2013	Ongoing
Massachusetts Green High Performance Computing Center (HPCC)	\$4.54 million	FY 2013	Ongoing
Holyoke Community College (HCC)	\$3.8 million	FY 2013	Ongoing
Springfield Technical Community College (STCC)	\$150,000	FY 2013	Ongoing
Bay Path College	\$50,000	FY 2013	Ongoing
Quinsigamond Community College (QCC)	\$310,000	FY 2013	Ongoing
The Forsyth Institute	\$4.1 million	FY 2013	Ongoing
Northern Essex Community College (NECC)	\$1.24 million	FY 2013	Ongoing
Middlesex Community College (MCC)	\$50,000	FY 2013	Ongoing
Boston Children's Hospital	\$4 million	FY 2013	Ongoing
Harvard Medical School	\$5 million	FY 2013	Ongoing
Bunker Hill Community College (BHCC)	\$200,000	FY 2013	Ongoing
Quincy College	\$100,000	FY 2013	Ongoing
Regis College	\$50,000	FY 2013	Ongoing
Pittsfield Economic Development Authority (PEDA)	\$55,000	FY 2013	Ongoing

The MLSC's infrastructure investments have contributed to the creation of more than 1.2 *million* square feet of new life sciences research and manufacturing space across the Commonwealth, while creating more than 3,300 jobs in the building trades and in the life sciences.

## Propelling the Companies of the Future

### Accelerating the Growth of Early-Stage Companies

In FY 2013, the MLSC continued its commitment to building the pipeline of new life sciences companies in Massachusetts by committing nearly \$6 million in Accelerator Loans to six early-stage companies. The MLSC's Accelerator Loan Program provides working capital to early-stage life sciences companies at a

critical stage in their development. This program seeks to de-risk these companies for future – usually private - investors by funding the necessary steps to achieve critical milestones. Some of these companies may hold the promise of becoming the next Vertex or Boston Scientific, while others will be acquired by large companies that are increasingly depending on “external innovation” for growth. A large pool of creative entrepreneurs who are developing promising technologies makes Massachusetts an attractive and vibrant life sciences environment.

During FY 2013 the MLSC administered two rounds of the Accelerator Loan Program, receiving a total of 66 applications, of which 61 were eligible for review by experts selected from among the MLSC’s 200-plus *pro bono* volunteer peer reviewers. The MLSC’s peer reviewers recommended 43 of these applicants for review by the MLSC’s Scientific Advisory Board (see Appendix B). Sixteen companies were then recommended by the Scientific Advisory Board (“SAB”) for review by the Investment Subcommittee of the MLSC’s Board of Directors (see Appendix A). Six of these companies were approved for a loan by the full Board of Directors (“Board”) as indicated below:

Accelerator Loans in FY 2013			
Company	Location	Area of Development	Loan Amount
Arch Therapeutics	Natick	Advancing a novel approach to enhance the way surgeons stop bleeding (hemostasis), control leaking (sealant), and mitigate infection during surgery and trauma care.	\$1,000,000
Bio2 Technologies	Woburn	Applying CLM™, a proprietary Cross-Linked Microstructure fiber bonding process, to produce a range of biocompatible materials with broad application in musculoskeletal clinical practice.	\$1,000,000
Cytrellis Biosystems	Boston	Developing new products for dermatology, scar reduction and aesthetic medicine using technology that facilitates non-invasive directional tightening and moving of the skin.	\$1,000,000
ImmuneXcite	Watertown	Discovering new immunotherapies for cancer via the proprietary mAbXcite platform, applying a unique polysaccharide to coat cancer cells, signaling human neutrophils to attack the tumors.	\$984,500
Lumicell Diagnostics	Wellesley	Developing a novel intraoperative cancer detection system, including a cancer-specific imaging agent and a new hand-held imager to provide specificity and sensitivity during cancer removal surgery.	\$1,000,000
MedicaMetrix	Wayland	Developing a diagnostic tool, ProstaGlove™, that provides a quantitative measurement of prostate size with the goal of improving clinical outcomes and reducing healthcare costs.	\$1,000,000

From the Accelerator Loan Program’s inception through the end of FY 2013, the MLSC has funded or committed to lend a total of \$17.2 million in Accelerator Loans.<sup>1</sup>

In FY 2013, two companies, Avaxia Biologics and MoMelan Technologies repaid Accelerator Loans with interest early, after achieving significant success in private fundraising or the sale of the company. As of the close of FY 2013, a total of six companies have pre-paid their loans: two in FY 2013, two in FY 2012, and two in FY 2011.

<sup>1</sup> Two companies that have received Accelerator Loans in the past have ceased operations, including Aura Medsystems, Inc., a 2010 loan recipient, which ceased operations in the spring of 2013.

MoMelan Technologies, recipient of an Accelerator Loan in 2011, repaid its loan after being acquired by Texas-based Kinetic Concepts, Inc. MoMelan is a medical device company developing an innovative epidermal grafting solution utilizing donor site-sparing technology for enabling and standardizing the use of epidermal skin grafting that can be performed in the office or outpatient setting with minimal discomfort. Avaxia Biologics, recipient of an Accelerator Loan in 2010, prepaid its Accelerator Loan after raising \$6.4 million in private financing. To date, Accelerator companies have raised more than \$115 million in funding subsequent to receiving a loan from the MLSC.



*Avaxia Biologics and MoMelan Technologies prepay their Accelerator Loans during FY 2013.*

The MLSC also supported entrepreneurship and company creation by co-sponsoring two important business plan competitions in FY 2013: MassChallenge was awarded a \$100,000 contribution for its international business plan competition, and Massachusetts Institute of Technology was awarded a \$10,000 contribution for its annual business plan competition.

## From Bench to Bedside: Academic Research Matching Grant Programs

The promise offered by innovation begins with “discovery,” usually in an academic setting. The MLSC’s key priorities include preserving the strong competitive position of Massachusetts’ academic institutions and medical centers, supporting translational research in the life sciences, and accelerating the discovery and transfer of technology out of academic settings. To accomplish these objectives, the MLSC has created three research matching grant programs. One of these programs, the Cooperative Research Matching Grant (CRMG) Program, launched its third round in FY 2013.

### Cooperative Research Grants

The MLSC’s Cooperative Research Grants encourage industry-sponsored research collaborations with Massachusetts academic institutions to accelerate translational research. Not-for-profit academic/research institutions and industry partners are eligible to apply for grant funding of up to \$250,000 per year over two years, provided that the industry sponsor matches the MLSC funds on at least a 1:1 basis. Funds to support these cooperative research projects are given as grants to the academic partner. Since 2008, the MLSC has awarded 12 grants under this program, totaling nearly \$6 million.

In June 2013, the MLSC's Board authorized four two-year awards of \$500,000 each under the third round of the program. The Principal Investigators who received grants and their research projects with industry sponsors are briefly described below:

- **Dr. Weining Lu of Boston Medical Center** will be addressing a major disease – chronic kidney disease -- that cannot be fully treated with existing pharmaceuticals. Chronic kidney disease is a major worldwide health problem with ineffective therapy options. The biological pathway that BMC is studying is an ideal, novel target for the development of renal protective therapy that can be used in conjunction with existing kidney disease drugs. **BMC's industry partner is Pfizer.**
- **Drs. Philip De Jager and Howard Weinder of Brigham and Women's Hospital (BWH)** are studying Multiple Sclerosis (MS) and the potential for personalized treatment of the disease. When MS is diagnosed, clinicians cannot predict if cases will be mild or severe, and often are left with arbitrary, sometimes ineffective treatment options for each individual patient. The BWH study will attempt to locate specific biomarkers for MS patients to allow for more individualized, effective treatment. **BWH's industry partner is Merck Serono.**
- **Dr. Xi He of Children's Hospital Boston** is studying the impact of modifying molecular pathways in bone growth as a potential treatment for osteoporosis. Osteoporosis is a large and growing problem with limited treatment available, and the pathway that Children's Hospital is studying is a novel way to approach the problem. If bone growth can be encouraged within the body, it could be possible to reverse osteoporosis. **Children's Hospital's partner is Pfizer.**
- **Dr. David Scadden of Massachusetts General Hospital (MGH)** will be testing a therapy in conjunction with another drug on the market in an attempt to reduce complications from bone marrow transplants, which often have complex and toxic side effects. This treatment aims to increase natural stem cell and red blood cell re-population after bone marrow donations, which would benefit donors and potentially recipients. When combined with an already-existing drug, this treatment could be a more efficacious way to make bone marrow transplantation available to a wider group of patients. **MGH's industry partner is GlaxoSmithKline.**

## Training the Next Generation of Life Sciences Experts

### Equipment and Supplies for High Schools Grant Program

In December 2012, the MLSC awarded \$3.2 million in grants to support the purchase of life sciences training equipment and supplies at vocational technical schools, public high schools in Massachusetts' Gateway Cities, and workforce training programs across the state. Awardees provide a breadth of training ranging from general STEM education curricula to biotechnology. The student population that will benefit from these equipment grants represents a diverse workforce, including workers seeking re-training and low-income individuals preparing for entry-level positions.

This grant program seeks to further the development of the state's life sciences workforce by providing funding of up to \$250,000 per institution for life sciences equipment and supplies. To be eligible for an award of greater than \$100,000, applicants must have secured matching funds or in-kind donations from an industry partner that supports the training program for which the equipment and supplies are needed. Industry sponsors have contributed more than \$350,000 in matching funds and in-kind donations as part of this year's program.

