



MASSBIO

CITY of BOSTON



Workforce
Development

Life Sciences Career Alliance

Labor Market Insights Report

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Prepared by:

Mae Tobin-Hochstadt, Year Up Senior Director, Strategic Growth

Meera Krishnan, Year Up Scalable Solutions Consultant

Ben Bradford, MassBio Head of External Affairs

Tom Browne, MassBio Director of Diversity, Equity, & Inclusion

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Life Sciences Career Alliance Description



Year Up and MassBio have partnered with the City of Boston to develop an intermediary organization named the Life Sciences Career Alliance that is focused on connecting underrepresented talent trained by Greater Boston community colleges, nonprofits, and workforce development organizations to life sciences industry roles.

Life Sciences Career Alliance Objectives



Immediate term

- Ensure that all 400+ underrepresented Boston residents trained under the City of Boston's Life Sciences Workforce Initiative (which is an umbrella program overseeing this intermediary and other related work) have access to quality job opportunities in the life sciences industry by Dec 2025
- Demonstrate employer value proposition and willingness to pay for access to the intermediary

Long term

- Increase the number of life sciences roles that are available to talent without Bachelor's degrees
- Increase the representation of non-Asian people of color in the life sciences industry workforce
- Establish pathways for talent from non-traditional training programs to continue their education and grow their careers in the life sciences industry
- Improve connectivity & streamline partnerships between training, career awareness & industry
- Identify & address other barriers to job access for this talent population (ex. transportation, need for barrier reduction services, career awareness)
- Establish sustainable operating & revenue model

Labor Market Insights Report Objectives



- Describe target roles for underrepresented talent in Massachusetts and gaps that currently exist in the life sciences ecosystem that may prevent these adults from accessing these roles
- Describe the target population for the Alliance, also known as "underrepresented talent", including target population demographics and geographic distribution

Labor Market Insights Report Use Cases



- Companies can compare industry trends to their own practices
- Companies can compare their own hiring and retention practices with our insights
- Stakeholders can compare findings of local trends to other city and state data
- Stakeholders can compare report data to census information
- Champions of underrepresented talent at employers can share this with leadership teams to encourage adoption of new practices
- HR & business leaders at employers can use this data to easily pinpoint opportunities to modify degree or other entry restrictions
- Training providers have an opportunity to see where there may be oversupply and undersupply of talent



We pulled job postings data from Lightcast, using the posting timeframe of Jan - Dec 2023. Industries included in this report align with the categorization from [MassBio's 2023 Life Sciences Employment Outlook](#), with four high level industry categories:

- Biopharmaceuticals and Medical Labs
- Medical Devices and Equipment
- Hospitals/Research Hospitals
- Colleges & Universities

Note: See Appendix D for more detail

We split role posting data across three categories: Life Sciences Roles within Biopharma & Medical Labs, Supporting Roles within Biopharma & Medical Labs, and Life Sciences Roles in Adjacent Industries.

Category	Career Areas Included
Life Sciences Roles within Biopharmaceuticals & Medical Labs	Healthcare Science and Research Manufacturing and Production Engineering Maintenance, Repair, & Installation Law, Compliance & Public Safety Agriculture, Horticulture & the Outdoors
Supporting Roles within Biopharmaceuticals & Medical Labs	Included all career areas except the above
Life Sciences Roles within Adjacent Industries – Medical Devices & Equipment	Healthcare Science and Research Manufacturing and Production Engineering Maintenance, Repair, & Installation Law, Compliance & Public Safety Agriculture, Horticulture & the Outdoors
Life Sciences Roles within Adjacent Industries – Hospitals / Research Hospitals and Colleges / Universities	Science and Research Engineering Law, Compliance & Public Safety

We focused on specific roles that are “promising” for our target population:

- The next sections contain a detailed definition of “promising roles,” and a full list of Lightcast LOT Specialized Occupations classified as Promising Roles can be found in Appendix C
- To develop our list of Promising Roles, we reviewed and labeled each Lightcast LOT Specialized Occupation as low skill, mid skill, promising high skill, or not accessible. We aggregated similar specialized occupations identified as promising into umbrella roles which are listed in the following tables (example: Manufacturing Technician is an umbrella role that contains a number of closely related Specialized Occupations)

Data Limitations:

- Promising Roles only include roles which had 15 or more unique postings in 2023 within the above industry classifications to ensure that the intermediary focuses on roles that have substantial demand
- We were not able to disaggregate the “research associate” and similar roles within colleges and universities that are in life sciences departments vs. other departments. The number of job postings listed for that role is therefore larger than the actual number of life science-specific research associate positions. We have included a breakdown of that role type in Appendix A of this report



