
Table of Contents

02	SCILS Initiative Overview & Outcomes
04	Partners
05	Life Sciences Careers Consortium
06	Biotechnology Career Preparation Programs
08	Healthcare Career Preparation Programs
10	Internship Placement & Startup Training
11	Participant Recruitment & Key Workforce Insight
12	Looking Ahead: Life Sciences Training & Employment in MA

Dear Colleagues:

Boston's world-class life sciences community has long been one of its signature strengths. Over the past four years, the Mayor's Office of Workforce Development and the Boston Private Industry Council have collaborated to take full advantage of this unique asset through the Metro Boston Skilled Careers in Life Sciences (SCILS) Initiative.

With the expertise and commitment of our SCILS program partners, we have been able to harness our region's educational infrastructure, thriving business sector, and culture of innovation to help unemployed and underemployed workers launch their careers. This work embodies both of our missions - to connect residents not just to employment, but to career pathways leading to high-quality jobs. As this report shows, the life sciences offer rich opportunities for residents to forge livelihoods that can help them realize their economic aspirations.

We are proud to play a role in that progress - over 500 individuals have benefited from the SCILS Initiative's tuition support, internship placements, career coaching, and networking opportunities. Their advancement also bolsters Boston's life sciences and healthcare industries. Workers supported by the SCILS Initiative represent a highly skilled and newly specialized workforce. Many SCILS grantees hail from other industries or countries, bringing an infusion of fresh energy and perspective to the workplace.

The results in this report confirm that with the proper investment and a partnered approach, we can continue to leverage Boston's strengths to benefit workers, business, and the local economy we all share.

Respectfully,



Trinh Nguyen
Director, Office of Workforce Development
City of Boston



Neil Sullivan
Executive Director
Boston Private Industry Council



SCILS Initiative Overview

Massachusetts is a world leader in the life sciences industry, which includes research and university-based discovery, biotechnology and pharmaceutical companies, and medical device manufacturers. The state employs over 113,000¹ life sciences workers, and more than 562,000² in the healthcare industry. These high-growth sectors have become a significant contributor to the state's economy.

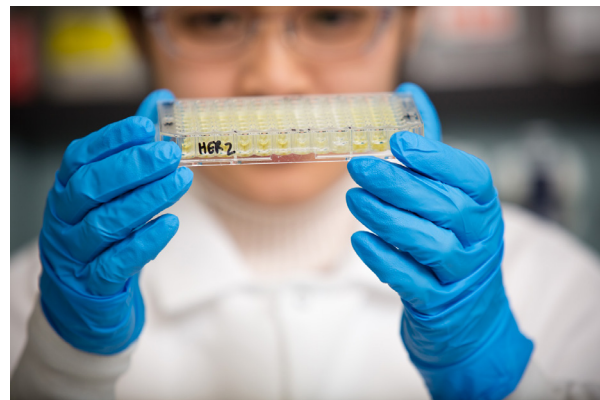
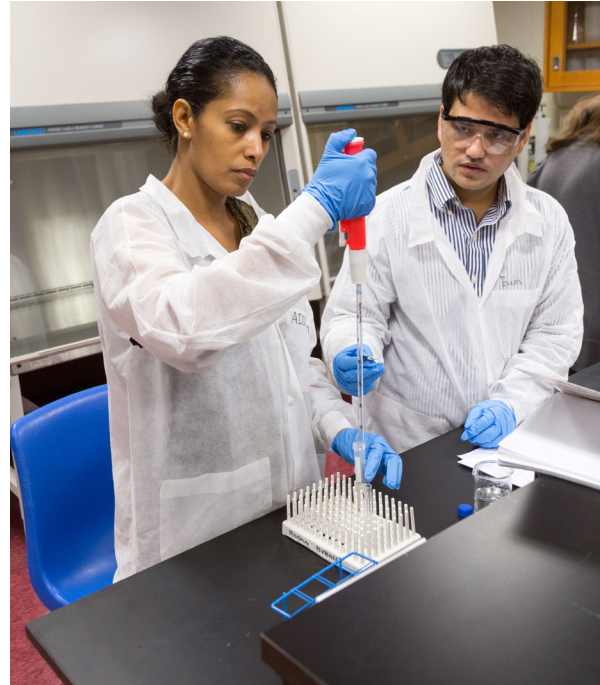
In 2012, the U.S. Department of Labor awarded the City of Boston a four-year, \$5 million H-1B technical skills training grant. The Metro Boston Skilled Careers in Life Sciences (SCILS) Initiative was established to better serve both individuals and businesses by creating a local pipeline of prepared workers for the life sciences and healthcare industries.

