Massachusetts Life Sciences Center
FY 2010 Annual Report

Submitted September 2010

MASSACHUSETTS LIFE SCIENCES CENTER

To: Governor Deval Patrick
Secretary of Administration and Finance Jay Gonzalez
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 30th, 2010

Re: Fiscal Year 2010 Annual Report of the Massachusetts Life Sciences Center

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The Massachusetts Life Sciences Center (the"Center") is the hub of our state's thriving life sciences Supercluster. We serve as stewards of the $1 billion Massachusetts Life Sciences Initiative, which was signed into law in June of 2008. In Fiscal Year 2010 the Center made enormous progress in fulfilling our dual mission of job creation and scientific advancement. We have continued to invest public funds in strategic opportunities that create jobs, leverage private investment and promote Massachusetts' leadership in scientific discovery.

The Center respectfully submits the following Annual Report detailing its operations and accomplishments during FY '10. This report and the accompanying FY '10 Audit Report are submitted in fulfillment of the requirements mandated by the General Court pursuant to the Center's enabling statute at Mass. Gen. Laws ch. 23I (formerly section 7, now section 15) as amended by Chapter 130 of the Acts of 2009. Financial statements are contained in the accompanying Fiscal Year 2010 Audit Report by PricewaterhouseCoopers.

As always, thank you for your ongoing interest and support.

Sincerely,

SWBannister

Susan Windham Bannister, Ph.D.
President & CEO

Creating jobs. Building the Economy. Accelerating Innovation.

Massachusetts Life Sciences Center
President & CEO, Dr. Susan Windham-Bannister

June 16th, 2010 marked the two-year anniversary of Governor Deval Patrick's signing of the Massachusetts Life Sciences Initiative. For the Life Sciences Center, this anniversary celebrated another year of measurable results and solid return on the Commonwealth's investment. The Center's investments in FY '10 directly reflect our strategic goals: 1) strengthen the state's academic institutions; 2) ensure access to a highly skilled life sciences workforce; 3) keep our globally-recognized innovation pipeline flowing; 4) improve infrastructure across the state, and 5) recruit, retain and support the continued growth of life sciences companies in Massachusetts.

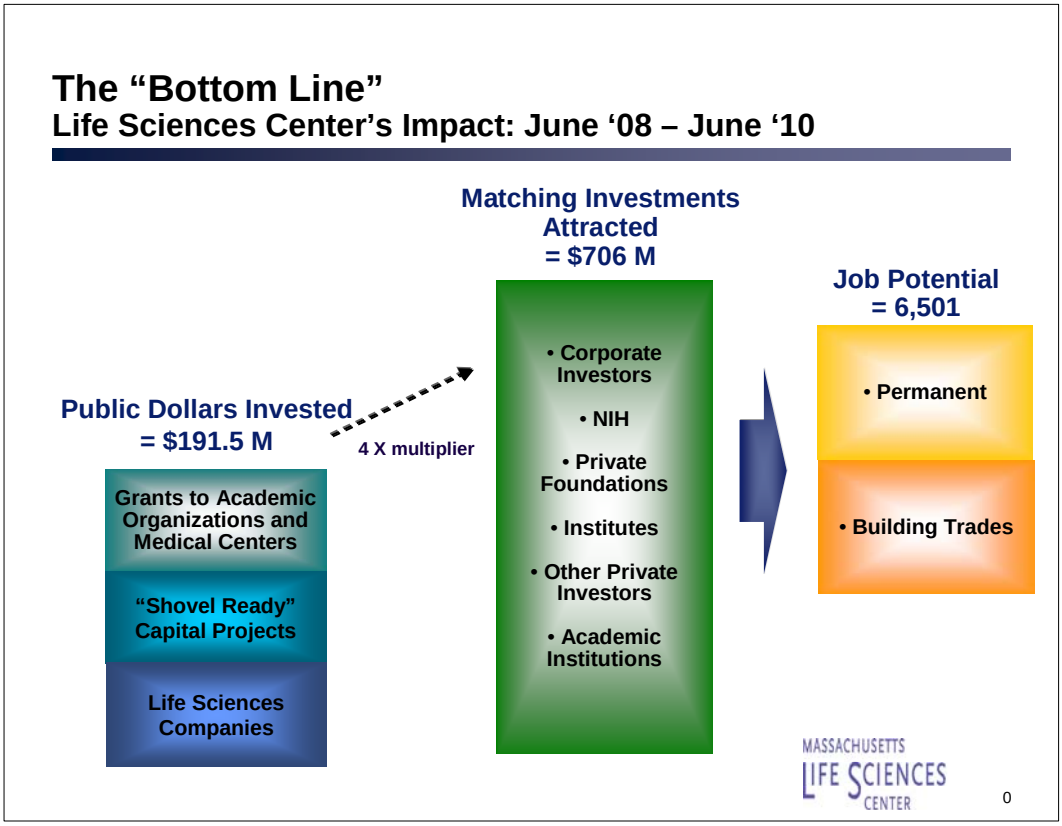
The Center's impact is receiving attention outside of the Commonwealth. We consistently receive a high volume of requests to share best practices and collaborate with other national and international life sciences initiatives, as a result of our creativity and results to date. During the past year the Center has celebrated many groundbreakings and ribbon-cutting ceremonies across the Commonwealth.

We have also successfully engaged life sciences experts across Massachusetts as our partners in promoting the success of the Life Sciences Initiative. Scientists, industry experts and members of the investment, legal and economic development communities are actively contributing their time and talent to the Center's programs.

Center Vice President for Communications Angus McQuilken participates in a forum at Genzyme with a delegation from Beijing.

The Bottom Line:

The Center continues to highly leverage the public dollars that have been entrusted to us. To date, we have committed $191 million in state funding and leveraged more than $700 million in outside investment, helping to create a projected 6,501 jobs across the Commonwealth. This means that for every $1 of taxpayer money that the Center has invested, we have attracted nearly $4 in additional outside investment – creating a public-private investment fund of nearly $900 million for the state's life sciences Supercluster in just two years.



Investment Portfolio:

The Center's investments during FY '10 included two new job-creating capital projects, authorization for four loans to provide working capital to early stage companies through the Center's Accelerator Program, three grants to support the commercialization of technologies through a new Small Business Matching Grant Program, a second round of grants to promising new investigators, and the first year of tax incentive awards to encourage job growth at 26 life sciences companies. These new investments join the more than 40 grants, loans and projects that the Center is administering through commitments made in prior fiscal years.

The Center also funded a second year of the Life Sciences Internship Challenge, a program that is developing the next generation of the Commonwealth's talented life sciences workforce. In addition, the Center awarded $120,000 to support leading business plan competitions that seek to identify promising new ideas and promote company creation. We also awarded a $50,000 grant to the Massachusetts Life Sciences Collaborative to support their efforts to strengthen the state's biomanufacturing sector through the creation of a Biomanufacturing Roundtable.