Key Insights

- There are a variety of entry points into life sciences roles, although functions like R&D, regulatory, and software have fewer entry-level role types
- An entry-level employee in life sciences has clear advancement opportunities and can move into a variety of career paths, with options both directly or indirectly related to their initial role

Function	Low-Skill (High School Req'd)	Mid-Skill (Associate's Req'd)	High-Skill (Bachelor's or Equiv. Experience Req'd)	High-Skill (Master's / PhD Req'd)
Life Sciences Roles within Biopharma				
R&D	<ul style="list-style-type: none"> • Laboratory Tech • Clinical Coordinator • Phlebotomist / Medical Assistant 	<ul style="list-style-type: none"> • Quality Inspector / Technician 	<ul style="list-style-type: none"> • Research Associate Lab Manager • Clinical Trial Manager / Clinical Research Coordinator • Clinical Supervisor / Director • Quality Control Analyst • Quality Assurance Manager • Technical Writer 	<ul style="list-style-type: none"> • Research Scientist • Chemist • Biologist • Biomedical Scientist • Medical Science Liaison
Manufacturing (Bio)	<ul style="list-style-type: none"> • Production / Warehouse Worker • Facilities / Operations Coordinator • Manufacturing Machine Operator 	<ul style="list-style-type: none"> • Manufacturing Technician 	<ul style="list-style-type: none"> • Process Engineer / Manufacturing Process Engineer • Manufacturing Manager 	
Regulatory			<ul style="list-style-type: none"> • Regulatory Affairs Specialist / Compliance Officer • Compliance / Regulatory Affairs Manager 	
Supporting Roles within Biopharma				
IT & Software Development		<ul style="list-style-type: none"> • IT Specialist • Software QA Tester • Cyber Security Analyst 	<ul style="list-style-type: none"> • Software Developer / Engineer • Data Analyst • Systems Engineer 	<ul style="list-style-type: none"> • Data Scientist • Bioinformatician • Biostatistics Manager / Director
Commercial	<ul style="list-style-type: none"> • Customer Service Rep Retail Sales Associate 	<ul style="list-style-type: none"> • Sales Representative 	<ul style="list-style-type: none"> • Sales Manager 	
Finance & Business Operations	<ul style="list-style-type: none"> • Office / Administrative Assistant • Accounts Payable / Security Officer / Manager • Operations Coordinator • Food Service Manager 	<ul style="list-style-type: none"> • Fundraising / Development Specialist • Executive Assistant • HR Analyst Claims Processor 	<ul style="list-style-type: none"> • Project / Product Manager • Operations Manager • Accountant / Financial Analyst • Business Analyst & Policy Analyst • Marketing Manager • Human Resources Manager 	
Distribution	<ul style="list-style-type: none"> • Inventory / Supply Specialist 		<ul style="list-style-type: none"> • Supply Chain / Distribution Manager 	
Life Sciences Roles Within Adjacent Industries				
Medical Devices	<ul style="list-style-type: none"> • Manufacturing Technician • Production Worker • Facilities / Operations Coordinator • Manufacturing Machine Operator 	<ul style="list-style-type: none"> • Quality Inspector / Technician • Production Supervisor 	<ul style="list-style-type: none"> • Quality Assurance Manager 	<ul style="list-style-type: none"> • Manufacturing Engineer • Industrial Engineer • Mechanical Engineer • Chemist
Hospitals, Colleges, & Universities	<ul style="list-style-type: none"> • Lab Technician • Clinical Coordinator 	<ul style="list-style-type: none"> • Medical Lab Technician • Safety Specialist / Coordinator • Document Control / Medical Records Specialist • Medical Equipment Technician • Social Services Specialist 	<ul style="list-style-type: none"> • Research Associate Safety Manager • Clinical Trial Manager / Clinical Research Coordinator 	<ul style="list-style-type: none"> • Research Scientist / Chemist / Biologist / Biomedical Scientist • Engineer • Medical Science Liaison • Research & Development Director



We identified a list of “promising roles” that are potentially accessible to an individual without a bachelor’s degree, defined as follows.