Led by the Mayor's Office of Workforce Development and the Boston Private Industry Council, the SCILS Initiative provided underemployed and unemployed adults who were interested in pursuing careers in STEM (Science, Technology, Engineering, and Math) with access to high-quality training, paid internships, and employment opportunities.

The Initiative also improved information sharing and collaboration among life sciences training programs, employers, and workforce development organizations through a quarterly Life Sciences Careers Consortium.

Through the SCILS Initiative, 523 individuals received training, paid internships, and career placement services. Over 225 local employers hired SCILS participants for full-time jobs and internships.

Due to rapidly changing technology, many companies now require specialized skill sets and/or advanced education. Thanks to the SCILS Initiative, these 523 participants are applying their new skills to the high-growth life sciences and healthcare industries.



SCILS Initiative Eligibility Requirements:

- Must be legally authorized to work in the U.S.
- Must be compliant with the Selective Service System
- Must be either unemployed or underemployed (work less than 35 hours/week or earn less than \$20/hour)
- Must reside in one of 86 cities or towns in Metro Boston, or be a dislocated worker whose previous employment was in one of those cities or towns
- Must already be on a STEM career pathway

¹Northeastern University's Dukakis Center for Urban and Regional Policy, New Life Sciences Industry Impact Analysis, June 18, 2014.

²2014 American Community Survey. United States Census Bureau.

SCILS Initiative Outcomes

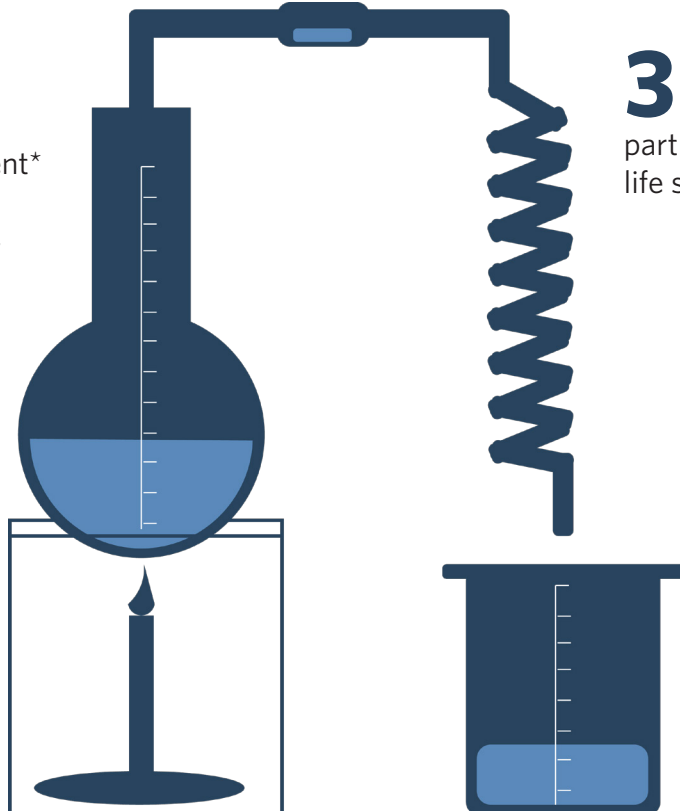
523 unique participants engaged in **725** training and internship opportunities

85%
of training graduates
gained new employment*

*excludes year four program
participants who are currently
enrolled or who recently
graduated

324
participants placed in paid
life sciences internships

288
participants enrolled
in bachelor's,
associate's, and
certificate degree
training programs



113
participants enrolled
in online soft
skills training and
networking for careers
at startups

Of the 288 participants who enrolled in bachelor's, associate's, and certificate degree training programs:



144
received biotechnology training
Top job titles after graduation:

- Manufacturing Technician
- Research Associate
- Quality Control Technician



144
received healthcare training
Top job titles after graduation:

- Medical Laboratory Technician
- Surgical Technician
- Clinical Research Assistant

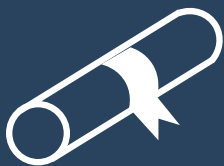
“In Massachusetts, Shire continues to attract a skilled workforce while collaborating with leading academic and industry partners. We participate in the SCILS Initiative because it’s aligned with Shire’s commitment to invest in the communities where we operate and live. SCILS also provides a strong pipeline of next generation biotech employees. These employees will innovate, discover, and produce therapies to improve the lives of patients.”

— Matt Walker, Head of Technical Operations, Shire

Partners Include:

Training Programs

Benjamin Franklin Institute of Technology
 Boston University
 Bunker Hill Community College
 Just-A-Start Corporation
 Quincy College
 University of Massachusetts Boston



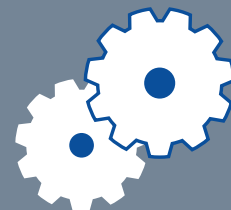
Employers

AB Biosciences
 Beth Israel Deaconess Medical Center
 Biogen
 BioVolutions
 Boston Children’s Hospital
 Boston Medical Center
 Brigham and Women’s Hospital
 Broad Institute
 Dana-Farber Cancer Institute
 DNA Medicine Institute
 enEvolv
 Harbor Health Services, Inc.
 Harvard Medical School
 Genocea Biosciences
 Ginko BioWorks
 Lahey Clinic
 MassBiologics
 Massachusetts General Hospital
 NinePoint Medical
 Partners HealthCare
 Pfizer
 Respiratory Motion
 Repligen
 Sanofi Genzyme
 Shire
 Xtal BioStructures



Workforce Development

Boston Career Link
 Boston Chinatown Neighborhood Center
 Boston Private Industry Council
 Career Place
 Career Source
 City of Boston
 Commonwealth Corporation
 Edge4Vets
 Employment and Training Resources
 JVS CareerSolution
 MassBioEd Foundation
 Massachusetts Life Sciences Center
 Mayor’s Office of Workforce Development
 Metro North Regional Employment Board
 Next Level Career Coach
 Partnerships for a Skilled Workforce
 Propel Careers
 SEIU 1199 Training and Upgrading Fund
 South Shore Career Centers
 South Shore Workforce Investment Board
 U.S. Department of Labor



Life Sciences Careers Consortium

As part of the SCILS Initiative, the Boston Private Industry Council convened the Life Sciences Careers Consortium. The Consortium's quarterly information-sharing forums fostered greater collaboration among life sciences training programs, employers, and workforce development organizations. Industry leaders participated in panel discussions to share their perspectives on training and employment opportunities. The Consortium events resulted in the creation of strategic partnerships and innovative training and hiring strategies. For example:

Training programs promoted their ability to develop qualified employees, and unveiled new laboratories and training capabilities.

Employers joined SCILS training program advisory boards, provided training curriculum feedback, and facilitated access to company tours and other resources.

Workforce development partners communicated the value of their career preparation and job placement services, and established new business relationships.

"We've been more successful hiring high school graduates with certificates than PhD's. The PhD's got bored and lost focus!"

-A local CEO shares his unique hiring experiences during a panel discussion on startup company workforce perspectives.

SCILS Participant Coaching & Networking

The Life Sciences Careers Consortium also hosted career coaching and networking events to give SCILS participants a leg up in today's competitive job market. Industry speakers and professional coaches provided participants with personalized resume consultation, interview tips, and networking advice.

METRO BOSTON
SCILS
INITIATIVE

Life Sciences Careers Consortium
Shire
April 13, 2016



PANEL DISCUSSION

EFFECTIVE WORKFORCE COLLABORATION

Thanks to our friends at Shire, WPI, Biogen, AMRI, Bio-Pharma Education & Training Assn., & MLSC for sharing their valuable insights.