FY ’10 was also a strong year for company recruitment to Massachusetts. The Center helped to organize grand openings for several life sciences companies that are new arrivals to Massachusetts, including three international companies that chose Massachusetts as the location for their U.S. or North American headquarters. One of these companies, CYTOO, Inc., is a direct return on investment for the state’s presence at Bio 2009 in Atlanta, where a decisive meeting took place between CYTOO’s newly hired U.S. CEO and Governor Deval Patrick. This meeting motivated the company to locate in Framingham. The Center again coordinated the state’s presence at the Bio International Convention in 2010, which took place May 3rd-6th in Chicago. Through a strong collaboration between the Center, MassBio, It’s All Here®, MOITI, the Boston Redevelopment Authority and other partner agencies and organizations, Massachusetts had a strong showing once again at this year’s show, resulting in dozens of promising new business leads identified for follow-up.

Investing in Infrastructure:

The Center’s grants for public infrastructure projects are designed to promote significant long-term job creation throughout the Commonwealth, and to ensure that more regions of the state have the necessary infrastructure for life sciences expansion, thus making these areas life-sciences ready. The Center’s infrastructure grants are funded through our capital fund, which received $30 million in bonding capacity in FY ‘10 as part of the state’s overall capital plan. These grants are directed to municipalities and institutions for infrastructure improvements that support growth in the life sciences sectors. **Through all programs combined the Center’s investments have contributed to the creation of more than one million square feet of new life sciences research and manufacturing space.**

The Center’s Board of Directors approved two new projects in FY ’10 totaling $96.6 million in capital authorizations, while maintaining the financial commitments made to previously approved projects from the prior fiscal year. To date, the Center has committed $129 million to five capital projects, which are expected to create more than 4,000 jobs in the building trades and more than 1,000 permanent jobs in the life sciences.

Life Sciences in the Heart of the Commonwealth:

On September 23, 2009 Governor Deval Patrick and the Massachusetts Life Sciences Center announced the approval of $90 million in capital funding toward the construction of the $405 million Albert Sherman Center Project at the University of Massachusetts Medical School (UMMS). This facility was a key targeted investment in the Life Science Act and will further bolster the pioneering life sciences research and medical education taking place at UMass Medical School in Worcester.

The 500,000-square-foot Sherman Center is slated for completion in 2012, and will be a state-of-the-art research and education facility designed to maximize collaboration among researchers, educators and learners across scientific disciplines. The new facility will be home to the Advanced Therapeutics Cluster (ATC), comprising the RNA Therapeutics Institute, the Center for Stem Cell Biology and Regenerative Medicine and the Gene Therapy Center, and contain wet research space for more than 100 investigators. Translational scientists in the ATC will pursue novel bench-to-bedside research in these emerging scientific fields with the goal of developing new innovative therapies for diseases. The Sherman Center will also integrate cutting-edge, quantitative “dry labs” that house bioinformatics, biostatistics, interactive health outcome

assessments and electronic health care data systems with the work of biologists and chemists in the "wet lab."

Ground is broken for construction of the Sherman Center at UMass Medical School in Worcester.

Under the terms of the funding, the UMass Building Authority will receive $90 million from the Massachusetts Life Sciences Center during the life of the construction project. According to the University of Massachusetts Donahue Institute, which conducted an economic impact analysis of the Sherman Center, the construction and operation of the facility will have an estimated $1 billion statewide economic impact. The direct construction spending of over $400 million is projected to create 3,512 jobs and generate over $760 million in total statewide economic activity during the building of the Center. When fully operational the Sherman Center is projected to create 730 permanent jobs, according to the Donahue Institute analysis. The groundbreaking ceremony for the project was held on September 17th, 2009, and was attended by Lieutenant Governor Timothy Murray, Senate President Therese Murray, UMass officials, local legislators and Life Sciences Center President & CEO Susan Windham-Bannister.

The Gateway to Expansion in Biomanufacturing:

On February 24, 2010 the Center's Board of Directors awarded a $6.6 million grant to Worcester Polytechnic Institute (WPI) to support the next phase of life sciences related development at Gateway Park in Worcester. The grant leverages $21 million in supplemental investment to develop a new 80,000-square-foot life sciences facility anticipated to create 120 construction jobs and house 142 permanent jobs at completion.

The grant supports the development of WPI's Biomanufacturing Education and Training Center (BETC), a new incubator for Massachusetts Biomedical Initiatives (MBI) and expanded academic and research space, including new facilities for the Massachusetts Academy of Math and Science. The BETC is planning a 10,000-square-foot facility that will provide hands-on biomanufacturing training to support industry workforce development. The new building will house a wet-lab core facility that supports early-stage company growth. MBI currently operates three life sciences incubators in Central Massachusetts (one of which is located in the first Gateway Park building) and has graduated 30 companies, creating 265 new jobs since 2000.

In addition to these programs, which will be housed in the new facility at Gateway Park, the expanded development will make available 40,000 square feet of additional lab and office space for commercial and academic uses, including workforce development.

Partnering With Massachusetts Cities and Towns:

On October 28, 2009, the Center's Board voted to provide $7.7 million to the Town of Framingham - the second and final installment of a $12.9 million grant for construction of a new wastewater facility to support the Framingham Technology Park (The Center approved a $5.2 million initial grant in November of 2008). This funding was a targeted investment contained in the Life Sciences Act. The Framingham wastewater project has enabled Genzyme Corporation to build a new $250 million facility and create 300 new manufacturing jobs, and is anticipated to attract new prospective employers to the Park. Construction of the Genzyme plant and its four bioreactors was completed in December 2009, and the bioreactor suite is now operational. Engineering runs will begin in September 2010, with process validation runs expected to begin in the first quarter of 2011. The first FDA approval for commercial production at the plant is anticipated by the end of 2011.

Construction of a new pumping station at the Framingham Technology Park is allowing Genzyme to build a new biomanufacturing facility that will employ at least 300 people.

The company estimates that the project has created 125 full-time equivalent construction jobs. The new pumping station went on-line on January 19, 2010. The Town reports that the project created 33 construction-related jobs. This investment continues to demonstrate the extraordinary results that can be obtained through state, municipal and industry partnerships.

Expanding Massachusetts Leadership in Regenerative Medicine:

On November 17, 2008, the Center joined with Governor Patrick, Senate President Therese Murray, State Representatives Matt Patrick and Eric Turkington and then Representative-Elect Timothy Madden to announce a $10 million grant to renovate the Loeb Lab at the Marine Biological Laboratory (MBL) in Woods Hole. The state's commitment of $10 million was leveraged by MBL to secure an additional $15 million from the Howard Hughes Medical Institute (HHMI).

Dr. Windham-Bannister participates in a ribbon-cutting to officially open the renovated Loeb Laboratory Building at the Marine Biological Laboratory in Woods Hole. Attendees included Senator John Kerry, Congressman William Delahunt, State Senator Robert O'Leary, and State Representative Timothy Madden.

The project broke ground in September, 2009 and was completed in June, 2010. The Center helped to organize a ribbon-cutting event that was held on July 23, 2010. At its peak the project involved 200 tradespeople, and the new facility will house more than forty new permanent jobs in the life sciences.