Definition of “Promising Role”: Role that an individual without a bachelor’s degree can successfully perform, provided they have completed related trainings and/or have appropriate experience, depending on the role. We have defined two categories of roles:

- *Entry-Level Promising Roles:* These are low-skill or mid-skill roles that do not require prior industry experience. Low-skill promising roles can be accessed by someone with a high-school degree or GED and are entry points that can lead to a career in the life sciences industry. Some of these roles may also require completion of a short role-specific training program. Mid-skill promising roles can be accessed by an individual who completed a relevant associate’s degree, certificate, or training program that provided in-depth role-specific skills
- *Non Entry-Level Promising Roles:* These are select high-skill roles that can be accessed by an individual without a bachelor’s degree only after they have gained relevant industry experience and in some cases gone through additional role-specific training

Key Insights

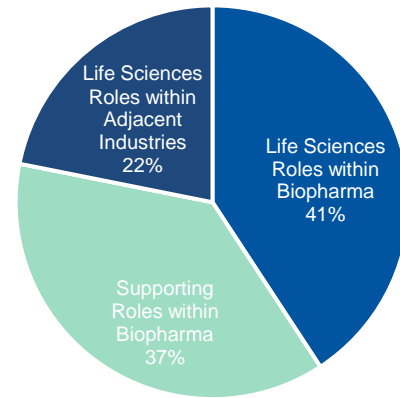
Approximately 40% of all 2023 life sciences role postings are promising to our target population based on our analysis. Of these roles:

- 41% were life sciences roles within Biopharma
- 37% were supporting roles in Biopharma
- 22% were life sciences roles within Medical Devices, Hospitals, and Colleges / Universities

In addition,

- Approximately 20% of all postings are entry-level promising roles
- An additional 23% of postings are non entry-level promising roles that can only be accessed by someone without a bachelor’s degree via advancement

Promising Roles Breakdown by Industry



	# 2023 Role Postings Identified as Promising - Entry Level	# 2023 Role Postings Identified as Promising - Non-Entry Level	Total 2023 Job Postings
All Roles within Biopharma Industry	7,929	8,034	37,399
Life Sciences Roles within Biopharma Industry	4,242	4,086	18,668
Supporting roles within Biopharma Industry (ex: IT, customer service, sales, finance)	3,687	3,948	18,731
Life Sciences Roles within Adjacent Industries (Medical Devices, Hospitals, and Colleges / Universities)	1,466	3,001	9,719
Total	9,395 (20%)	11,035 (23%)	47,118 (100%)



Key Insights

- Although most industry-aligned training programs focus on training adults for life sciences roles, there is also significant career opportunity in supporting roles like IT, business operations, and finance
- Roles in manufacturing machine operations, supply chain, phlebotomy, safety, research, process engineering, and lab management are projected to have high growth rates in the next five years
- There is a clear opportunity to revisit bachelor's degree requirements for roles in quality, manufacturing, operations, and safety, especially since many training programs are already placing talent without 4-yr degrees into these roles
- Though some training programs focus on research, regulatory, and clinical trials, those roles still require bachelor's degrees from most companies
- Industry job demand is highly dependent on macroeconomic factors & specific events, such as building a new facility or launching a product
- Even if we do not include research associate positions in universities / colleges (which may be inflated compared to actual demand for that role type), the demand for research associates is still very high

Appendix A contains a deep dive of the top 10 roles

Low Skill Promising Roles (Entry-Level)

Role Type	Classification	# Roles Posted in 2023	Projected Growth Rate ¹	Hiring Difficulty (Out of 5) ²	% Currently Requiring Bachelor's Degree or Higher	Local Training Providers Focused on This Role
Laboratory Technician • Laboratory Assistant	Low Skill	1,217	9%	3.53	33%	FCIT, Quincy College, Bioversity, JAS, BHCC, JVS
Manufacturing Machine Operator • Machinery Maintenance Mechanic	Low Skill	874	12%	3.33	6%	
Production / Warehouse Worker • Manufacturing Assistant	Low Skill	860	10%	3.55	21%	Quincy College, MassBioEd
Facilities / Operations Coordinator • Facilities Technician	Low Skill	620	8%	3.55	25%	Bioversity, FCIT, Year Up
Clinical Coordinator / Patient Services Rep	Low Skill	554	10%	NA	28%	
Office / Administrative Assistant (General)	Low Skill	525	2%	NA	32%	
Phlebotomist & Medical Assistant	Low Skill	498	12%	NA	1%	RCC, BHCC
HR Analyst	Low Skill	398	8%	NA	17%	Year Up
Customer Service Representative	Low Skill	175	1%	NA	18%	
Accounts Payable / Receivable Clerk	Low Skill	114	2%	NA	32%	Year Up
Total Low Skill³		6,233				