-  "Successful collaboration requires participation from industry, academia, and the State. Each plays a unique and important role in workforce development."
-  "Our lab equipment is very nice, but worthless if students don't get jobs. We're constantly staying up with industry practices to avoid wasting lots of time and money."
-  "Understanding the biomanufacturing process from A to Z is critical. The ability to consider where human error can creep in and get to the root cause is essential."
-  "Curriculum should have substance to see the big picture. There are expansive opportunities in the life sciences; manufacturing is just a starting point."
-  "Hiring managers are always looking at return on investment and whether a candidate will commit for at least two years."
-  "Technical skills aren't as valuable if you can't explain what happened. The value of communication skills (like basic e-mail writing) cannot be overstated."
-  "The days of being completely autonomous are over; everyone collaborates and is cross functional."
-  "Remember this: training is not a luxury, it's a requirement!"



Biotechnology Career Preparation Programs

The SCILS Initiative provided tuition support to adults enrolled in biotechnology training programs at Boston University, Just-A-Start Corporation, and Quincy College. These programs equip participants with the necessary skills to obtain jobs in the growing fields of biomanufacturing, drug development, research, quality control, and other related areas.



Boston University BioScience Academy & Bachelor of Science in Biomedical Laboratory & Clinical Sciences

BioScience Academy at Boston University prepares unemployed or underemployed individuals with STEM or healthcare backgrounds for jobs at biotechnology companies, medical centers, and other life sciences institutions. The two-semester program includes classes in medical terminology, the business of biotech, and laboratory training in biomedical science. Students also explore the field of clinical research and participate in a full-time internship. Upon completion, graduates receive 12 Boston University credits, a certificate in Applied Biotechnology, and job search assistance.

www.bu.edu/biosci

Boston University also offers a Bachelor of Science in Biomedical Laboratory & Clinical Sciences, which combines general undergraduate education with special technical training that prepares students for positions in biomedical or clinical research.

www.bu.edu/met/programs/undergraduate/biomedical-laboratory-clinical-sciences



Just-A-Start Biomedical Careers Program

The Just-A-Start Biomedical Careers Program is a nine-month training course that prepares students for entry-level positions at biotechnology companies, hospital laboratories, and research institutions. Training includes instruction in academic and laboratory science, tutoring, career planning, and job placement assistance. Graduates of the program have the potential to earn up to eight college credits from Bunker Hill Community College.

www.justastart.org/what-we-do/education-training/biomed-careers



Quincy College Biotechnology & Compliance Program

The Biotechnology & Compliance Program at Quincy College prepares students for entry-level positions in biotechnology. Students develop a broad laboratory, science-based background, gain industry-specific knowledge, and train on state-of-the-art equipment. Upon program completion, students may enter the workforce directly as laboratory technicians or research assistants, or may transfer to a four-year university to continue their studies at the baccalaureate level. Students can choose from an associate's degree or certificate in Biotechnology and Compliance.

www.quincycollege.edu/program/biotechnology-and-compliance

Jesse Logan Class of 2016 BioScience Academy

Growing up, Jesse Logan always wanted to combine her strengths as a writer with science. She worked for more than ten years as a multimedia journalist and writer in New York and Boston, but still had a desire to help others in the healthcare field. Jesse took a leap of faith and submitted an application for the certificate program in applied biotechnology at Boston University's BioScience Academy (BSA).

Jesse was accepted into the BSA program and received a \$2,550 SCILS scholarship towards her studies. Once enrolled, she found a group of people of varying ages, origins, and life circumstances, but they all shared a common goal: finding a stimulating career in the thriving life sciences field. Having just completed the one-year program, Jesse is now working full time at Dana-Farber Cancer Institute, where she is a regulatory coordinator for breast oncology clinical research studies.

Jesse's new job aligns her strengths and interests, and provides the career fulfillment she desires: scientific research and writing. She coordinates protocol submissions, prepares and submits regulatory documents, and maintains records on assigned studies to ensure regulatory compliance with institutional policies as well as federal regulation and guidelines around good clinical practices.



Graduates of the Just-A-Start Biomedical Careers Class of 2015 proudly accept their certificates at Sanofi Genzyme.