Former Lieutenant Governor Timothy Murray launched the first round of the MLSC Equipment and Supplies for High Schools Grant Program at the 7th Annual Science, Technology, Engineering and Math (STEM) Summit held in 2010. Building on the success of the first year of the program, Lieutenant Governor Murray in December visited the Nashoba Valley Technical High School, one of the recipients in this latest round, to award the vocational technical school with a \$96,665-grant to support the expansion

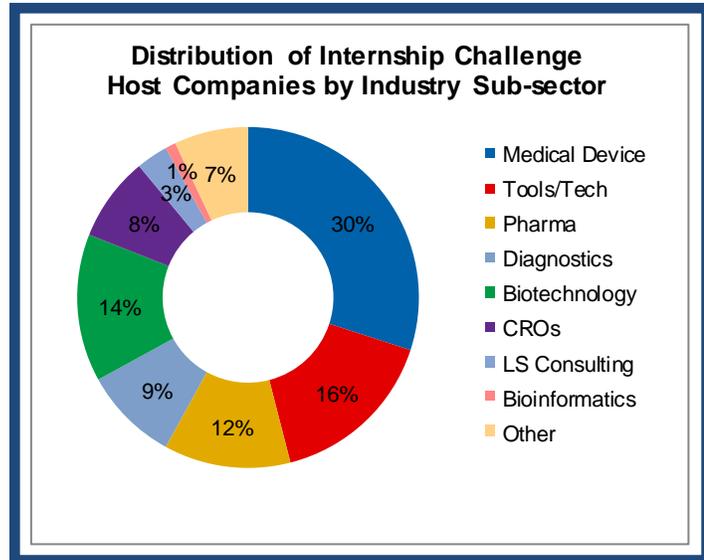
of their Engineering Academy to include biotechnical engineering and robotic fabrication. In addition to Nashoba Valley, 30 other schools and programs were also awarded grants:

<b>Schools and Organizations Awarded High School Equipment and Supplies Grants in FY 2013</b>		
<b>School/Organization</b>	<b>City/Town</b>	<b>Award Amount</b>
Assabet Valley Regional Technical High School	Marlborough	\$ 90,284
Blackstone Valley Regional Vocational Technical High School	Upton	\$ 99,984
Blue Hills Technical School District	Canton	\$ 100,000
Bristol-Plymouth Regional Technical School District	Taunton	\$ 99,940
Cape Cod Regional Technical High School	Harwich	\$ 77,738
Fall River Public Schools (Durfee High School)	Fall River	\$ 92,555
Greater Lowell Regional Vocational Technical High School	Tyngsboro	\$ 89,936
Haverhill High School	Haverhill	\$ 99,289
Holyoke Public Schools (Dean Tech & Holyoke High School)	Holyoke	\$ 195,019
Lynn English High School	Lynn	\$ 77,419
Massachusetts Biotechnology Education Foundation	Cambridge	\$ 249,777
Minuteman Regional Vocational Technical School District	Lexington	\$ 134,137
Montachusett Regional Vocational Technical School District	Fitchburg	\$ 248,274
Nashoba Valley Technical High School	Westford	\$ 96,665
Norfolk County Agricultural High School	Walpole	\$ 97,612
North Shore Technical High School	Middleton	\$ 99,999
Northeast Metropolitan Vocational School District	Wakefield	\$ 71,610
Quaboag Regional Middle High School	Warren	\$ 7,438
Quincy High School	Quincy	\$ 94,469
Revere High School	Revere	\$ 98,176
Rindge School of Technical Arts	Cambridge	\$ 100,000
Roger L. Putnam Vocational Technical Academy	Springfield	\$ 100,000
Shawsheen Valley Regional Vocational School District	Billerica	\$ 95,928
Smith Vocational and Agricultural High School	Northampton	\$ 100,000
South Shore Vocational Technical High School	Hanover	\$ 119,925
Taconic High School	Pittsfield	\$ 88,028
Taunton Public Schools	Taunton	\$ 99,384
The BioBuilder Educational Foundation	Cambridge	\$ 95,300
Westfield Public Schools	Westfield	\$ 44,333
Worcester North High School	Worcester	\$ 64,995
Worcester Technical High School	Worcester	\$ 99,982

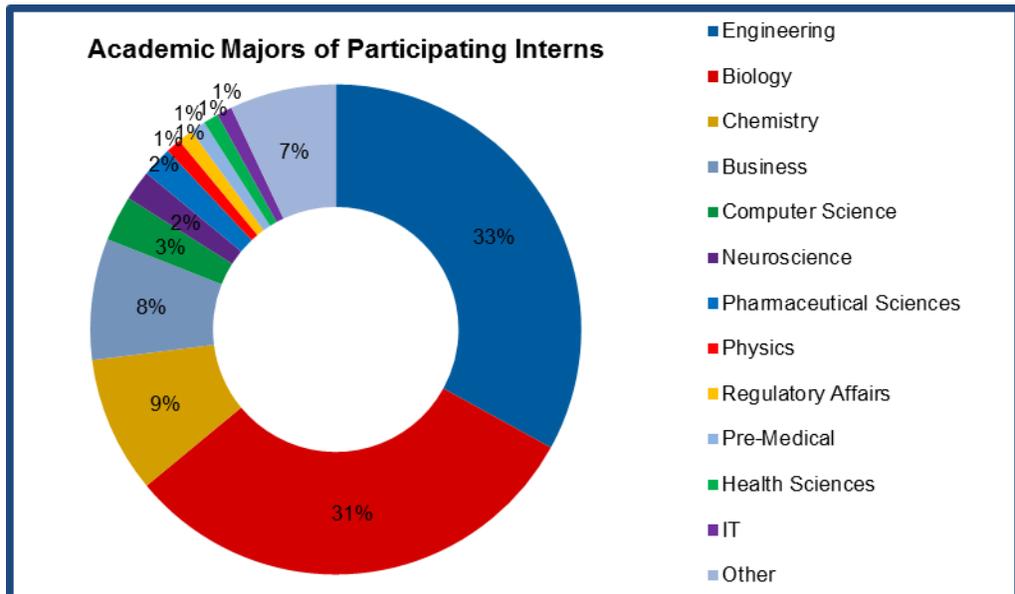
### **Internship Challenge Program**

The Internship Challenge is the MLSC's flagship workforce development program, focused on enhancing the talent pipeline for life sciences companies in Massachusetts while simultaneously providing interns with practical, "hands-on" experience that prepares them to step into the workforce ready to meet the job requirements of life sciences employers. The program provides paid internships to undergraduate sophomores, juniors and seniors; community college students; Master's students; and recent college graduates. Since the program first launched in 2009, 1,306 internships have been established, with students representing 145 different colleges and universities placed with 356 companies across the state.

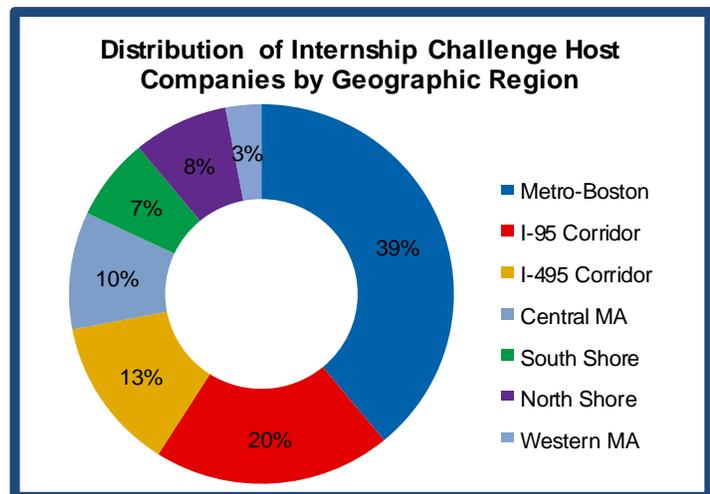
Through this program, host companies commit to providing a dedicated mentor and a meaningful internship opportunity related to the academic focus of eligible students. The MLSC provides a web-based interface to connect student candidates with host companies, students complete an online application, which includes a cover letter and their resume, and host companies review applications to match skills with their needs. Host companies can hire up to two interns per year, but have the option to hire an additional two interns that are enrolled in a community college. At the conclusion of the internship, the MLSC reimburses companies for intern stipends of up to \$7,200, which allows for 12 weeks of full-time work at the maximum reimbursable pay rate of \$15 per hour.



The Internship Challenge is designed to expand the pool of prospective employees who have practical experience, enhance opportunities for mentoring, enable more students to explore career opportunities, provide students interested in working in the life sciences with a peer network through educational and informational exchange events, and expose students to entrepreneurship.



The Internship Challenge is also a human-capital subsidy program for small and early-stage companies. The MLSC only reimburses intern stipends for companies with 100 or fewer employees in Massachusetts (and up to 250 globally). Larger life sciences companies and research institutions can access the program's database to recruit students, but cannot seek reimbursement for the interns that they hire. Because



participating interns work in smaller companies, they also receive exposure to the dynamic entrepreneurial environment.

FY 2013 saw the highest level of participation in the program since its inception. More than 2,000 students and recent graduates submitted applications for review by nearly 300 companies across Massachusetts. The program placed a total of 428 interns with 222 host companies (See Appendix C for a complete list of 2012-13 Internship Challenge host companies.) Interns were demographically diverse and represented 87 different colleges and universities. The Internship Challenge program is broadly inclusive, as the data above on participating interns and host companies illustrates.

### Feedback about the Internship Challenge Program

The MLSC conducts a survey of both interns and sponsors at the conclusion of each internship period because the Center believes that the Internship Challenge participants themselves provide the best evidence of the program's value and impact.

Surveys of participating interns show that nearly 30 percent of the interns that were entering the workforce (recent graduates) found immediate full-time employment as a result of their internships. In most cases, these interns were hired by the company that hosted their respective internships.