1. Source: Lightcast growth rates are based on SOC codes corresponding to each occupation. They are not specific to the life sciences industry.
 2. Source: MassBio 2023 Life Sciences Employment Outlook, p. 41
 3. Roles with less than 100 2023 job postings are not shown in this chart; however, roles with 15 -99 postings are incorporated into totals



Mid Skill Promising Roles (Entry-Level)

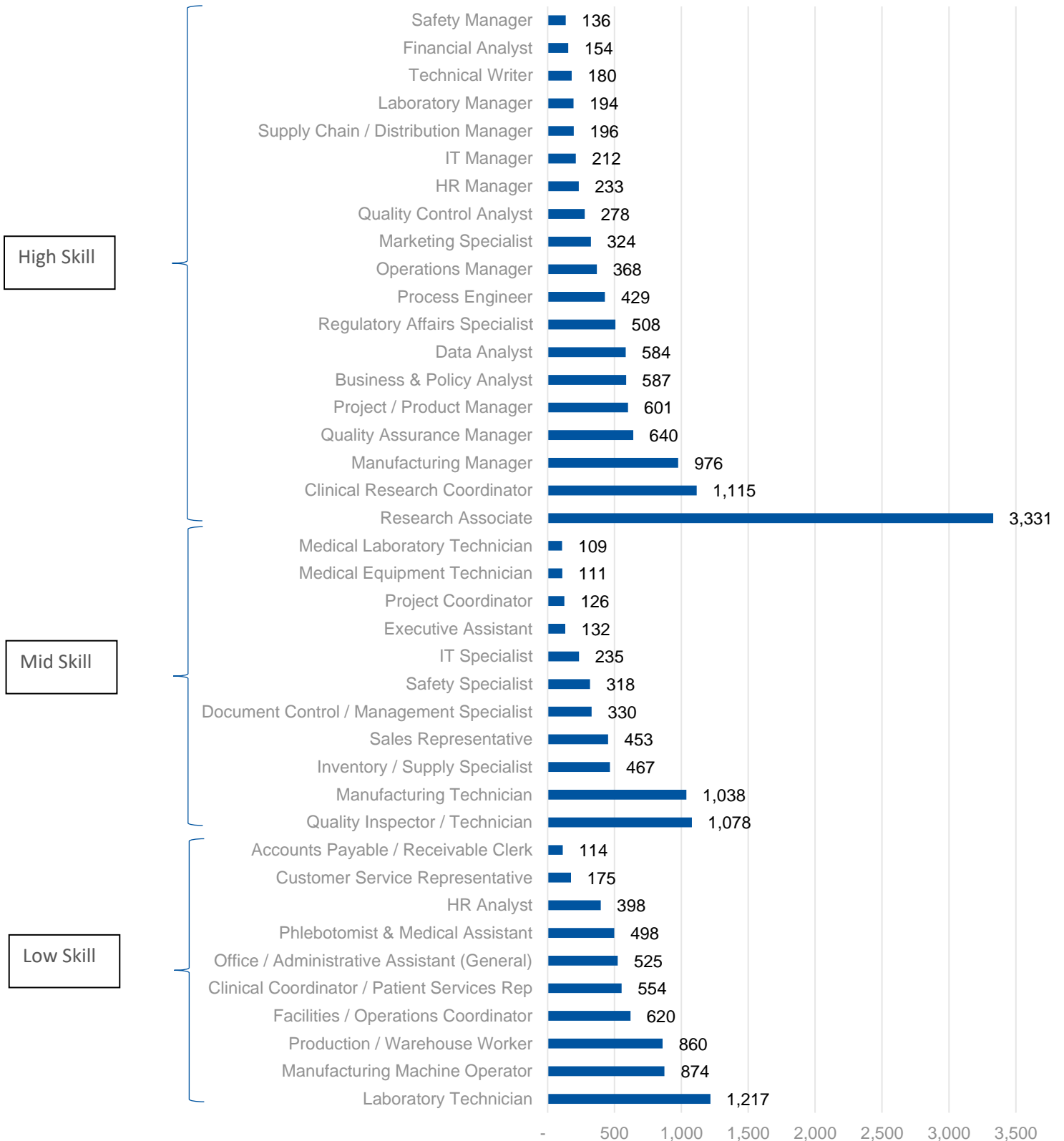
Role Type	Classification	# Roles Posted in 2023	Projected Growth Rate	Hiring Difficulty (Out of 5)	% Currently Requiring Bachelor's Degree or Higher	Local Training Providers Focused on This Role
Quality Inspector / Technician • Quality Assurance Specialist	Mid Skill	1,078	NA	3.39	51%	Quincy College, JAS, Year Up
Manufacturing Technician • Biomanufacturing Technician – Downstream	Mid Skill	1,038	5%	3.55	35%	FCIT, Quincy College, MassBioEd, JAS, BHCC, Year Up
Inventory / Supply Specialist	Mid Skill	467	14%	3.00	64%	Year Up
Sales Representative	Mid Skill	453	7%	NA	70%	
Document Control / Management Specialist	Mid Skill	330	9%	4.11	39%	FCIT
Safety Specialist • EHS Technician • Lab Safety Associate	Mid Skill	318	NA	3.39	57%	Bioversity
IT Specialist	Mid Skill	235	7%	NA	49%	Year Up
Executive Assistant	Mid Skill	132	-5%	NA	43%	
Project Coordinator	Mid Skill	126	9%	NA	55%	Year Up
Medical Equipment Technician	Mid Skill	111	9%	3.33	9%	
Medical Laboratory Technician	Mid Skill	109	9%	2.67	47%	BHCC
Total Mid Skill		4,589				