The renovated laboratory facility contains MBL's new Center on Regenerative Biology and Tissue Engineering, reflecting the institution's increased focus on regenerative medicine. As additional leverage on the Center's investment, the National Institutes of Health (NIH) has awarded the Marine Biological Laboratory (MBL) $802,500 in federal stimulus funds to support the recruitment of scientists specializing in regenerative biology. The NIH is also providing $557,000 for the Laboratory's intensive Frontiers in Stem Cells and Regeneration training course, designed for young scientists, physicians and established investigators seeking comprehensive training in research strategies and state-of-the-art approaches for advancing regeneration and regenerative medicine research. MBL is anticipating funding from the National Institutes of Health to establish a national resource for research on the frog, *Xenopus*, which possesses unique regenerative abilities, including the ability to regenerate the lens of its eye. The Loeb Laboratory is the cornerstone of the MBL's world-famous life sciences education programs, which train more than 450 students, including 200 international students, each year.

Biosafety Laboratory Up and Running in Grafton:

In March 2009, the Center's Board approved a $9.5 million grant to support completion of the New England Regional Biosafety Laboratory (NE-RBL) at Tufts University's Cummings School of Veterinary Medicine in Grafton. The grant bolstered existing grant funding from the National Institute of Allergy and Infectious Diseases (NIAID), as well as additional matching funds from Tufts University. The $33.7 million project created 70 full-time equivalent jobs in design, development and construction of the facility, and approximately 29 long-term positions for scientists, research technicians, and additional facility staff are anticipated. Construction was completed in December, 2009. The facility was permitted for occupancy in May, 2010.

Support for Small Businesses:

During FY '10 the Center awarded $2.5 million to provide working capital to four early-stage life sciences companies through the Center's Accelerator Program. In addition, the Center awarded $1.5 million in Small Business Matching Grants to three life sciences companies in Massachusetts.

Accelerating the Growth of Early-Stage Companies:

The Center's Accelerator Program is designed to provide working capital to early-stage life sciences companies at a critical stage of their development. The program seeks to de-risk these companies in order to encourage private investment and help commercialize scientific research into jobs, products and therapies. The Center developed the program in FY '09 with input from the business community and a roundtable of investors.

The investment vehicle for the Accelerator Program is a 5-year loan of up to $750,000 with a 10% interest rate. The interest and principal is paid in full at the end of 5 years or the principal and accrued interest is paid upon a financing event of $5 million or more. The program matches other sources of at-risk capital that companies have raised.

To ensure that all applicants are evaluated on the basis of the merits of their proposals, the Center developed a novel and rigorous peer review process that is modeled, in part, on the approach used by the National Institutes of Health (generally considered as the "gold standard"), and the approach used by venture capital firms and corporate investors.

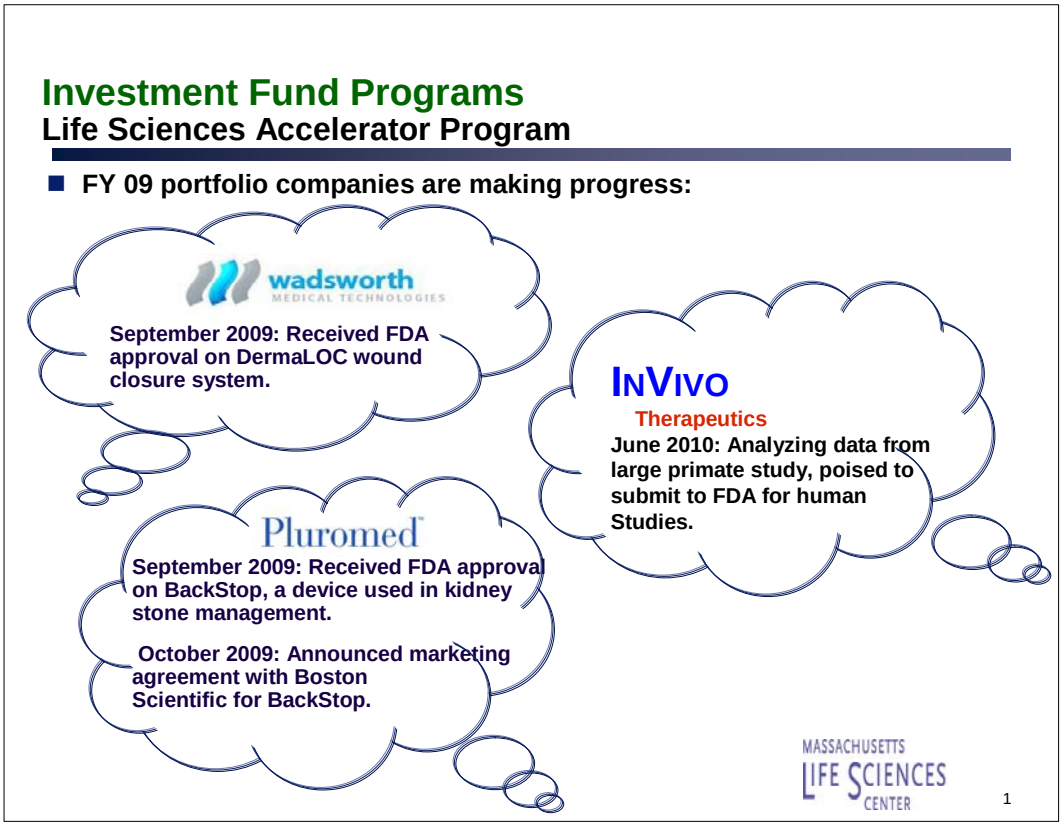
The Center received a total of 39 Accelerator applications during FY '10. In June 2010, the Center's Board of Directors approved the funding of four (4) Accelerator Loans for a total investment of approximately $2.5 Million. These four companies were designated by the Center as certified life sciences companies as required by the Life Sciences Act (for a complete listing of certified companies to date, see Appendix C):

Company (Location)	**Area of Development**	**Loan Amount**
Aura Medsystems (Duxbury)	Developing skin closure technology to help doctors treat wounds	$750,000
Avaxia Biologics (Burlington)	Developing antibody therapeutics aimed at disease targets accessible through the mouth and gastrointestinal (GI) tract	$375,000
Connective Orthopaedics (Woburn)	Developing therapies that stimulate the healing of intra-articular tissues, particularly the anterior cruciate ligament.	$750,000
4s3 Bioscience (Medford)	Developing a proprietary antibody technology that allows for targeted and active intracellular delivery of therapeutics to skeletal muscle	$600,000

Dr. Windham-Bannister congratulates Dustin Armstrong, VP and Head of Research for 4s3 Bioscience, after the company was awarded an Accelerator loan from the Center.

Accelerator loans were awarded to seven early-stage companies during the program's first year in FY '09. Several of these companies reached regulatory and research milestones in FY '10.[1] Good Start Genetics, a 2009 Accelerator loan awardee, repaid their loan in full with interest on September 2, 2010.

[1] One of the seven companies that received Accelerator loans in 2009, Spectra Analysis, ceased operations as of March, 2010.



Matching Federal Small Business Grants:

The Center's Small Business Matching Grant Program, launched in January 2010, matches federal small business grant funding for early-stage life sciences companies engaged in life sciences research and development, commercialization and manufacturing in Massachusetts. Goals of the program include the creation of jobs in Massachusetts based on the commercialization of products with high potential for market adoption and penetration.