Western New England University graduate student and Internship Challenge intern Brian Dutra won first place in the Old Guard Oral Presentation Competition held at the 2012 American Society of Mechanical Engineers' (ASME) International Mechanical Engineering Congress and Exposition held in Houston, Texas. He claimed the top prize for his presentation on "Acoustophoretic Separation of Lipid Particles from Red Blood Cells," a process of removing microscopic impurities from blood using ultrasonic standing waves. Brian was a summer intern at FloDesign Sonics and ultimately became an employee of the Wilbraham-based company.



*Internship Challenge participant Brian Dutra with the poster of his winning project.*

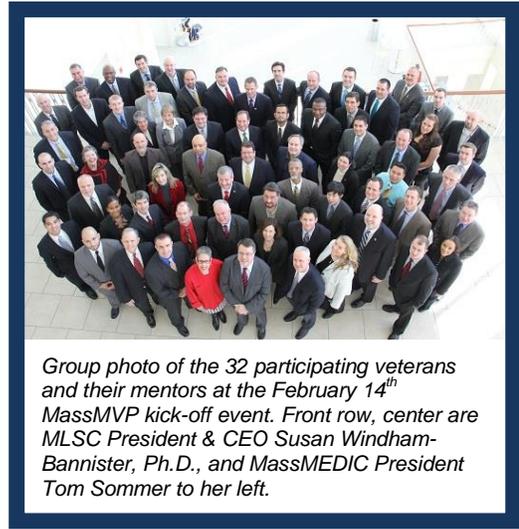
### MedTech IGNITE Program

The MLSC renewed its commitment to the Massachusetts Medical Device Industry Council's (MassMEDIC) MedTech IGNITE program in FY 2013 with a grant of \$50,000. The MLSC previously awarded MassMEDIC a \$50,000 grant in 2011 to support the business-coaching program, launched in 2007. The most recent funding awarded to MassMEDIC was used to jumpstart the Bay State Shadowing Program, a first-of-its-kind effort in Massachusetts designed to increase the number of successful medical device startups by focusing on clinical unmet needs and physician – industry collaboration at the earliest stage of company formation.

As part of the program, passionate, qualified entrepreneurs shadow leading physicians during typical daily rounds in the hospital with an eye to identifying areas in which the quality and cost of patient care could be significantly improved. Once a significant unmet need has been identified, the team will brainstorm on potential technology and business solutions that may enable the formation of successful new startups. MedTech IGNITE's new shadowing program is an innovative approach to identifying unmet medical needs that can be addressed by entrepreneurs in the medtech industry.

## Massachusetts Medical Technology Veterans Program (MassMVP)

On February 14, 2013, the MLSC and MassMEDIC sponsored a kick-off event for a medical technology mentoring program for U.S. military veterans residing in Massachusetts. The program selected 32 Massachusetts veterans to participate in training to enter the medical technology workforce as part of the Massachusetts Medical Technology Veterans Program (MassMVP). The training is being organized in partnership with the International Center for Professional Development (ICPD), an experienced provider of career development counseling using personalized mentoring, face-to-face experiential training and ongoing web-based support. The expanded program builds on the work that began last October with the launch of the Medical Technology Veterans Program (MVP) at *AdvaMed 2012: The Medtech Conference* in Boston and will provide veterans with training and networking opportunities within the medical device and diagnostics industries, including opportunities to exchange knowledge with industry experts.



*Group photo of the 32 participating veterans and their mentors at the February 14<sup>th</sup> MassMVP kick-off event. Front row, center are MLSC President & CEO Susan Windham-Bannister, Ph.D., and MassMEDIC President Tom Sommer to her left.*

## Supporting STEM (Science, Technology, Engineering and Math) Education and an Inclusive Workforce

The MLSC awarded grants totaling over \$250,000 to seven programs focused on STEM education and diversity in the life sciences workforce during FY 2013. The grants build upon the Patrick/Murray Administration's strategy for enhancing STEM educational opportunities across Massachusetts, and on the MLSC's commitment to ensuring an inclusive life sciences workforce. Dr. Windham-Bannister serves on the Governor's STEM Council.

The seven organizations that received grants focus on different strategies for enhancing STEM education and diversity:

- **Boston Children's Museum: "Maker Lab Program" (\$50,000 in FY 2013)** will utilize this grant to support a pilot project. The program will be a creative space where parents and children can tinker and explore various modular station-based labs which feature different topics, tools and techniques for exploration, with an emphasis on life science learning for children. This is an opportunity for the MLSC to support the museum's efforts to develop STEM skills through informal science programs.
- **Freedom House: Preparing Urban Students for Success in High School and Higher Education programs (PUSH - \$10,000 in FY 2013)** is an innovative program designed to address educational inequality and inequity by providing services to students in marginalized urban neighborhoods in Boston. Continued funding from the MLSC will be used to implement a STEM program that will expand the comprehensiveness of the educational programs and offer students additional educational and career opportunities.
- **Girl Scouts of Eastern Massachusetts (GSEM): Girls Building Self-eSTeEM and Event-based STEM opportunities (\$30,000 in FY 2013)** provides STEM-related activities to girls who are at-risk within underserved communities through the FaB Factor program. Continued funding from the MLSC allows them to bring programming to more girls by expanding their program offerings into the summer months. GSEM also offers a variety of STEM-related programming that directly ties into the Girl Scout Leadership Experience to all girls within GSEM's 178 communities.

- **Massachusetts Computing Attainment Network (MassCAN - \$50,000 in FY 2013)** will use the MLSC's grant to support a partnership of organizations collaborating to inspire and educate Massachusetts students in computing and to prepare them to lead and innovate in a future economy that will depend on and be driven by computer technology. MassCAN wants to make sure that Massachusetts plays a nation-leading role in providing all its students with the opportunity to be inspired and prepared for many of the most extraordinary computer science and computer science-enabled careers of the 21<sup>st</sup> century. In addition, MassCAN wants to make sure that the state actively develops the highly educated workforce necessary to sustain the nation's leading knowledge and information-based state economy.
- **Mass Technology Leadership Council: Big Data Project (MassTLC - \$50,000 in FY 2013)** will use its grant to support a Big Data project for the life sciences by: (1) convening a cohort of experts at the intersection of big data and the life sciences; (2) conducting a discovery process through a series of interviews; (3) synthesizing, reporting back, and validating results via survey, and (4) exploring opportunities and interventions through a facilitated roundtable of experts.
- **Science Club for Girls: *Girls with a Z* program and the pilot internship program for high school girls (SCG - \$50,000 in FY 2013)** will primarily utilize the MLSC's grant for: (1) the enhancement of the "Girls with a Z" program with the goal of exposing students to live organisms, stereomicroscopy, developmental biology and project-based learning; and (2) the development of a research internship experience for high school students through state-wide research-based vacation week and summer workshops similar to those conducted at the Broad Institute.
- **Youth Creating Impact Through Innovation, Entrepreneurship and Sustainability (Youth CITIES): MedTech Tinkering (\$18,950 in FY 2013)** exposes young people to the mindset and principles of entrepreneurship. The MedTech Tinkering program will provide experiential learning for students in all components of STEM that is informed by MedTech and expose students to technology-related projects that will allow hands-on "tinkering." The program will also foster career awareness by building relationships with industry professionals through mentoring, as well as encourage community well-being by directing students toward MedTech projects that improve human health and welfare.

The MLSC will continue to seek additional opportunities to expand access to STEM education and to ensure an inclusive life sciences workforce in the fiscal year ahead.

## Investing in Industry and Job Creation

### The Life Sciences Tax Incentive Program

In FY 2013, the MLSC awarded \$23 million in tax incentives to 24 life sciences companies under the MLSC's 2012 Life Sciences Tax Incentive program. The companies receiving tax incentive awards have committed to creating nearly 1,000 new jobs in the Commonwealth during calendar year 2013.

The Life Sciences Act authorizes up to \$25 million in tax incentives each year for companies engaged in life sciences research and development, commercialization and manufacturing. The primary goal of the program is to incentivize life sciences companies to create new long-term jobs in Massachusetts. Companies receiving incentives must commit to the creation of a specific number of net new jobs during the following calendar year and also to the retention of those jobs for a five-year period.

The 2012 round of the program featured 10 different incentives, which address the significant capital expenditures associated with the life sciences R&D cycle and the high costs of translating research into commercially viable products. A total of 44 companies applied for tax incentives in 2012. Details of the 24 tax incentive awardees are below:

### Tax Incentives Awarded Under the MLSC's 2013 Life Sciences Tax Incentive Program

Company	Location	Tax Incentive Amount Awarded	Jobs Committed
Aegerion Pharmaceuticals, Inc.	Cambridge	\$ 260,000	20
ARIAD Pharmaceuticals, Inc.	Cambridge	\$ 1,225,000	50
Biogen Idec MA, Inc.	Weston	\$ 5,512,500	225
bluebird bio, Inc.	Cambridge	\$ 294,000	12
Blueprint Medicines Corporation	Cambridge	\$ 245,000	10
Boston Heart Diagnostics Corporation	Framingham	\$ 450,000	35
Bruker Corporation	Billerica	\$ 1,347,500	55
DePuy Orthopaedics, Inc.	Raynham	\$ 1,715,000	70
Enzymatics, Inc.	Beverly	\$ 152,000	10
Epizyme, Inc.	Cambridge	\$ 416,500	17
Foundation Medicine, Inc.	Cambridge	\$ 450,309	25
Instrumentation Laboratory Company	Bedford	\$ 980,000	40
inviCRO, LLC	Boston	\$ 60,000	10
Merrimack Pharmaceuticals, Inc.	Cambridge	\$ 490,000	20
Moderna Therapeutics, Inc.	Cambridge	\$ 318,500	13
NinePoint Medical, Inc.	Cambridge	\$ 343,774	18
Nova BioMedical Corporation	Waltham	\$ 1,730,000	75
Pall Corporation	Westborough	\$ 127,500	10
PAREXEL International Corporation	Billerica	\$ 1,421,000	58
PerkinElmer, Inc.	Waltham	\$ 1,470,000	60
Quest Diagnostic LLC	Cambridge	\$ 1,225,000	50
Quintiles Transnational Holdings, Inc.	Cambridge	\$ 1,225,000	50
Shire Human Genetic Therapies, Inc.	Lexington	\$ 750,000	25
Synageva BioPharma Corporation	Lexington	\$ 784,000	32

The MLSC takes its stewardship of these resources seriously and has built in strong accountability measures to ensure that the program has “teeth.” The MLSC is carefully monitoring the performance of companies that have received tax incentives to ensure compliance with the tax incentive agreements they are required to execute with the MLSC. Headcount requirements must not only be met in the year following receipt of the award, but also maintained for the following five years. Under agreements by awardees, recipients of tax incentives are required to report job creation results to the MLSC by the end of the calendar year. Under the Life Sciences Act, the Department of Revenue has the authority to recover or “claw back” incentives from companies that the MLSC determines will not meet the minimum job creation threshold in their tax incentive agreement.