Healthcare Career Preparation Programs

The SCILS Initiative provided tuition support to adults in healthcare training programs. These programs develop system coordinators and qualified technicians for the rapidly evolving healthcare market.



Benjamin Franklin Institute of Technology Health IT & Biomedical Engineering Technology Programs

The Health IT program at Benjamin Franklin Institute of Technology prepares students for careers in health information systems development, implementation, and maintenance. Health IT is a rapidly growing field that enables the digitization, storage, and secure exchange of health information between physicians and their patients. The program is offered in both associate's and bachelor's degree options. Upon graduation, students can apply for health information technician or coordinator roles, or pursue an advanced degree.

The Biomedical Engineering Technology program prepares students for careers as biomedical technicians at hospitals and other healthcare facilities. Students learn how to maintain, repair, and calibrate electronic medical instruments, including EKGs, defibrillators, and incubators. This two-year associate's degree program enables students to enter the workforce upon graduation or to pursue an advanced degree.

www.bfit.edu/academics



Bunker Hill Community College Surgical Technician, Medical Assistant, & Central Processing Technician Programs

The Surgical Technician certificate program at Bunker Hill Community College prepares students to deliver quality patient care in the operating room. Through classroom teaching, lab observation and practice, and clinical experience in an area hospital, this full-time, eleven-month certificate program prepares students to work closely with surgeons, anesthesiologists, registered nurses, and other surgical personnel.

The Medical Assistant certificate program prepares students to function as members of a healthcare delivery team and to perform administrative and clinical duties. Graduates qualify for employment in hospitals, clinics, health maintenance organizations, and physicians' offices as multi-skilled workers, medical assistants, medical aides, clinical assistants, and clinical practice assistants.

The Central Processing Technician (CPT) certificate program prepares working students for facility management positions at hospitals and other healthcare facilities. Graduates gain a blend of medical and business skills training and qualify as CPTs who perform duties in materials management, supply, processing and distribution.

www.bhcc.mass.edu/certificate-programs



Quincy College Medical Laboratory Technician Program

The Medical Laboratory Technician (MLT) program at Quincy College provides the didactic knowledge and laboratory skills to perform clinical laboratory procedures in chemistry, hematology, microbiology, immunohematology, immunology, and phlebotomy. Students enrolled in the two-year program practice laboratory techniques and apply their knowledge in a classroom and clinical laboratory setting. Upon completion of the program, students earn an associate's degree in Medical Laboratory Technology and are eligible to take the MLT national certification examination.

www.quincycollege.edu/program/medical-laboratory-technician

Salasse Keffous Class of 2015 Benjamin Franklin Institute of Technology

At the age of 27, Salasse Keffous immigrated to the United States from Algeria. He was full of potential—he had a finance degree from his home country, accounting and electronics experience, and he was fluent in three languages. However, because he was not fluent in English his options were limited, and so he had to work as a cashier at Dunkin Donuts.

After months of English lessons, Salasse enrolled at Benjamin Franklin Institute of Technology (BFIT) to pursue his associate's degree in Biomedical Engineering Technology. However, going to school full time while working full time as a parking valet was difficult. The money he was earning only covered the most basic living expenses.

Then, during his third semester at BFIT, Salasse received a \$4,000 SCILS scholarship which covered the remainder of his tuition. He graduated on the dean's list. Today, five years after he arrived in the United States, Salasse is a biomedical equipment technician for GE, doing crucial work in hospitals—even fixing equipment mid-surgery.



21%
of Boston jobs are
in healthcare³

31%
of core lab
supervisors plan
to retire by 2020⁴

41,000
projected increase
in healthcare job
openings in MA from
2014-2024⁵

³Massachusetts Executive Office of Labor and Workforce Development, Employment and Wages, Annual Average, 2015.

⁴2014 Vacancy Survey of Medical Laboratories in the United States. American Society for Clinical Pathology. September 1, 2015.

⁵2014 - 2024 Massachusetts Occupation and Industry Projections, Mass.gov.