To qualify for the program companies must have received Phase II or Post Phase II small business innovation research (SBIR) or small business technology transfer (STTR) grants from Federal agencies such as the National Institutes of Health (NIH), National Science Foundation (NSF), or Department of Defense (DOD). They also must qualify as a small business under the guidelines of the U.S. Small Business Administration (SBA). A total of 34 early-stage companies applied for the program and three recipients were chosen to receive grants of $500,000 after extensive review by the Center's peer review panel, Scientific Advisory Board and Board of Directors.

The recipient companies are as follows:

- Boston Biochem Inc. (Cambridge)- a leading provider of ubiquitin-related research products and services
- Tetragenetics, Inc. (Cambridge)- a biotechnology company meeting the needs of customers who seek a cost-effective alternative platform technology for the production of genetically engineered proteins

Dr Windham-Bannister congratulations Thermedical President Michael Curley after his company was selected to receive a Small Business Matching Grant from the Center.

- Thermedical, Inc. (Somerville)- designs, develops, manufactures and sells thermal ablation systems to treat previously untreatable cancers and cardiac arrhythmias

The companies will use the Center's grants to create 40 new jobs in the Commonwealth by the end of 2011, maintain and expand R&D and manufacturing in Massachusetts, and commercialize technology platforms.

Private Partnerships:

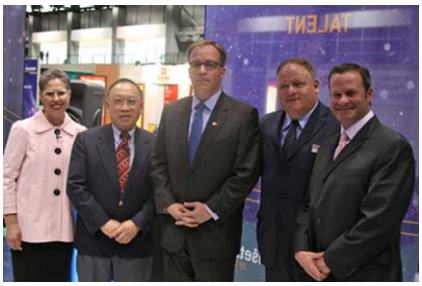
An important part of the Center's mission is to attract additional investment dollars to the life sciences sectors in addition to the state funds that flow through the Center's portfolio. In FY '09, the Center launched the Corporate Consortium Program, which enables each dollar funded by the Center to be potentially matched by a corporate investor. Corporate Consortium members, in exchange, are provided with a non-voting seat on the Investment Sub-Committee of the Center's Board of Directors and the opportunity to have a view of the innovation pipeline in the Commonwealth.

In January 2009, the Center announced the Charter Member of the Consortium, Johnson & Johnson (JNJ). To date, JNJ has committed $500,000 to the Center's Accelerator Loan Program over two fiscal years. In May, 2010 the Center announced its second Consortium member, global life sciences firm sanofi-aventis, which also agreed to join the Consortium with an investment of $500,000 over two years.

Leveraged Impact – Corporate Consortium Program

The Center continues to highly leverage the public tax dollars that we invest by attracting matching dollars from the private and non-profit sectors.

- **Johnson & Johnson agreed to participate in our Corporate Consortium Program for a second year**
- **In FY 10, sanofi-aventis become the second member of the program**



J&J and sanofi-aventis each committed a minimum of $250,000 per year for two years to match investments made by the Center in early-stage companies.

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The Center's Consortium Program is a unique funding vehicle that is attracting national and international interest as a model for public-private investment. The Program allows the Center to stretch the public dollars that are invested in early-stage companies, maximize the impact of the Center's investments and leverage private investment dollars. Encouraged by our success, we plan to expand the Consortium Program in FY '11 to include more private, public and foundation participants.

From Bench to Bedside:

The Center's Research Matching Grant Program is designed to support translational research in the life sciences, promote technology transfer and support the competitive position of Massachusetts' academic institutions and medical centers. To accomplish these objectives, the Center created three matching grant programs: the New Investigator Research Grants, the New Faculty Startup Grants and the Cooperative Research Grants. The New Investigator Grant is designed to spur innovative research and advance the careers of new investigators working in the life sciences at research institutions in the Commonwealth. The New Faculty Startup Grant was designed to increase the number of nationally prominent faculty working in the life sciences at Massachusetts colleges and universities. The Cooperative Research Grant is designed to encourage industry-sponsored research at research institutions and facilitate the commercialization of scientific discoveries and inventions with beneficial medical applications.

Massachusetts Life Sciences Center Scientific Advisory Board Chairman Dr. Harvey Lodish addresses a gathering held to recognize the Centers research matching grant recipients at the Boston Museum of Science.

To ensure that all applicants are evaluated on the basis of merit, the Center developed a rigorous peer review process that is modeled on the approach used by the National Institutes of Health. For each solicitation, the Center's Scientific Advisory Board reviewed applications and made recommendations to the Center's Board of Directors which rendered the ultimate decisions for successful grant awardees.

To date the Center has awarded 21 New Investigator Grants out of a pool of 92 applicants in two rounds, five Faculty Startup Grants from a pool of 12 applicants, and six Cooperative Research Grants from a pool of 27 applicants. 10 of the new investigator grants were awarded in June and July of 2009:

MA LIFE SCIENCES CENTER – RESEARCH MATCHING GRANT AWARDS		
NEW INVESTIGATOR AWARDS AUTHORIZED JUNE-JULY 2009		
PRINCIPAL INVESTIGATOR	**INSTITUTION**	**RESEARCH**
Christopher Gabel	Boston University Medical Center	The study of neural regeneration in *C. Elegans* using femtosecond laser surgery and advanced optical neurophysiology
Satoshi Yoshida	Brandeis University	How cells respond to stress
Sun Hur	Immune Disease Institute, Children's Hospital	Structural and kinetic investigations of the mechanism for self vs non-self RNA discrimination by RIG-I
Konstantina Stankovic	Massachusetts Eye and Ear Infirmary	Functional role and therapeutic implications of osteprotegerin secretion by the auditory nerve
Raul Mostolovsky	Massachusetts General Hospital	The chromatin factor SIRT6 is a master regulator of glucose homeostasis
Mark Niedre	Northeastern University	Optical tomographic sensing and enumeration of rare circulating cells in vivo
Jeffrey Bailey	University of Massachusetts Medical School	Dissecting the role of human copy number variation in severe malaria
Dr. Tobias Ritter	Harvard College	New pharmaceuticals and diagnostics by late-stage fluorination
Dr. Briana Burton	Harvard University	Mechanisms of nucleic acid transport across membranes
Dr. Matthias Marti	Harvard School of Public Health	Establishment of a high throughput screen focused on preventing the development of gametocytes, the form of malaria that mediates transmission

The Center's New Investigator Grant recipients have achieved a high level of success both in securing follow-on funding through supplemental grants from other sources, and in getting their work published in prestigious academic journals.