High Skill Promising Roles (Non Entry-Level)

Role Type	Classification	# Roles Posted in 2023	Projected Growth Rate	Hiring Difficulty (Out of 5)	% Currently Requiring Bachelor's Degree or Higher	Local Training Providers Focused on This Role
Research Associate • Research Assistant • Research Associate	High Skill	3,331	15%	3.53	73%	FCIT, BHCC
Clinical Research Coordinator • Clinical Research Coordinator	High Skill	1,115	NA	3.56	76%	
Manufacturing Manager	High Skill	976	6%	3.55	62%	
Quality Assurance Manager	High Skill	640	NA	3.39	79%	
Project / Product Manager	High Skill	601	9%	NA	78%	
Business & Policy Analyst	High Skill	587	9%	NA	79%	
Data Analyst	High Skill	584	9%	NA	82%	
Regulatory Affairs Specialist • Compliance Specialist	High Skill	508	9%	4.11	92%	FCIT
Process Engineer • Process Development Associate	High Skill	429	NA	3.76	86%	
Operations Manager	High Skill	368	6%	3.55	66%	FCIT
Marketing Specialist	High Skill	324	7%	NA	65%	
Quality Control Analyst • Quality Control Technician	High Skill	278	NA	3.39	87%	
HR Manager	High Skill	233	7%	NA	71%	
IT Manager	High Skill	212	10%	NA	77%	
Supply Chain / Distribution Manager	High Skill	196	14%	3.00	75%	
Laboratory Manager	High Skill	194	17%	2.67	73%	
Technical Writer	High Skill	180	9%	NA	73%	FCIT, Year Up
Financial Analyst	High Skill	154	6%	NA	79%	
Safety Manager	High Skill	136	NA	3.39	79%	
Total High Skill		11,046				



Roles Posted in 2023





Key Insights:

- The majority of life science training programs in MA focus on biotechnology and biomanufacturing, targeted at lab tech, manufacturing tech, and quality roles (see chart above of promising roles)
- There is potential opportunity for programs to target supporting roles in biopharma and possibly manufacturing machine operators