### Summary of the Tax Incentive Program from Inception to June 30, 2013

Program Year	Number of Awards Provided	Dollar Amount of Awards Provided	Number of Active Awards as of June 30, 2013	Dollar Amount of Active Awards as of June 30, 2013
2009	26	\$24,420,000	13	\$13,955,500
2010	24	\$24,390,292*	15	\$20,528,259
2011	26	\$20,340,884	21	\$17,350,995
2012	24	\$22,992,583	24	\$22,992,583
Total	100	\$92,143,759	73	\$74,827,337

\*In FY 2012, Shire HGT, Inc., of Lexington received an additional \$3.5 million of tax incentives under an existing tax commitment by the Commonwealth.

Some awardees have declined their awards due to changes in their business or general economic conditions. Some awardees have also determined that they were unlikely to reach their job creation commitment under the statutory guidelines and opted to voluntarily terminate their agreements, either by foregoing taking the tax benefits at all or by returning the benefits to the Commonwealth if they had already received them. Since inception, the MLSC has decertified two awardees for not achieving the statutory thresholds. Nineteen active companies have received two or more active awards, illustrating their continued commitment to grow their headcount in the Commonwealth.

In FY 2013, awardees from the 2009 through 2011 tax programs were required to report their headcount as of December 31, 2012. As of December 31, 2012, reporting awardees from the 2009 through 2011 programs had hired and maintained 3,065 employees, representing a 157 percent attainment of their commitment.

As of June 30, 2013, there were 49 active awards from the 2009 through 2011 program years, with a combined commitment of fulfilling or maintaining 1,882 new hires under the program.

The 2012 program awardees have committed to creating an additional 990 jobs within the Commonwealth in calendar year 2013. The results of these awards will be reported to the MLSC in January 2014. To date, the Tax Incentive Program has resulted in a combined net new hire commitment of more than 2,800 jobs among active awardees.

## Attracting Companies to Massachusetts



*State, community and company officials cut a ribbon to celebrate Canada-based Baylis Medical's new office opening in Burlington, Mass. (from left to right): Kris Shah, Baylis Medical, Executive Vice President & Chief Technology Officer; Tom Sommer, Massachusetts Medical Device Industry Council (MassMEDIC), President; Massachusetts State Representative Kenneth I. Gordon; Angus McQuilken, MLSC, Vice President for Communications and Marketing; and Frank Baylis, Baylis Medical, President.*

Massachusetts continues to be a magnet for growing companies, both domestic and international. The Commonwealth is a great place for life sciences companies to do business with world-class academic institutions, teaching hospitals and research institutes, access a talented workforce and a vibrant investment community, partner with existing industry leaders in all sectors of the life sciences, benefit from a healthy pipeline of innovative young companies, and enjoy a supportive environment for growth. The MLSC actively recruits new companies to the state through its extensive marketing efforts and portfolio of tools and programs, and supports the integration of these companies into Massachusetts' life sciences community.

FY 2013 was another active year for company attraction. In partnership with the state's industry associations, MassBio and MassMEDIC, and with sister agencies in state government, the MLSC continued to work with companies large and small from around the nation and across the world, helping to organize numerous grand openings and press announcements for new or expanding life sciences companies in Massachusetts:

- Bristol-Myers Squibb announced plans for a 350-person, \$250 million expansion of the company's large-scale biologics manufacturing facility in Devens, Mass.
- Roche, a Swiss-based drug and diagnostics company, joined the Massachusetts life sciences community when it acquired Consitution Medical Investors Inc., based in Westborough, Mass.
- Johnson & Johnson announced the opening of its Boston Innovation Center in Cambridge, Mass.; the center's goal is to advance healthcare by catalyzing collaborations in science and technology between regional innovators and the Johnson & Johnson family of companies across a diverse spectrum of early-stage opportunities.

- ZS Genetics announced the grand opening of a new facility in Wakefield.
- Boston Biomedical, Inc., the Oncology Division of Dainippon Sumitomo, celebrated the relocation of its headquarters to Cambridge with a grand opening ceremony.
- Z-Medica, a leading developer and marketer of hemostatic agents, established a new office in Boston.
- Mediso USA, distributor of the pre-clinical imaging portfolio of Hungarian company Mediso Medical Imaging Systems, opened a U.S. office in Boston.
- Canadian medical device company Baylis Medical strengthened its U.S. presence with new offices in Burlington.
- French biotechnology company Hemarina established its first U.S. office in Boston.
- Israeli medical device company NLT SPINE opened a new U.S. office in Dedham.
- Finnish company Pharmatest Services Ltd. announced the opening of a new U.S. sales office in Cambridge.
- German-based Leica Biosystems increased their presence in North America with the opening of a U.S. R&D laboratory in Massachusetts.
- ReproCell, Inc., a Japanese stem cell technology company, announced the opening of the company's first branch and U.S. office in Boston.
- Promedior, Inc., a clinical-stage biotechnology company developing novel biologic therapeutics for the treatment of fibrosis, opened its new office and laboratory space in Lexington, where the company's headquarters were relocated from Pennsylvania.
- U.K.-based Cambridge Consultants kicked off a U.S. recruitment effort to identify and attract new talent in the medical technology arena.
- BioSurplus announced the grand opening of its new 20,000-square-foot showroom and warehouse located at 57 Water Street in Watertown.
- Era7 Bioinformatics, a next generation sequencing provider based in Spain, expanded to the U.S. by opening an office in Cambridge.
- BioAxone BioSciences celebrated the official opening of its scientific and clinical headquarters in Cambridge.
- Japan-based Human Metabolome Technologies, Inc. opened its first U.S. office in Cambridge.
- ConforMIS, Inc. relocated its expanded headquarters to Bedford.
- Scottish company Arrayjet increased their presence in North America with the opening of the company's first U.S. sales office.
- Gov. Patrick joined NXStage Medical to open their new company headquarters in Lawrence.
- During the AdvaMed Conference in Boston on October 2012, Israel-based ARGO Medical Technologies, Dutch company Qserve Group and Sialix, Inc. announced plans to locate in Massachusetts.
- InVivo Therapeutics opened their new office, manufacturing and lab space in Cambridge.
- Norway-based Algeta celebrated the official opening of their U.S. subsidiary in Cambridge.
- U.K.-based company Alacrita established their U.S. headquarters in Cambridge.
- Japanese company SCIVAX USA, Inc., a 3D cell culture system provider, announced the launch of a sales office in Woburn.
- KeraFAST, Inc. celebrated the opening of its new headquarters in Boston.



*U.S. Army Veteran Theresa Hannigan demonstrates ARGO's ReWalk at the AdvaMed 2012 Massachusetts Pavilion; In background from left to right: Massachusetts Secretary of Veterans Affairs Coleman Nee, ARGO Board of Directors member Wayne Weisman, MassMEDIC President Tom Sommer, Massachusetts Life Sciences Center President & CEO Susan Windham-Bannister, Ph.D., Massachusetts Governor Deval Patrick, and ARGO CEO Larry Jasinski.*

A sampling of companies the MLSC has collaborated with to announce expansions within or into Massachusetts over the past five years is below:



The MLSC continues to engage companies across the nation and around the world to encourage them to invest and locate in Massachusetts. The MLSC anticipates many more announcements in FY 2014.

## Building Partnerships

### International Partnerships

In FY 2013, the MLSC received intense interest from international governments, companies and academic institutions that are eager to develop or expand relationships with Massachusetts. Through participation and interaction with numerous government and industry-focused delegations, trade missions and visits, the continuation of the bilateral partnership program with Israel, the creation of a new on-line partnering tool and the launch of a new international collaboration program, the MLSC has established global brand recognition for Massachusetts and the leadership role that the state plays globally in the life sciences.

### Participation in Global Trade Missions and Conferences

The MLSC promoted the visibility of the state's life sciences cluster to many regions of the world through its participation in trade missions to Panama, Chile, Colombia, and Northern Ireland, and participation in trade conferences in Germany, Japan and Israel. Fueling relationships such as the Northern Ireland Massachusetts Connection (NIMAC) through expanded conversations in the spring of 2013 has extended the ongoing collaboration to further integrate participants from Finland and Catalonia.