Investment Fund Programs

Leverage on the New Investigator Grant Program*

- **As of June 30, 2010, *nearly half* (43%) of the Center's New Investigators (9 of 21) had leveraged their MLSC grants with follow-on funding.**
- **The Center's investment in these nine (9) Investigators totals $2.4M.**
- **However, these nine (9) New Investigators have won 15 grants totaling over $6.5M.**

Leverage on MLSC investment = 2.7x

*A total of 21 New Investigators were funded; MLSC grants average $100k for 2-3 years; all grants received a 1:1 match from the Investigator's affiliated academic institution

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Investment Fund Programs

New Investigators' Scientific Contributions*

- **As of June 30, 2010, *over half (57%)* of the Center's New Investigators (12 of 21) had published articles based on the work being funded by MSLC grants.**
- **These 12 grantees have published a combined total of 31 articles that have been presented in the following journals:**

- ***Applied Physics***
- ***Cell***
- ***EMBO Journal***
- ***European Journal of Immunology***
- ***Gastroenterology***
- ***Genes & Development***
- ***Hearing Research***
- ***Journal of Bacteriology***
- ***National Academy of Science***
- ***Nature***
- ***Nature Biotechnology***
- ***Nature Methods***
- ***Nature Reviews Immunology***
- ***New England Journal of Medicine***
- ***Optics Express***
- ***Proceedings of the National Academy of Sciences***
- ***Sem. Immunology***

*A total of 21 New Investigators were funded; MLSC grants average $100k for 2-3 years; all grants received a 1:1 match from the Investigator's affiliated academic institution

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Peer-reviewed publications are the metric by which the academic community measures the credibility and rigor of the scientific advancements set forth in the article. For this reason, publication in prestigious journals is highly regarded and forms the basis for future grants and advancement in the profession.

During FY '10 four of the five institutions that received Faculty Startup Grants were successful in hiring new world-class senior faculty.

Developing the Next Generation of Life Sciences Leaders and Skilled Workers: the Life Sciences Internship Challenge:

The Massachusetts Life Sciences Center's 2010 Internship Challenge received an overwhelming response, with nearly 900 applicants seeking internships this past summer. Over 130 companies from all sectors of the life sciences community combed through hundreds of resumes, held numerous interviews and selected interns to hire. Through the Challenge, 170 interns were matched with 93 life sciences companies, an increase of over 60% from the 104 interns hired in 2009. Selected interns came from 46 different academic institutions and 32% were from public colleges or universities. Of the selected interns, 13 were from community colleges, up from two the prior year. This reflected the Center's commitment to set aside 10% of program resources for community college students, and extensive outreach to community colleges to encourage their participation. Interns came from communities across the state; from Swampscott to Pittsfield, and Amesbury to New Bedford. The Center committed $1,160,000 to this program during FY '10.

Investment Fund Programs

Workforce Development: FY 10 Internship Challenge

2009 Internship Challenge	2010 Internship Challenge
Investment: **$452,190**	Investment: **$1,160,000**
Eligible sponsors: **any size company and research institution** in MA.	Eligible sponsors: **limited to small businesses** in MA with 100 or fewer employees.
Interns required to be undergraduates majoring in a STEM subject.	Intern eligibility expanded to include grad students and students studying business or law.
Internship period (subsidized by Center) limited to up to **8 weeks**.	Internship period (subsidized by Center) extended to up to **12 weeks**.
# Applications submitted: **508**	# Applications submitted: **892** (↑76%)
# Interns placed: **104**	# Interns placed: **170** (↑63%)
Interns represented **29** colleges/universities **22%** from public institutions	Interns represented **47** colleges/universities (↑60%) **32%** from public institutions (↑45%)
# Community college interns placed: **2**	# Community college interns placed: **13** (↑550%)
# Sponsors reviewing candidates: **77**	# Sponsors reviewing candidates: **140** (↑82%)
# Intern sponsors: **59**	# Intern sponsors: **93** (↑58%)

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The Massachusetts Life Sciences Center's Internship Challenge is a workforce development program focused on enhancing the talent pipeline for life sciences companies in Massachusetts while 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 summer internships to juniors and seniors, recent college graduates and graduate students. Nearly all of the interns selected for the Internship Challenge were hired for a 12-week work period, with a maximum reimbursement from the Center of $15/hr. Host companies and institutions commit to providing a dedicated mentor and a meaningful internship opportunity related to the academic focus of eligible students. The Center established a web-based interface where students could post resumes, as well as cover letters highlighting their experience, and where host companies can match skills with their needs. Host companies contacted and interviewed candidates, selected interns for their programs, and notified the Center of their desire to provide an internship to a qualified student.

Objectives of the Life Sciences 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 to students interested in working in the life sciences a peer network through educational and informational exchange events.

The Life Sciences Internship Challenge Program is also a human capital subsidy program for small and early stage companies. The focus of this year's Internship Challenge, while student-oriented, was to provide smaller companies with the opportunity to grow their businesses in this tough economic climate. All of the companies that are receiving reimbursement of student stipends are companies with 100 or fewer employees. Life sciences companies with more than 100 employees and research institutions were able to recruit students from the Center's database, but are not being provided with subsidies to hire interns. Companies hosting interns represent a broad spectrum of the life sciences industry, including pharmaceuticals, medical devices, biotechnology and contract research organizations.

Matt Gethers, 2009 Life Sciences Internship Challenge participant and recent MIT graduate with a degree in biological engineering, interning at Ginkgo Bioworks in Boston.

At the conclusion of the 2009 program, more than 20 students received offers of either full or part-time employment at the companies where they interned. The Center will be closely tracking the outcomes of the expanded 2010 program.

Feedback from the Internship Challenge:

"Having graduated college, my job opportunities seemed slim to none with the current job market, but the Massachusetts Life Science Center's Internship Challenge has allowed me to get my foot in the door to greater opportunities," said Enget Dang, a marketing major and recent graduate of UMass-Amherst, who is interning this summer at PharmaHealth Clinical Research Services in Fairhaven, MA. "It is important to jump on opportunities like the Internship Challenge because it allows you to build and develop new skills and interact with professionals, and gives hope to those students who believe that job opportunities are scarce. The Internship Challenge is a stepping stone towards my future, and is the best graduation gift any graduate could ask for."

"It is a great benefit to have the opportunity to work for a small company that, without the Center's funding, may not otherwise have had the opportunity to bring on interns," said Kevin Goggins, a senior and biomedical engineering major at Worcester Polytechnic Institute, who is interning this summer at SemiNex Corporation in Peabody, MA. "I have had the opportunity to work within a large organization in the summer prior to this; however, I am delighted that I now have the opportunity to experience a completely different corporate structure. I think this program offers a phenomenal opportunity for students in the already very promising life sciences field."

"We are grateful to the Massachusetts Life Sciences Center for their support of this internship program," said Dr. Barbara Fox, CEO of Avaxia Biologics, Inc. Located in Burlington, MA, Avaxia Biologics, Inc. is hosting a student this summer from Bridgewater State College. "By providing funding for students to work with small life sciences companies, the Center is both strengthening the biotech industry in Massachusetts and providing an important educational and work experience for talented local students."

"The Massachusetts Life Sciences Center's Internship Challenge Program turned out to be a great vehicle for bridging the gap between local colleges and our company," said Endodynamix CEO Pavel Menn. Endodynamix, located in Salem, MA, is hosting two students this summer, one from UMass Amherst and another from Northeastern University. "This program is extremely helpful, as it gives students opportunities to gain real life experience in development of medical instrumentation and makes them valuable contributors that we intend to hire."