Internship Placement & Startup Training



Investing in the State of Innovation

Massachusetts Life Sciences Center's Internship Challenge

The Massachusetts Life Sciences Center's (MLSC) Internship Challenge is a workforce development program focused on enhancing the talent pipeline for Massachusetts life sciences companies. The program creates hundreds of new internship opportunities each year by enabling small businesses to hire paid interns, and facilitates the placement of students and recent graduates into these statewide internships. In 2012, the SCILS Initiative partnered with MLSC and awarded \$800,000 of its \$5 million grant to expand the Internship Challenge program. As a result, 324 SCILS participants were placed in paid life sciences internships. Interns received valuable, hands-on experience and earned up to \$15 per hour. The companies selected interns with the qualifications most suited to their needs, and were reimbursed up to \$7,200 per intern by MLSC. Companies could hire up to two interns per year, and had the option to hire up to two additional interns who were enrolled in a two-year community college or certificate program.

SCILS participants greatly benefited from the MLSC Internship Challenge partnership. Participants frequently applied for internships during or immediately following their studies. This relevant work experience helped them refine their skills and increase their marketability to prospective employers.

www.masslifesciences.com/programs/internship



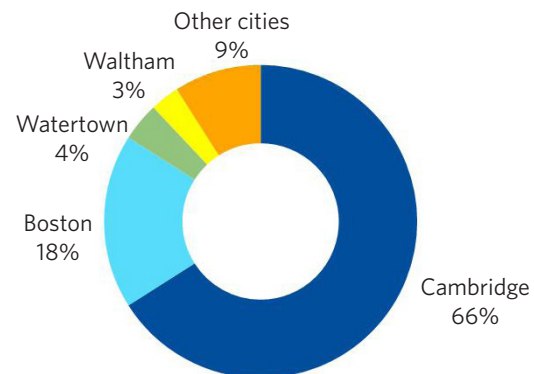
UMASS Venture Development Center's Jumpstart Your Career in Life Sciences Online Course

Venture investment in Massachusetts rose to \$2 billion in 2015, an all-time high.⁶ Much of that investment is centered on Metro Boston, where the majority of the state's life sciences startups are bringing emerging research, products, and services into the marketplace.

In 2013, the SCILS Initiative partnered with the University of Massachusetts' Venture Development Center, a startup accelerator, to develop Jumpstart Your Career in Life Sciences. The online course taught 113 SCILS participants how to research and apply for positions at local startup companies through targeted and personalized approaches. Participants received resume, interview preparation, and networking advice from a startup expert.

www.umb.edu/vdc

2014-15 Location of Venture Capital-backed Massachusetts Companies⁷



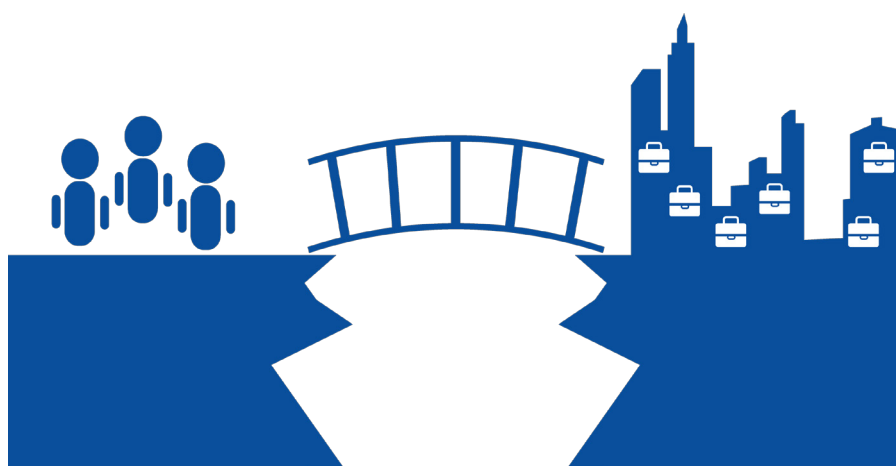
⁶2015 Industry Snapshot. Massachusetts Biotechnology Council EvaluatePharma®, August 2015.

⁷Ibid.