## Massachusetts Israel Innovation Partnership (MIIP) Round 2: Partnership Continues

The Massachusetts Israel Innovation Partnership (MIIP) has continued to encourage and support innovation and entrepreneurship between Massachusetts' and Israel's life sciences clusters. At the Biomed-IL conference in Tel Aviv in June 2013, the funding authorities in both states announced the awarding of two grants to support life sciences research and development (R&D) collaborations between Massachusetts and Israeli companies, with a total R&D budget of over \$2 million. The winning projects represented a commitment of \$450,170 from the MLSC to two Massachusetts companies:

MIIP Round 2 Awardees		
Companies	Project Description	Amount Awarded
Bio-Tree (Framingham) and Harlan (Israel)	Creating a new vascular toxicity and safety measure to vastly enhance existing drug toxicology assessment tools. The two companies will address the largely unmet area known as DIVI – Drug Induced Vascular Injury, a major cause of new compound failure late in clinical trials or after-market launch.	\$250,000
Cytonome S/T (Boston) and Orgenesis (Israel)	Combining a novel source of cells to be used in a self-replacement therapy technology with an efficient and reproducible separation and enrichment technology to create functional Autologous Insulin production cells.	\$200,170

## Launch of the International Partnership Assistant Portal (IP-ap)

In late November 2012, the MLSC launched an exciting new tool, the International Partnership Assistance Portal, (IP-ap) to provide the means — 365 days a year, 24/7 -- for international companies to identify potential partnerships with Massachusetts companies. The portal was also designed to facilitate partnerships between Massachusetts companies. Provided by the MLSC as a free, password-protected, cloud-based portal, the IP-ap is a growing global database of potential partners from a range of therapeutic areas and industry sectors within the life sciences.

At the close of FY 2013, the IP-ap database contained more than 140 international and Massachusetts company profiles, and dozens of international and local life sciences based agencies and institutions. More than 17 countries are currently represented in the database from four continents. Companies from more than 30 cities and towns from all across the Commonwealth have registered with business profiles.

The MLSC promotes the IP-ap at local, national and international conferences and workshops, information sessions for the Accelerator Loan and international programs, and as part of meetings with foreign delegations. At BIO 2013, a marketing campaign specific to the IP-ap was a huge success and attracted many new interested partners.



## Launch of the International Collaborative Industry Program (ICIP)

Building off of the interest in collaborating with Massachusetts that was established through MIIP, in FY 2013 the MLSC created and launched a new program called the International Collaborative Industry Program or ICIP. ICIP was announced at the 2013 BIO International Convention.

ICIP is based on our belief that knowledge creation occurs worldwide and global collaboration between life science companies has the potential to accelerate breakthroughs and fuel economic development, as well as drive manufacturing and commercialization in the life sciences. In identifying partner regions, the MLSC had more than 15 regions and countries express interest in participating in this program. Ultimately, the four global partners with Massachusetts for the pilot phase of ICIP are:

- The Alsace Region of France
- The Quebec Province in Canada
- The State of Victoria in Australia
- The Wallonia Region in Belgium

The program welcomes applications for projects in biotechnology, pharmaceuticals, medical devices, diagnostics and bioinformatics. Applicants represent two companies (one from Massachusetts and one from a region named above) working on a collaborative project in late stage R&D. In this inaugural round of ICIP, Massachusetts companies have an opportunity to win grants of \$100,000 (minimum) to \$500,000 (maximum) which will be awarded to the most promising life sciences projects on a competitive basis. Funding for the winning non-U.S. company will be provided by the sister agency in the related geography.

After a robust evaluation process including the Scientific Advisory Board of the MLSC and a scientific evaluation team in each of the regions, winners will be selected. The MLSC Board committed up to \$1.5 million to grant to the winners under this program. Expected awards will be announced by spring of 2014.



*On April 22, 2013, at the BIO International Convention, the Massachusetts Life Sciences Center announced the launch of a new International Collaborative Industry Program (ICIP).*

## The Massachusetts Neuroscience Consortium



*Researchers awarded funding through the Massachusetts Neuroscience Consortium and project liaisons from consortium member companies join Massachusetts Life Sciences Center President & CEO Dr. Susan Windham-Bannister, EMD Serono President Jim Hoyes and MS patient Joann D'Amico Stone at the announcement on July 11, 2013.*

The Massachusetts Neuroscience Consortium was launched in June 2012 at the BIO International Convention in Boston, and the first solicitation for project submissions was issued last fall. Consortium members reviewed and evaluated nearly 100 applications and selected seven pre-clinical projects to fund at Massachusetts academic and research institutions with a focus on Alzheimer's disease, Multiple Sclerosis, Neuropathic Pain and Parkinson's disease. Consortium members are AbbVie, Biogen Idec, EMD Serono, Janssen Research & Development, LLC, Merck, Pfizer and Sunovion Pharmaceuticals Inc. Through efforts that began in 2009, the MLSC used its convening power to bring these

companies together to form a unique model of industry collaboration and collaboration between sponsors and the research community in order to accelerate the pace of discovery in the neurosciences.

The seven participating member companies have each contributed \$250,000 to the Consortium during this round, for total initial funding of \$1.75 million. The MLSC and the Consortium announced in July 2013 that seven awardees will each receive up to \$250,000 in funding to further their respective neuroscience research projects. Additionally, every researcher has been assigned a project liaison from one of the Consortium member companies who will serve as the primary liaison between the investigator and the Consortium as a whole. Consortium members will share all data generated from each of the projects with all members.

The Neuroscience Consortium’s first round of awardees is as follows:

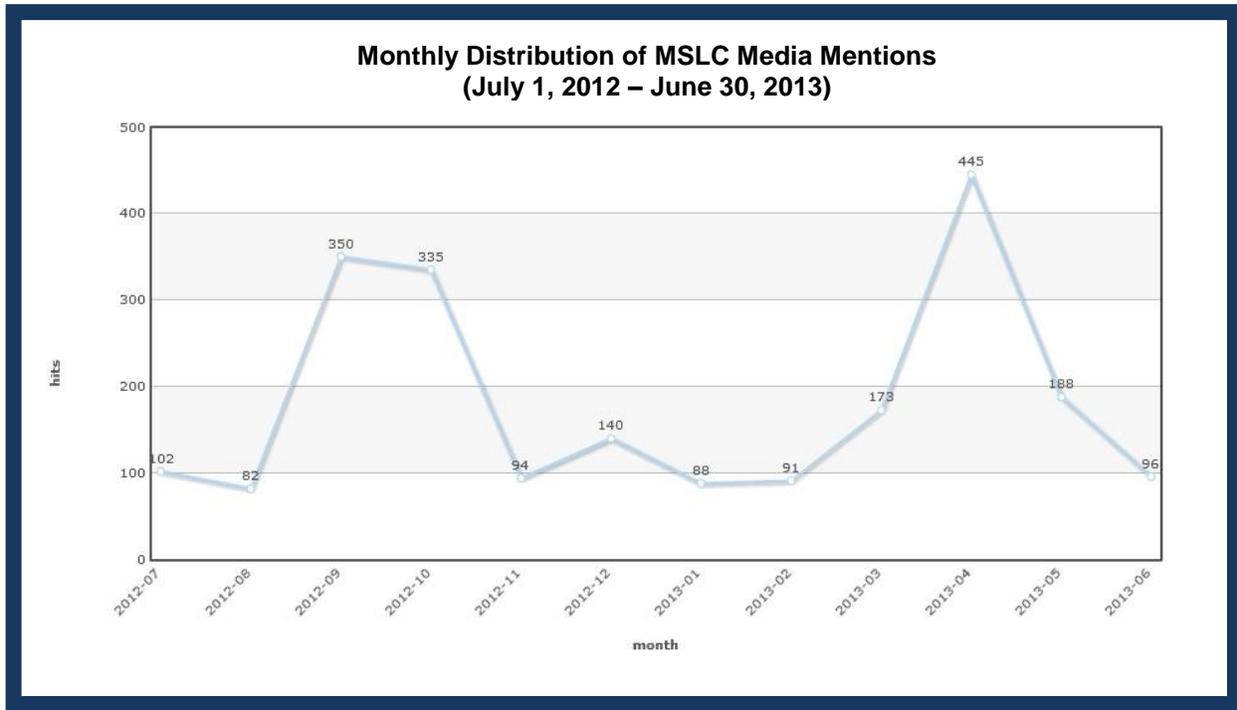
Neuroscience Consortium First-Round Awardees			
Primary Investigator (PI)	Institution	Disease Area	Project Liaison
David A. Harris, M.D., Ph.D.	Boston University School of Medicine	Alzheimer’s	Biogen Idec
Bradley T. Hyman, M.D., Ph.D.	Massachusetts General Hospital	Alzheimer’s	Janssen Research & Development, LLC
Benjamin Wolozin, M.D., Ph.D.	Boston University School of Medicine	Alzheimer’s	EMD Serono
Wassim Elyaman, Ph.D.	Brigham and Women’s Hospital	Multiple Sclerosis	Sunovion Pharmaceuticals Inc.
David Clapham, M.D., Ph.D.	Boston Children’s Hospital	Neuropathic Pain	Merck
Clifford J. Woolf, M.D., Ph.D.	Harvard Medical School – Boston Children’s Hospital	Neuropathic Pain	AbbVie
Ann M. Graybiel, Ph.D.	Massachusetts Institute of Technology	Parkinson’s	Pfizer

## Staying Connected

The MLSC’s communications and marketing program keeps stakeholders and the general public informed about the MLSC’s investments of public dollars, promotes public accountability for the MLSC’s progress in accomplishing its mission, and provides ongoing updates and information exchange with the life sciences community in order to encourage its involvement and input. Communication and outreach have been integral to the MLSC’s success in attracting a robust and diverse pool of applicants for MLSC programs.

During FY 2013, the MLSC grew its email list from 3,900 to more than 4,600 contacts. The MLSC used its website as both a clearinghouse for information about the MLSC and a portal for applying to the MLSC’s programs. The MLSC also ramped up its social media efforts, growing its Twitter follower base from over 100 to nearly 700, our LinkedIn followers to more than 100 and Facebook fans to 50.