2010 Internship Challenge Participants

Intern Distribution by College:

Assumption College (1)	Massachusetts Institute of Technology (16)
Babson College (1)	Middlebury College - VT (1)
Bates College - ME (1)	Middlesex Community College (1)
Bentley University (2)	Mount Wachusett Community College (3)
Boston College (2)	Northeastern University (14)
Boston University (13)	Rochester Institute of Technology - NY (1)
Brandeis University (3)	Roger Williams University - RI (1)
Brown University - RI (1)	Roxbury Community College (1)
Bridgewater State College (1)	Simmons College (2)
Bunker Hill Community College (2)	Smith College (1)
Central European University - Hungary (1)	Springfield Technical Community College (2)
Clark University (1)	Tufts University (12)
Colby-Sawyer College - NH (1)	Union College - NY (1)
College of the Holy Cross (3)	University of Connecticut - CT (2)
Cornell University - NY (1)	University of Massachusetts Amherst (17)
Duke University - NC (1)	University of Massachusetts Boston (4)
Endicott College (1)	University of Massachusetts Dartmouth (8)
Framingham State College (2)	University of Massachusetts Lowell (6)
Franklin W. Olin College of Engineering (3)	University of Pennsylvania - PA (1)
Harvard University (1)	Western New England College (1)
Hult International Business School (3)	Woods Hole Oceanographic Institution (1)
Liberty University - VA (1)	Worcester Polytechnic Institute (22)
Massachusetts Bay Community College (4)	Worcester State College (1)
Massachusetts College of Liberal Arts (1)	

Intern Distribution by Company:

Abpro Labs (2)	Cambridge	Harvard Apparatus (3)	Holliston
AdvanDx (2)	Woburn	Hepregen Corporation (1)	Medford
Advantagene, Inc. (2)	Auburndale	incTANK Ventures (2)	Cambridge
Advent Medical Products (2)	Westborough	IntAct Labs (2)	Somerville
Agilux Laboratories (2)	Worcester	inviCRO (1)	Boston
Agrivida (2)	Medford	InVivo Therapeutics (1)	Cambridge
Albright Technologies (1)	Leominster	INVO Bioscience, Inc. (1)	Beverly
Alzcor Pharmaceuticals Inc (3)	Arlington	IonSense, Inc. (1)	Saugus
Aphios Corporation (3)	Woburn	IQuum, Inc. (4)	Marlboro
Arsenal Medical (2)	Watertown	JEF Core Inc. (3)	Weston
Avaxia Biologics, Inc. (1)	Burlington	Ligon Discovery (4)	Cambridge
Averica Discovery Services (1)	Cambridge	MicroCHIPS, Inc. (3)	Bedford
Bioscale, Inc. (2)	Cambridge	Microtest Laboratories, Inc. (2)	Agawam
BioSurfaces, Inc. (2)	Ashland	Myomo (2)	Cambridge

Biotechnic Products, Ltd. (3)	Worcester	NeoStem (1)	Cambridge
Blue Sky Biotech (1)	Worcester	New England Peptide (4)	Gardner
Boston BioChem, Inc. (2)	Cambridge	NMT Medical, Inc. (2)	Boston
Boston MedTech Advisors, Inc. (1)	Dedham	NP Medical (1)	Clinton
Boston Open Labs (2)	Fall River	NormaTec Industries (1)	Newton
Bridgemedica (1)	Walpole	NovoBiotic Pharmaceuticals, LLC (2)	Cambridge
Cambridge Biomedical (2)	Boston	Nuclea Biotechnology (2)	Pittsfield
Cambridge Polymer Group, Inc. (1)	Boston	NuOrtho Surgical (2)	Fall River
Cambridge Research & Instrumentation (2)	Woburn	One Cell Systems, Inc. (2)	Cambridge
Cellay, LLC (1)	Cambridge	Optim Inc (1)	Sturbridge
CellMosaic, LLC (1)	Worcester	Orbital Therapy (2)	Bedford
CeQur LTD (2)	Marlborough	Orthotics & Prosthetics Laboratories (1)	Springfield
CFRx (1)	Charlestown	PharmaHealth Clinical Research Services (2)	Fairhaven
Claros Diagnostics, Inc. (1)	Woburn	Phosphorex (2)	Fall River
CMB Science, Inc. (1)	Pepperell	Phylonix Pharmaceuticals, Inc. (2)	Cambridge
Connective Orthopaedics, Inc. (2)	Woburn	Respiratory Motion, Inc. (3)	Lexington
Cytonome/ST (1)	Boston	RXi Pharmaceuticals (2)	Worcester
CYTOO, Inc. (2)	Framingham	Pluromed (2)	Woburn
Dexrex, LLC (3)	Cambridge	Qteros, Inc. (2)	Marlborough
Digilab, Inc. (1)	Holliston	SeventhSense Biosystems (3)	Cambridge
DNA Medicine Institute, Inc. (2)	Cambridge	SemiNex Corporation (3)	Peabody
DocBox Inc (2)	Waltham	T2 Biosystems, Inc. (1)	Cambridge
Ekam Imaging (1)	Shrewsbury	Tetraphase Pharmaceuticals, Inc. (2)	Watertown
EndoDynamix, Inc. (2)	Salem	The Capital Network (1)	Wellesley
EpigenDx Inc. (1)	Worcester	Tim Rosa Associates, LLC (1)	West Newton
Eutropics Pharmaceuticals Inc. (2)	Boston	Vasotech, Inc. (2)	Lowell
Excellims Corporation (2)	Acton	Velico Medical, Inc. (1)	Beverly
EyeGate Pharmaceuticals, Inc. (2)	Waltham	VelQuest Corporation (1)	Hopkinton
FlagshipIP, P.C. (1)	Bedford	ViThera Laboratories (2)	Cambridge
GI Dynamics, Inc. (2)	Lexington	VivoPath (1)	Worcester
Ginkgo BioWorks (2)	Cambridge	WaterSep Technology Corp. (2)	Marlborough
GlycoSolutions Corp. (1)	Worcester	Wolfe Laboratories, Inc. (4)	Watertown
Grove Instruments, Inc. (1)	Worcester	Zibra Corporation (1)	Westport

Investing in Industry and Job Creation:

The Life Sciences Tax Incentive Program:

In FY ‘10 the Massachusetts Life Sciences Center awarded $24.4 million in tax incentives to 26 life sciences companies. The companies receiving tax incentive awards have committed to creating more than 800 new jobs in the Commonwealth during calendar year 2010.

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.

Life sciences leaders tour the manufacturing space at Morgan Advanced Ceramics in New Bedford, a recipient of a 2009 tax incentive award from the Center.