SCILS Participant Recruitment & Key Workforce Insight

Workforce Development Outreach

Massachusetts One-Stop Career Centers and Workforce Development Boards in Boston, Metro North, Metro Southwest, and the South Shore played a key role in recruiting eligible SCILS participants. The SCILS Initiative leveraged the capacity of up to ten career centers in order to reach a diverse group of unemployed and underemployed individuals. Career center customers received introductory workshops on life sciences careers, labor market information, and access to available training and funds. SCILS Initiative training partners leveraged the career center network to recruit motivated job seekers in addition to their own outreach efforts.



Workforce Insight: Improving Access to Clinical Rotations

The need for trained laboratory professionals nationwide is clear. According to a 2014 study from the American Society for Clinical Pathology, nearly 17% of core laboratory department employees surveyed are expected to retire in the next five years. The SCILS Initiative funded training for 103 medical lab technicians in order to address this growing concern.

However, in general, it has been increasingly difficult for individuals to enter the workforce as laboratory professionals because of a shortage of available clinical rotations (internships) at local laboratories. Completing these clinical rotations is a requirement for program graduation, but short-staffed hospitals and other medical institutions are limited in their ability to offer supervised clinical rotations.

The SCILS Initiative recommends exploring whether creating a clearinghouse of clinical rotations in Metro Boston would help address this issue. A clearinghouse or centralized online database may enable laboratories and training programs to more easily share real-time information on clinical opportunities and qualified candidates to fill those roles.

Looking Ahead: The Future of Life Sciences Training & Employment in MA

Many factors favor Massachusetts' prospects for continuing its leadership in the life sciences and healthcare industries. As U.S. and global populations age, life-saving and illness-preventing technologies and procedures will continue to increase demand for products and services provided by companies and healthcare organizations in Metro Boston and across the state.

While employment opportunities in these sectors are expected to steadily increase over the coming years, a strong emphasis on demand-driven training remains critical. Efforts to foster open and regular communication among training programs, employers, and workforce development partners, like those conducted by the Life Sciences Careers Consortium, are necessary to ensure the greatest training and employment outcomes.

According to MassBioEd's 2016 Job Trends Forecast, 25 percent more students received degrees in biotechnology-related programs from Massachusetts colleges and universities in 2014 than in 2010. Additionally, Massachusetts community colleges "over-performed" in the period from 2010-2014, producing more graduates each year than there were jobs available at the associate level in the industry.

Despite the performance of higher education in Massachusetts, 78 percent of surveyed biopharmaceutical companies still report hiring difficulties in four job areas: clinical research management and quality, regulatory, and process development. Meanwhile, personnel shortages linked to an aging workforce continue to spark employee succession pressures in healthcare settings.

Bridging the gap between the available supply and demand of talent is an achievable undertaking. With the strong education and training infrastructure in Massachusetts, strategies can be developed to meet employer needs for high-demand positions with the help of insight from workforce development partners, and continued dialogue between academic and industry partners.

Top 15 Occupations by Projected Increase, 2015-2018

Occupation	2015	2018	Net Change	Growth
Medical Scientists, <i>Except Epidemiologists</i>	9,411	10,030	+619	6.6%
Biochemists and Biophysicists	3,095	3,502	+408	13.2%
Sales Representatives, <i>Wholesale & Manufacturing, Technical & Scientific Products</i>	578	814	+236	40.7%
Chemists	1,213	1,443	+230	18.9%
General and Operations Managers	1,565	1,747	+182	11.7%
Natural Sciences Managers	1,450	1,618	+168	11.6%
Biological Technicians	5,850	6,012	+162	2.8%
Microbiologists	999	1,158	+159	15.9%
Biological Scientists, <i>All Other</i>	603	760	+157	26.1%
Industrial Engineering Technicians	356	493	+137	38.5%
Medical and Clinical Laboratory Technicians	684	816	+132	19.3%
Industrial Engineers	722	852	+130	18.0%
Industrial Production Managers	611	732	+122	19.9%
Software Developers, <i>Systems Software</i>	651	762	+110	16.9%
Statisticians	586	688	+101	17.3%

35%

increase in biopharmaceutical job listings in MA in 2015

4,325

forecasted number of new jobs the MA life sciences industry will need to fill by May 2018

7%

projected increase in healthcare jobs in MA from 2014-2024⁸

Notes:



www.owd.boston.gov



www.bostonpic.org