The MLSC had nearly 2,200 media mentions during FY 2013. Publications across the nation and around the world covered the MLSC's activities. The chart below shows the monthly distribution of the MLSC's media coverage during FY 2013. Periods of greater coverage tended to coincide with the announcement of new programs or investments.



Source: Meltwater.com clipping service

During FY 2013, MLSC staff participated as presenters, speakers or panelists at more than 50 public events.

## The Way Forward

At the half-way mark of the 10-year Massachusetts Life Sciences Initiative, the MLSC's investments are having a measurable impact on the Massachusetts economy, while strengthening Massachusetts' position as the global leader in life sciences. However, the competition is fierce, and other states and regions are making substantial public investments in an effort to catch up. Rather than rest on our laurels, the MLSC will continue to invest strategically so that Massachusetts can continue to lead, and pull away from the competition.

The state budget calls for a FY 2014 investment fund appropriation of \$19.5 million, a \$4.5-million increase from FY 2013, contingent on the comptroller's declaration of a consolidated net surplus for FY 2013. The MLSC is appreciative and excited about this vote of confidence by Governor Patrick and his administration, and the State Legislature, under the leadership of Senate President Murray and Speaker of the House DeLeo. The MLSC looks forward to delivering another productive and impactful year.

## Appendix A - The Board of Directors of the Massachusetts Life Sciences Center as of June 30, 2013

- **Gregory Bialecki, Co-Chair**  
Secretary, Executive Office of Housing and Economic Development
- **Glen Shor, Co-Chair**  
Secretary, Executive Office for Administration and Finance
- **Edward J. Benz, Jr., M.D.**  
President and CEO, Dana-Farber Cancer Institute
- **Josh Boger, Ph.D.**  
Founder & CEO (retired), Vertex Pharmaceuticals
- **Robert L. Caret, Ph.D.**  
President, University of Massachusetts
- **Abbie Celniker, Ph.D.**  
CEO, Eleven Biotherapeutics, Inc.
- **Lydia Villa-Komaroff, Ph.D.**  
Director and Chief Scientific Officer, Cytonome/ST

## Appendix B - Massachusetts Life Sciences Center Scientific Advisory Board Members as of June 30, 2013

- **Harvey Lodish, Ph.D., Chair**  
Whitehead Institute for Biomedical Research and Professor of Biology and of Bioengineering, Massachusetts Institute of Technology
- **James Barry, Ph.D.**  
Executive Vice President and COO, Arsenal Medical
- **Kevin J. Bitterman, Ph.D.**  
Principal, Polaris Venture Partners
- **Dalia Cohen, Ph.D.**  
Chief Scientific Officer, Asterand, Inc.
- **James J. Collins, Ph.D.**  
Professor of Biomedical Engineering, Boston University
- **John M. Collins, Ph.D.**  
Chief Operating Officer, Center for Integration of Medicine & Innovative Technology (CIMIT)
- **Robert D'Amato, M.D., Ph.D.**  
Judah Folkman Chair in Surgery and Director, Center for Macular Degeneration Research, Children's Hospital, Boston
- **T. (Teo) Forcht Dagi, M.D.**  
Partner, HLM Venture Partners
- **Jonathan Fleming, M.P.A.**  
Managing General Partner, Oxford Bioscience Partners
- **Rainer Fuchs, Ph.D.**  
Chief Information Officer, Harvard Medical School
- **Glenn R. Gaudette, Ph.D.**  
Associate Professor, Biomedical Engineering, Worcester Polytechnic Institute
- **José-Carlos Gutiérrez-Ramos, Ph.D.**  
Senior Vice President, head of BioTherapeutics Research & Development, Pfizer Inc.
- **Henry Kay**  
U.S. Partner, Medica Venture Partners
- **Dale Larson**  
Director of Biomedical Systems, Draper Laboratory

- **Judith Lieberman, Ph.D.**  
M.D., Senior Investigator, Immune Disease Institute, Children's Hospital Boston and Professor of Pediatrics, Harvard Medical School
- **Lita L. Nelsen**  
Director, Technology Licensing Office, Massachusetts Institute of Technology
- **Barbara Osborne**  
Professor of Veterinary and Animal Sciences, University of Massachusetts Amherst
- **Carmichael Roberts, Ph.D.**  
Partner, North Bridge Venture Partners
- **Lauren Silverman, Ph.D.**  
Managing Director, Novartis Option Fund
- **Alan E. Smith, Ph.D.**  
Former Chief Scientific Officer, Genzyme Corporation
- **Allison Taunton-Rigby, Ph.D.**  
Co-founder, CEO and Director, RiboNovix, Inc.
- **Guillermo Tearney, M.D., Ph.D.**  
Professor of Pathology, Harvard Medical School
- **David Walt, Ph.D.**  
Robinson Professor of Chemistry and Howard Hughes Medical Institute Professor, Tufts University School of Medicine
- **Philip Zamore, Ph.D.**  
Professor, Biochemistry and Molecular Pharmacology, UMass Medical School

## Appendix C - FY 2013 Internship Challenge Host Companies

Company Name	Location		
BioSurfaces, Inc.	Ashland	Dental Photonics, Inc.	Walpole
BioTechnic Products, Ltd.	Worcester	Dentovations Inc	Boston
Biotrofix, Inc.	Waltham	Dermatopathology Consultations LLC	Boston
Blue Ocean Biomanufacturing, Inc.	Wellesley	Digilab, Inc.	Marlborough
Blue Sky Biotech	Worcester	DMI Dx, LLC	Cambridge
Blue Stream Laboratories, Inc.	Cambridge	DNA Medicine Institute	Cambridge
Boston Biomedical Associates	Northboro	DocBox Inc	Waltham
Boston MedTech Advisors	Dedham	Ekam Imaging, Inc.	Shrewsbury
Boston Microfluidics Inc.	Medford	EndoDynamix, Inc.	Salem
Boston Micromachines Corporation	Cambridge	EndoSim, LLC	Berlin
Boston Open Labs	Fall River	Energesis Pharmaceuticals, Inc.	Cambridge
Bridgemedica, LLC	Walpole	Ensemble Therapeutics Corporation	Cambridge
Cambridge Biomedical, Inc.	Boston	Enumeral Biomedical	Cambridge
Cellay, Inc.	Cambridge	EpigenDx, Inc.	Worcester
Celldex Therapeutics, Inc.	Fall River	Essential Life Solutions Ltd.	Stoughton
CellMosaic LLC.	Worcester	Eutropics Pharmaceuticals	Cambridge
Celltreat Scientific Products	Shirley	Excellims Corporation	Acton
Cephos Corp.	Pepperell	First Light Biosciences	Bedford
CeQur Corporation	Marlborough	Five Star Manufacturing, Inc.	New Bedford
ChemGenes Corp.	Wilmington	Five Star Surgical, Inc.	New Bedford
Clover Medical LLC	Dover	Flagship IP, P.C.	Boston
CMC Consulting Group	Framingham	FloDesign Sonics	Wilbraham
Constellation Pharmaceuticals	Cambridge	Flow Forward Medical, LLC	Lowell
Convergence Medical Devices, Inc.	Woburn	G&F Industries, Inc.	Sturbridge
Corindus, Inc.	Waltham	G&F Medical Inc.	Danvers
Court Square Group, Inc.	Springfield	Genocea Biosciences, Inc.	Cambridge
Courtagen Life Sciences, Inc.	Woburn	Giner, Inc.	Newton
CreaGen Biosciences, Inc	Woburn	Ginkgo BioWorks, Inc.	Boston
CuriRx Inc	Wilmington	GlycoSolutions Corporation	Marlborough
Cytonome/ST, LLC.	Boston	Glycosyn Inc.	Medford
Daktari Diagnostics, Inc.	Cambridge	Global Business Support, Inc.	Fall River

Grove Instruments, Inc.	Worcester
Guided Surgery Solutions, LLC	Boston
Gweepi Medical Inc.	Cambridge
Harvard Apparatus	Holliston
Hemedex Inc.	Cambridge
Hepatochem, Inc.	Beverly
Hepregen Corporation	Medford
HighRes Biosolutions Inc	Woburn
Hstar Technologies Co.	Cambridge
HydroCision, Inc	North Billerica
Imagine Optic, Inc.	Cambridge
Imgen BioSciences, Inc.	Fall River
Immunetics, Inc	Boston
Immunotrex Biologics Inc.	North Andover
InCrowd, Inc.	Chestnut Hill
InfoBionic	Lowell
InfraReDx, Inc.	Burlington
Institute for Pediatric Innovation, Inc.	Cambridge
Integral BioSystems, LLC	Bedford
Interactive Motion Technologies	Watertown
inviCRO	Boston
InVivo Therapeutics Corporation	Cambridge
IonSense	Saugus
iQuartic, Inc.	Cambridge
Janus Biotherapeutics	Worcester
JEF Core, Inc.	Weston
JNK Healthcare Inc	Boston
KeraFAST	Boston
Kibur Medical	Boston
Knode Inc.	Cambridge
LaVoie Strategic Communications, Inc.	Salem
Lantos Technologies Inc	Cambridge
MagneMotion Inc.	Devens