The Act provides for nine 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 85 companies applied for tax incentives in this first year of the program. The 26 certified life sciences companies that received tax incentives from the Center, the awards they received, and the jobs they committed to creating are below:

Company (Location)	**Job creation commitment in calendar year 2010**	**Amount Awarded**
Alnylam Pharmaceuticals, Inc. (Cambridge)	10	$300,000
Biogen Idec MA, Inc. (Cambridge)	50	$1,500,000
Constellation Pharmaceuticals, Inc. (Cambridge)	26	$513,252
Cubist Pharmaceuticals, Inc. (Lexington)	58	$1,740,000
Dyax Corporation (Cambridge)	15	$100,000
Facet Solutions (Hopkinton)	10	$300,000
FoldRx Pharmaceuticals, Inc. (Cambridge)	17	$510,000
Genzyme Corporation (Cambridge/Framingham)	200	$6,000,000
GTC Biotherapeutics, Inc. (Framingham)	10	$300,000
Infinity Pharmaceuticals, Inc. (Cambridge)	18	$540,000
InfraReDx, Inc. (Burlington)	21	$630,000
Interlace Medical, Inc. (Framingham)	10	$300,000
Lightlab Imaging, Inc. (Westford)	29	$188,951
Merrimack Pharmaceuticals, Inc. (Cambridge)	50	$1,500,000

Morgan Advanced Ceramics, Inc. (New Bedford)	19	$570,000
NeuroMetrix, Inc. (Waltham)	10	$300,000
Nova Biomedical Corporation (Waltham)	10	$300,000
OmniGuide, Inc. (Cambridge)	18	$540,000
Organogenesis (Canton)	15	$245,240
Sepracor, Inc. (Marlboro)	25	$750,000
Shire Human Genetic Therapies, Inc. (Lexington)	150	$6,277,057
STD Med, Inc. (Stoughton)	10	$121,000
Still River Systems, Inc. (Littleton)	10	$300,000
TEI Biosciences, Inc. (South Boston)	10	$27,000
ToleRx, Inc. (Cambridge)	10	$300,000
Zoll Medical Corporation (Chelmsford)	20	$267,500

Pursing a Strategy for Biomanufacturing: The Biomanufacturing Roundtable & Initiative:

The Massachusetts Life Sciences Center awarded a $50,000 grant to the Massachusetts Life Sciences Collaborative to support an initiative aimed at strengthening the state's biomanufacturing sector through a Massachusetts Biomanufacturing Roundtable and the development of a comprehensive biomanufacturing action agenda during the 2010 calendar year. The Biomanufacturing Roundtable includes participation from influential life sciences, biomanufacturing, academic and government leaders, including Massachusetts Life Sciences Center President & CEO, Dr. Susan Windham-Bannister. The Roundtable is co-chaired by Taligen Therapeutics CEO Abbie Celniker, Acceleron Pharma Senior Vice President of Manufacturing Bob Steininger and former Pfizer Vice President Mickey Koplove.

Recruiting Companies to Massachusetts:

The Center helped organize grand openings for several new life sciences companies in Massachusetts, including three international companies that chose Massachusetts as the location for their U.S. or North American headquarters. All of these companies cited the Life Sciences Initiative, along with our talented workforce and world-class academic institutions, as one of their reasons for locating in Massachusetts. The Center is continuing to engage international companies in conversations regarding investment and location in Massachusetts.

Attracting Companies to Massachusetts in FY 10

October 2009: Italian amniotic stem cell company Biocell Center opens North American Headquarters in Medford, Massachusetts.

December 2009: UK medical device company Systagenix opens headquarters for the Americas in Quincy, Massachusetts.

December 2009: French biotech company CYTOO Cell Architects opens U.S. subsidiary headquartered in Framingham, Massachusetts.

April 2010: NeoStem, Inc, an international biopharmaceutical company with operations in the U.S. and China, launched a new facility in Cambridge

Company officials cite Massachusetts' Life Sciences Initiative, talented workforce and proximity to leading research institutions as among their reasons for choosing to locate in the state.

MASSACHUSETTS LIFE SCIENCES CENTER

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Staying Connected:

The Center's communications program is designed to accomplish three objectives: 1) keep our stakeholders and the general public informed about the Center's investments of public dollars, 2) promote public accountability for the Center's progress in accomplishing our mission and 3) provide ongoing updates and information exchange with the life sciences community. Communication and outreach have been central to the Center's success in attracting a robust and diverse pool of applicants for Center programs during FY '10.

Electronic Communications:

During FY '10, the Center launched a new weekly service by providing life sciences event listings each Monday morning to individuals on the Center's email distribution list. The event listings have become a very popular feature of the Center's communication efforts.

Keeping Stakeholders Informed:

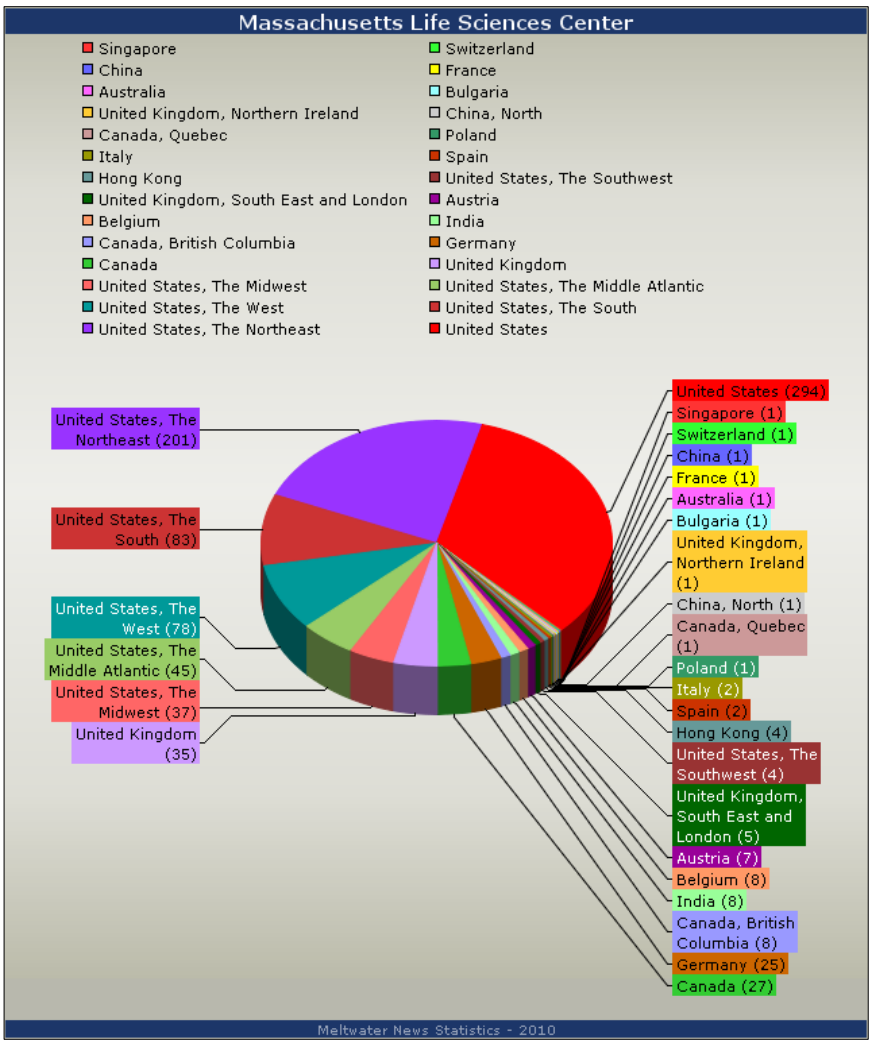
During FY '10, the Center's email database of life sciences stakeholders grew from 1,500 individuals to more then 3,000, demonstrating the sustained interest in the Life Sciences Initiative. Interested individuals can sign up for inclusion in the Center's database on our web site, or at Center-sponsored events.

Media Outreach:

The Center had more than 900 media mentions during FY '10. Center activities were covered by publications across the nation and around the world. The chart below shows the distribution of

the Center's media coverage during FY '10 by region. Periods of greater coverage tended to coincide with announcements of new programs or investments.

Geographic distribution of media mentions (7/1/09-6/30/10):



Public Appearances:

During FY '10, Center staff participated as presenters, speakers or panelists at more than 100 public events.

The Big Bang – Bio International 2010:

The Bio International 2010 conference in Chicago, Illinois was a highly successful event for the Center and the Commonwealth of Massachusetts. Bio International is the leading global annual gathering of life sciences leaders. The Life Sciences Center once again took the lead in coordinating a 2,300 square foot pavilion on the show floor. The Center was joined by sixteen Massachusetts-based exhibitors. Featured events included a Tuesday evening pavilion reception, an international town hall forum consisting of global companies that had made the decision to move to Massachusetts, and Global Connect sessions with international companies organized in partnership with MOITI.

The show attracted more than 15,000 industry leaders representing 49 states and 65 countries. Traffic at the Massachusetts pavilion was consistently heavy throughout the show, and all of the events that the Center sponsored or co-sponsored were well attended. Center staff finished the show with more than 850 new contacts.

The Center was pleased to participate in the September 2009 announcement that Bio will return to Boston in 2012.

Governor Patrick announces that Bio 2012 will return to Boston.

Conclusion:

FY '10 was another year of demonstrated impact by the Life Sciences Center in fulfilling our mission of creating jobs and advancing good science. The State Budget calls for a Fiscal Year 2011 investment fund appropriation of $10 million, contingent on the comptroller's declaration of a consolidated net surplus for FY '10. We are pleased with this vote of confidence by our state's political leadership, and we look forward to a productive and effective year ahead.

Appendix A

The Board of Directors of the Massachusetts Life Sciences Center as of June 30, 2010 (Denotes New FY 10 Member).*[2]**

- **Gregory Bialecki, Co-Chair**
  Secretary, Executive Office of Housing and Economic Development
- **Jay Gonzalez, Co-Chair***
  Secretary, Executive Office for Administration and Finance
- **Jack Wilson, Ph.D.**
  President, University of Massachusetts
- **Marc D. Beer**
  Former President & CEO, ViaCell, Inc
- **Josh Boger, Ph.D.**
  Former President & CEO, Vertex Pharmaceuticals
- **Peter L. Slavin, M.D.**
  President, Massachusetts General Hospital
- **Lydia Villa-Komaroff, Ph.D.**
  Board Member and Chief Scientific Officer, Cytonome/ST

Massachusetts Life Sciences Center Scientific Advisory Board Members as of June 30, 2010

- **Harvey Lodish, Ph.D. , Chair**
  Whitehead Institute, and Professor of Biology and of Bioengineering, MIT
- **James Barry, Ph.D.**
  Senior Vice President, Corporate Research and Advanced Technology Development, Boston Scientific Corporation
- **Doug Cole, M.D.**
  General Partner, Flagship Ventures
- **James J. Collins, Ph.D.**
  Professor of Biomedical Engineering, Boston University
- **George Q. Daley, M.D., Ph.D.**
  Children's Hospital Boston, Harvard Medical School, Harvard Stem Cell Institute
- **Patricia K. Donahoe, M.D.**
  Director Pediatric Surgical Research Laboratories and Chief Emerita Pediatric Surgical Services at Massachusetts General Hospital, and the Marshall K. Bartlett Professor of Surgery, Harvard Medical School
- **Jonathan Fleming, M.P.A.**
  Managing General Partner, Oxford Bioscience Partners
- **Jean M. George, M.B.A.**
  Partner, Advanced Technology Ventures
- **Lila Gierasch, Ph.D.**
  Professor, Biophysical Chemistry, Department of Biochemistry, University of Massachusetts Amherst

[2] In July of 2010, Governor Patrick appointed Taligen Therapeutics CEO Abbie Celniker to the Life Sciences Center Board of Directors, replacing Marc Beer who had completed his term.

- **Richard A. Goldsby, Ph.D.**
  John Woodruff Simpson Lecturer and Professor of Biology, Amherst College
- **Jeffrey Leiden, M.D., Ph.D.**
  Managing Director, Clarus Ventures
- **David T. Scadden, M.D.**
  Professor of Medicine, Harvard University, Co-Chair, Department of Stem Cell and Regenerative Biology, Harvard University, Co-Director, Harvard Stem Cell Institute, Director, MGH Center for Regenerative Medicine
- **Alan E. Smith, Ph.D.**
  Chief Scientific Officer, Genzyme Corp.
- **Allison Taunton-Rigby, Ph.D.**
  CEO and Director, RiboNovix, Inc.
- **David Walt, Ph.D.**
  Robinson Professor of Chemistry and Howard Hughes Medical Institute Professor at Tufts University School of Medicine
- **Philip Zamore, Ph.D.**
  Professor, Biochemistry and Molecular Pharmacology, UMass Medical School

Appendix B – List of Active Certified Life Sciences Companies as of June 30, 2010

COMPANY	LOCATION
4s3 Bioscience	Medford
Alnylam Pharmaceuticals, Inc.	Cambridge
Aura Medsystems	Duxbury
Avaxia Biologics	Burlington
Biogen Idec MA, Inc.	Cambridge
Connective Orthopaedics	Woburn
Constellation Pharmaceuticals, Inc.	Cambridge
Cubist Pharmaceuticals, Inc.	Lexington
Dyax Corporation	Cambridge
Eutropics Pharmaceuticals	Dorchester
Facet Solutions	Hopkinton
FoldRx Pharmaceuticals, Inc.	Cambridge
Genzyme Corporation	Cambridge/Framingham
Good Start Genetics	Boston
GTC Biotherapeutics, Inc.	Framingham
Infinity Pharmaceuticals, Inc.	Cambridge
InfraReDx, Inc.	Burlington
Interlace Medical, Inc.	Framingham
InVivo Therapeutics	Cambridge
Lightlab Imaging, Inc.	Westford
Merrimack Pharmaceuticals, Inc.	Cambridge
Morgan Advanced Ceramics, Inc.	New Bedford
NeuroMetrix, Inc.	Waltham
Nova Biomedical Corporation	Waltham
OmniGuide, Inc.	Cambridge
Organogenesis	Cambridge
Pluromed	Woburn
Sepracor, Inc.	Marlboro
Shire Human Genetic Therapies, Inc.	Lexington
STD Med, Inc.	Stoughton
Still River Systems, Inc.	Littleton
TEI Biosciences, Inc.	South Boston
ToleRx, Inc.	Cambridge
Wadsworth Medical Technologies	Westborough
Wolfe Laboratories	Watertown
Zoll Medical Corporation	Chelmsford