Matrigen LLC.	Worcester
Maxiom Consulting Group Inc.	Waltham
Med Techna, Inc.	Dedham
MedChem Partners LLC	Lexington
MedPanel	Cambridge
Metis Manufacturing LLC	Beverly
Microbiotix, Inc.	Worcester
Microtest Laboratories, Inc.	Agawam
Most Corporation	Salem
MostMed, Inc.	Salem
Mouse Specifics, Inc.	Quincy
MSM Protein Technologies	Medford
MX Orthopedics	Billerica
Myomo, Inc.	Cambridge
Nemucore Medical Innovations, Inc.	Worcester
Neo-Advent Technologies, LLC	Littleton
New England Peptide LLC	Gardner
Nexcelom Bioscience LLC	Lawrence
NKT Therapeutics Inc.	Waltham
Northeast Biomedical, Inc.	Tyngsboro
NovoBiotic Pharmaceuticals, LLC.	Cambridge
Nuclea Biotechnologies, Inc.	Pittsfield
OC10, LLC	Boston
Ocean Genome Legacy	Ipswich
OnSite Therapeutics, Inc.	North Andover
Ora, Inc.	Andover
Orbit Research	Andover
PharmaHealth Clinical Research Services	Fairhaven
Pharmalucence, Inc.	Billerica
Phonologics, Inc.	Bedford
Phosphorex, Inc.	Fall River
Phylonix Pharmaceuticals, Inc.	Cambridge
pION INC	Woburn

Precision Fabricators Ltd	Stoughton
Pressure BioSciences, Inc.	South Easton
Privo Technologies	Cambridge
Progenika Inc.	Medford
Proveris Scientific Corporation	Marlborough
Quanterix Corporation	Cambridge
Reflectance Medical Inc.	Westborough
Relay Technology Management, Inc.	Boston
Respiratory Motion, Inc.	Lexington
ReSurfX LLC	Cambridge
S2N Health, LLC	Newton
SafePath Medical, Inc	Methuen
Safety Partners, Inc.	Burlington
Sage Science, Inc.	Beverly
Sample6 Technologies, Inc.	Boston
SBH Sciences, Inc.	Natick
Scientia Advisors, LLC.	Cambridge
Seeding Labs	Boston
Segterra Inc.	Lexington
Selecta Biosciences, Inc.	Watertown
SemiNex Corporation	Peabody
Senscio Systems, Inc.	Shirley
Sentien Biotechnologies, Inc.	Medford
Seventh Sense Biosystems	Cambridge
Sharp Edge Labs, Inc.	Beverly
Shaser, Inc.	Woburn
Sialix, Inc.	Newton
SonyaSoft	Cambridge

Sproxil, Inc.	Cambridge
STAR Analytical Services	Bedford
STC Biologics, Inc.	Cambridge
T2 Biosystems, Inc.	Lexington
Targeted Cell Therapies, LLC	Worcester
TDC Medical, Inc.	Marlborough
Tegra Medical	Dartmouth
Tetraphase Pharmaceuticals, Inc.	Watertown
Therapeutic Systems, LLC	Amherst
TheraTorr Medical, Inc.	Beverly
THINQ Pharma	Natick
Tissue Solutions, LLC	Marblehead
TRA360	West Newton
Two Square Science, LLC	Fall River
Union Biometrica, Inc.	Holliston
VasoTech, Inc.	Lowell
Vista Scientific LLC	Andover
VitaThreads Inc.	Worcester
VivoPath, LLC	Worcester
Vizio Medical Devices LLC	Lowell
WaterSep Technology Corp	Marlborough
WaveGuide Corporation	Cambridge
White Systems, Inc.	Hyannis
WorldCare Clinical, LLC	Boston
X-CHEM, Inc.	Waltham
Xtal BioStructures Inc.	Natick
ZeptoMetrix Corporation	Franklin

## Appendix D - List of Active Certified Life Sciences Companies as of June 30, 2013

Company	Location
Aegerion Pharmaceuticals, Inc.	Cambridge
AesRx, LLC	Newton
Alcyone Lifesciences, Inc.	Concord
Allurion Technologies, Inc.	Wellesley
Avaxia Biologics, Inc.	Burlington
Ariad Pharmaceuticals, Inc.	Cambridge
Bind Biosciences, Inc.	Cambridge
Bio2 Technologies, Inc.	Woburn
Biogen Idec MA, Inc.	Cambridge
Bio-Tree Systems, Inc.	Framingham
Bluebird Bio, Inc.	Cambridge
Blueprint Medicines Corporation	Cambridge
Boston Heart Diagnostics Corporation	Framingham
Bruker Corporation	Billerica
Cell Signaling Technology	Danvers
Christcot Medical, Inc.	Sudbury
Constellation Pharmaceuticals, Inc.	Cambridge
Cubist Pharmaceuticals, Inc.	Lexington
CytonomeST, LLC	Boston
DePuy Orthopaedics, Inc.	Raynham
Dyax Corporation	Cambridge
Enzymatics, Inc.	Cambridge
Epizyme, Inc.	Cambridge
Eutropics Pharmaceuticals, Inc.	Cambridge
Foundation Medicine, Inc	Cambridge
Good Start Genetics, Inc.	Cambridge
Grove Instruments, Inc.	Worcester
Hepatochem, Inc.	Cambridge
InfraReDx, Inc.	Burlington
Instrumentation Laboratory Company	Bedford
inviCRO, LLC	Boston
InVivo Therapeutics, Inc.	Cambridge
Ironwood Pharmaceuticals, Inc.	Cambridge
LeMaitre Vascular, Inc.	Burlington
Lightlab Imaging, Inc.	Westford
MedicaMetrix, Inc.	Wayland
Merrimack Pharmaceuticals, Inc.	Cambridge
Mevion, Inc.	Littleton
Moderna Therapeutics, Inc.	Cambridge
Momenta Pharmaceuticals, Inc.	Cambridge
Myomo, Inc.	Cambridge
NinePoint Medical, Inc.	Cambridge
Nova Biomedical Corporation	Waltham

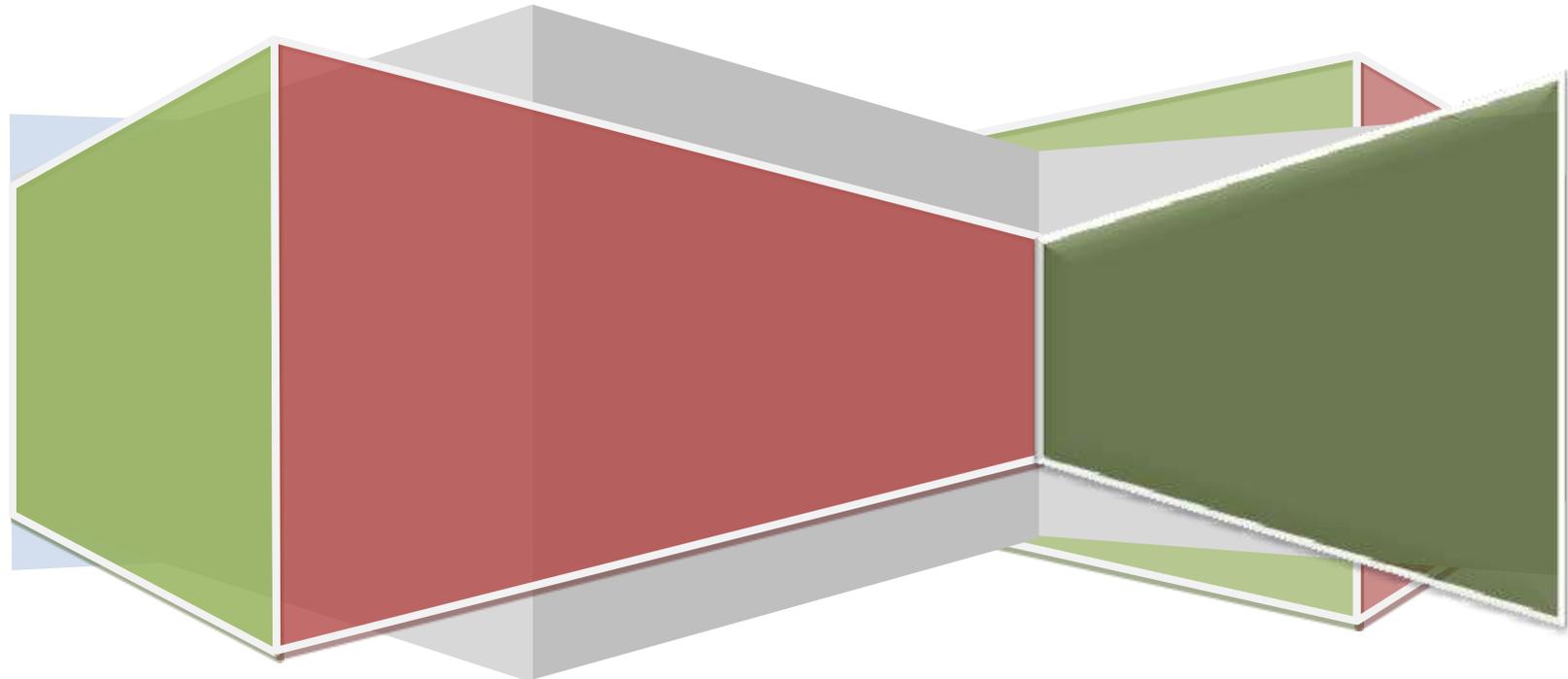
NxStage Medical, Inc.	Lawrence
OmniGuide, Inc.	Cambridge
Organogenesis, Inc.	Canton
Pall Corporation	Westborough
PAREXEL International Corporation	Lowell
PerkinElmer, Inc.	Waltham
Pharmalucence, Inc.	Bedford
Quanterix Corporation	Cambridge
Quest Diagnostics, Incorporated	Cambridge
Quintiles Consulting	Cambridge
Ra Pharmaceuticals, Inc	Cambridge
Sample6 Technologies, Inc.	Boston
Sanofi-Aventis, Inc.	Cambridge
SBH Sciences, Inc.	Natick
Shire Human Genetic Therapies, Inc.	Lexington
STD Med, Inc.	Stoughton
Strohl Medical Technologies, Inc.	Weymouth
Synageva BioPharma Corporation	Lexington
T2Biosystems, Inc.	Lexington
Valerion Thereapeutics, Inc.	Boston
Valeritas, Inc.	Shrewsbury
Vertex Pharmaceuticals, Inc.	Cambridge
Wadsworth Medical Technologies, Inc.	Westborough
Wolfe Laboratories, Inc.	Watertown

**Office of Performance Management & Oversight**

**Massachusetts Life Sciences Center**

**Fiscal 2014**

**Business Plan**



# Massachusetts Life Sciences Center (MLSC)

## FY2014 BUSINESS PLAN SUMMARY “AT A GLANCE”

### FY2014 Business Plan Summary

#### Commonwealth’s Strategic Priorities

#### Related MLSC Program(s)

- **Workforce Development**
  - Internship Challenge Program
  - Equipment/Supplies Grants
  - Med Tech Veterans Program
  
- **Supporting Innovation, Entrepreneurship and Ecosystem**
  - Accelerator Loans
  - SBMG Grants
  - MIIP (MA-Israel) and International Collaborative Industry (ICIP) R&D Grants
  - Internship Challenge
  - Fund Convening and Collaboration
  - Feedback to Program Applicants
  
- **Regional Development**
  - Capital Project Grants
  
- **Cost Competitiveness**
  - Tax Incentive Program

### Dashboard (Summary Metrics Across All MLSC Programs)

- **Number Net New Jobs Created:**
  - Construction
  - Permanent
    - Highly Skilled
    - Mid-Skilled
    - Lower Skilled
- **Public Dollars Invested**
- **Dollars Leveraged**

## Executive Summary

### Mission statement

The Massachusetts Life Sciences Center (“MLSC”) is a quasi-public agency of the Commonwealth of Massachusetts tasked with implementing the Massachusetts Life Sciences Act, a ten-year, \$1 billion initiative that was signed into law in June of 2008. The Center's mission is to create and retain jobs in the life sciences “Super Cluster” – stimulate work force development, strengthen the life sciences infrastructure and ecosystem, and promote our global competitiveness. This work includes making financial investments in public and private institutions that are advancing life

sciences research, development and commercialization as well as building collaboration among sectors of the Massachusetts life sciences community.

## Fiscal Year 2013 Business Plan Summary

### Strategic Goals, Action Steps and Performance Measures

PROGRAM SPECIFIC METRICS		
EDP Goal	MLSC Program/Action	Measurement
<p>1. Advance Education and Workforce Development for Middle-Skill Jobs</p> <p>1.3.3: Increase the number of public school facilities that are appropriately equipped to enable such experiences</p>	<p>Fund and Implement FY2014 MLSC Equipment and Supply Program (Capital Grants)</p>	<p><b>Key Target:</b> 60% of net new life sciences created in FY '14 are for workers with a BA/BS or less</p> <ul style="list-style-type: none"> <li># of community colleges and high schools receiving MLSC Equipment/Supply grants</li> <li># of graduates of these programs hired for FT or PT life sciences jobs in MA</li> </ul>
<p>1.2: Improve responsiveness of workforce programs for business and workers that will meet the demands of the marketplace</p> <p>2.2: Build and retain talent for the innovation economy</p>	<p>Implement 2013-14 Internship Challenge Program</p> <p>Implement Med Tech Veterans Program to train MA Veterans for employment in the Med Tech sector</p>	<ul style="list-style-type: none"> <li>#of applicants to the MLSC Internship Challenge Program ("Program")/ # of Sponsors registering to take interns</li> <li># of interns placed through the Program</li> <li># of new sponsors</li> <li># of repeat sponsors</li> <li># and type of academic institutions represented by interns</li> <li>Demographics of interns placed through the Program</li> <li>Interns' satisfaction with internship experience</li> <li># of interns who decide to pursue a career in life sciences</li> <li>Sponsors' satisfaction with interns in selected and value received through the Program</li> <li># of interns hired by sponsors for FT or PT jobs in MA following the internship</li> <li># MA vets receiving full time job offers at completion of Med Tech Vet Program</li> </ul>
<p>1.3.2: Increase the attractiveness of STEM careers to</p>		

<p>both students and teachers, including increasing their exposure to role models in STEM careers, through expanded internship opportunities</p> <p>1.3: Prioritize goals of the State STEM Plan that align with middle-skill jobs</p>	<p>Implement FY2014 MLSC Discretionary Grants to support STEM programs</p>	<ul style="list-style-type: none"> <li>• # community-based STEM programs receiving grants from the MLSC</li> <li>• #students served by STEM programs receiving MLSC grants</li> </ul>
<p>2. Support Innovation and Entrepreneurship, including Ecosystem</p> <p>2.1: Strengthen</p>	<p>Implement FY2014 Accelerator Loan Program</p> <p>Fund Business Plan Competitions</p>	<p><b>Key Target:</b> two (2) early stage companies funded by the MLSC achieve major funding or commercialization milestones in FY '14</p> <ul style="list-style-type: none"> <li>• # of and geographic distribution of applicants to the MLSC Accelerator Loan Program</li> <li>• # competitions funded by MLSC</li> <li>• # new life sciences tracks in business plan competitions seeded by MLSC funds</li> </ul> <p><b>Key Target:</b> Mass rated #1 in global life sciences by independent industry experts</p> <ul style="list-style-type: none"> <li>• # new collaborations, consortia</li> </ul>

<p>and support our innovation community, including ecosystem</p> <p>2.4: Support growth to scale</p>	<p>Fund/Initiate new collaborations and consortia across the life sciences community, including launch of the Center's new International Collaborative Industry (ICIP) Program</p> <p>Grow the Center's International Partnership Portal</p> <p>Engage life sciences community in the life sciences initiative</p> <p>Implement FY2014 SBMG Program</p>	<p>and/or partnerships initiated/funded by the MLSC</p> <ul style="list-style-type: none"> <li>• # of convening sessions, roundtables, etc. initiated/funded by the MLSC</li> <li>• # of companies applying for a life sciences collaborative project under the MIIP Program</li> <li>• # of companies applying for a life sciences collaborative project under the Center's new International Collaborative Industry (ICIP) Program</li> <li>• # companies listing in the Center's International Partnership Portal</li> <li>• # of organizations offering to "sponsor" information sessions for MLSC programs</li> <li>• # new participants in MLSC Peer Review Panel</li> <li>• # of repeat participants in MLSC Peer Review Panel</li> <li>• # of new participants on the MLSC SAB</li> <li>• # and geographic distribution of companies applying for SBMG grants</li> </ul>
<p>3. Support Regional Economic Development through Infrastructure Investments</p> <p>3.1: Make public infrastructure investments that support regional growth opportunities</p>	<p>Implement FY2014 MLSC Capital Project Matching Grant Program</p>	<p><b>Key target:</b> MLSC capital dollars used to form a significant new regional collaboration around life sciences driven economic dev</p> <ul style="list-style-type: none"> <li>• # and type of applicants to the MLSC capital grant program</li> <li>• Geographic distribution of applicants</li> <li>• Local/Regional economic development impact of MLSC capital projects</li> </ul>
<p>4. Increase Ease of Doing Business</p> <p>4.2: Re-align</p>	<p>Collaborate with other</p>	<p><b>Key target:</b> MLSC and MTC collaborate on a "big data" initiative</p> <ul style="list-style-type: none"> <li>• # of collaborations with other quasi-</li> </ul>

business development efforts 4.3: Market the strengths of doing business in Massachusetts	quasi-public organizations and state agencies to present an integrated business development team for life sciences companies	public agencies, state agencies and stakeholder organizations that result in job creation in MA
5. Address our Cost Competitiveness 5.4: Make tax structure more simple, competitive, and predictable thru tax incentives	Implement FY2014 MLSC Tax Incentive Program	<ul style="list-style-type: none"> <li>• # of companies applying for tax incentives' size and geographic distribution of applicants</li> <li>• # of companies achieving job creation targets using tax incentives</li> <li>• Cost per job created using tax incentives</li> </ul>
<b>AGGREGATE ("ROI UP") METRICS ACROSS MLSC PROGRAMS</b>		
Create/Retain Jobs		<ul style="list-style-type: none"> <li>• # of construction jobs</li> <li>• # of permanent jobs</li> <li>• Job mix (high – low skilled)</li> <li>• Indirect job creation, multiplier effect</li> <li>• Direct job creation</li> <li>• Geographic (regional) distribution of jobs created</li> <li>• Cost per job created (Tax Incentive Program only)</li> <li>• Public dollars invested</li> <li>• ROI to Commonwealth (Tax Incentive Program)</li> </ul>
Leverage on Investments		<ul style="list-style-type: none"> <li>• Dollars leveraged</li> </ul>

### Additional Opportunities/Challenges for FY2014

Opportunities for FY2014:

- **Scaling the Center's Growth:** MLSC is advocating to be fully funded in its annual appropriation for FY2014. An increase in funding will allow us to expand our existing programs, add new programs for early stage companies, offer additional incentives to attract companies to the state, and leverage additional investments in the Commonwealth:
  - ✓ **Leverage Potential:** The MLSC has used its funds as a "magnet" to attract additional investment capital. Most of our programs require at least a \$1 to \$1 match. Across all of our investments, MLSC has averaged \$3.4 for every \$1 that we have invested.

- ✓ **Accelerate Job Creation:** The life sciences cluster is now the major source of new job creation in the Commonwealth and Massachusetts leads the nation in the pace of life sciences job creation. Strengthening MLSC's ability to invest will help accelerate the economic development contributions of the cluster.
- ✓ **"Gap Closure:"** The Center has identified opportunities to develop new programs in FY2014 that target additional funding gaps within the life sciences cluster, for example, funding for seed stage companies.

Challenges for FY2014:

- **Staying Competitive:** The Massachusetts Life Sciences Initiative has received tremendous national and international attention since its inception. However, other states and countries are making targeted investments to grow or strengthen their life sciences cluster.