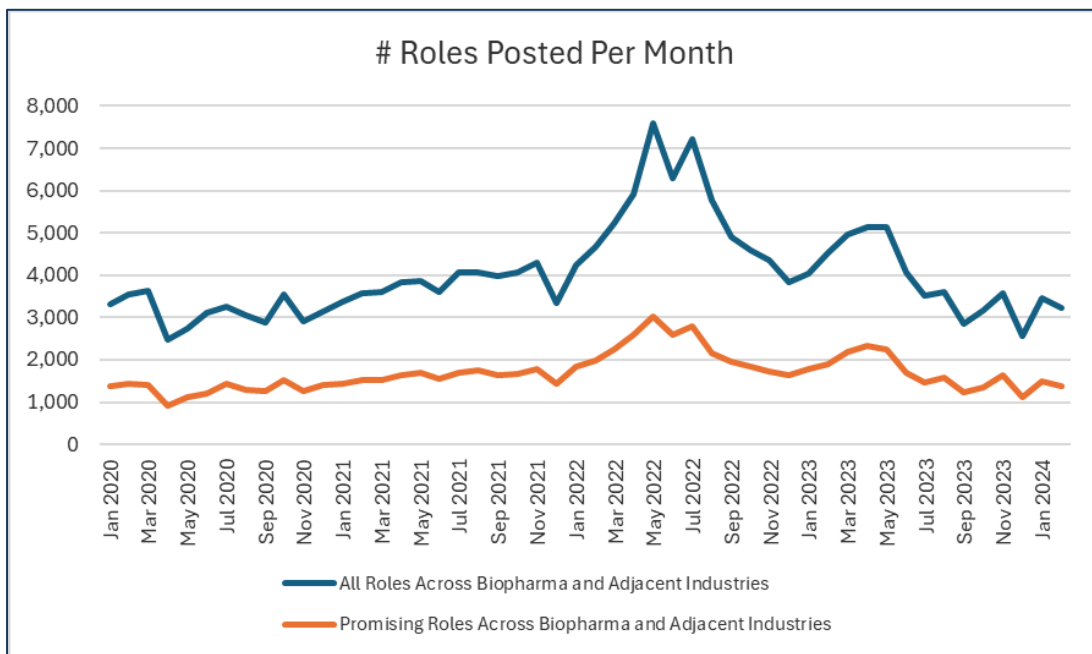
Focus Area ¹	# Programs in MA
Biotechnology	11
Biomanufacturing	6
Biomedical	2
General Life Sciences	2
Biotechnology/ Biomanufacturing	1
Clinical Trials	1
Data Science	1
Total	24

Demand Over Time of Life Sciences Roles



Key Insights:

- Demand for life sciences roles has declined since reaching a peak in mid 2022. As of Jan 2024, average monthly job postings are down over 50% since May 2022
- Many companies conducted layoffs in 2023; a number of smaller companies have shut down
 - Real estate investment in lab space declined significantly
 - Reasons for the decline include private investors pulling back on funding, a new federal law to combat high drug prices, a belief by some that the industry grew too quickly in 2021-2022, and overall challenging market dynamics in 2023
- However, the Bureau of Labor Statistics projects above-average growth (20%) in the Biopharma & Medical Labs industry over the next 5 years in Massachusetts



1. Source: MassBio 2022 Massachusetts Life Sciences Workforce Analysis Report



Key Insights:

- Industry knowledge (pharmaceuticals, biotechnology, Good Manufacturing Practices) are necessary for any role in Biopharma, including supporting roles. In MassBio’s interviews with industry stakeholders, lab skills and manufacturing knowledge were highlighted as key needs, especially since biomanufacturing is growing due to growth in cell/gene therapy and personalized medicine
- Industry stakeholders also emphasized the need for soft skills like interpersonal skills, professional skills, and problem-solving / critical thinking
 - Communication and detail-orientation are two significant soft-skills needs in Biopharma and Medical Devices
 - Research skills are important across all industries
- Hospitals, colleges, and universities prioritize skills most important to effective research, such as writing
- The industry overall has been experiencing shifts towards large-scale digitization of data, new types of precision manufacturing, and AI-driven applications, leading to a need for “hybrid” skill sets across science, digital skills, and computational skills
 - All industries continue to have a high demand for Microsoft Office, particularly Microsoft Excel
 - Data analysis is also increasingly important.

	Top Skills Listed in Lightcast Job Postings – Specialized	Top Skills Listed in Job Postings – Other
Life Sciences Roles in Biopharma	<ul style="list-style-type: none"> • Good Manufacturing Practices • Pharmaceuticals • Biology • Biotechnology • Standard Operating Procedures 	<ul style="list-style-type: none"> • Communication • Operations • Research
Supporting Roles in Biopharma	<ul style="list-style-type: none"> • Pharmaceuticals • Project Management • Biotechnology • Data Analysis • Good Manufacturing Practices 	<ul style="list-style-type: none"> • Detail-Orientation • Microsoft Office (Esp. Microsoft Excel)
Life Sciences Roles in Hospitals, Colleges, & Universities	<ul style="list-style-type: none"> • Clinical Research • Biology • Data Analysis • Data Collection • Institutional Review Board (i.e., university research practices) 	<ul style="list-style-type: none"> • Research • Communication • Writing • Microsoft Excel • Microsoft PowerPoint
Life Sciences Roles in Medical Devices	<ul style="list-style-type: none"> • Good Manufacturing Practices • Medical Devices • Quality Management Systems 	Similar to Life Sciences roles in Biopharma

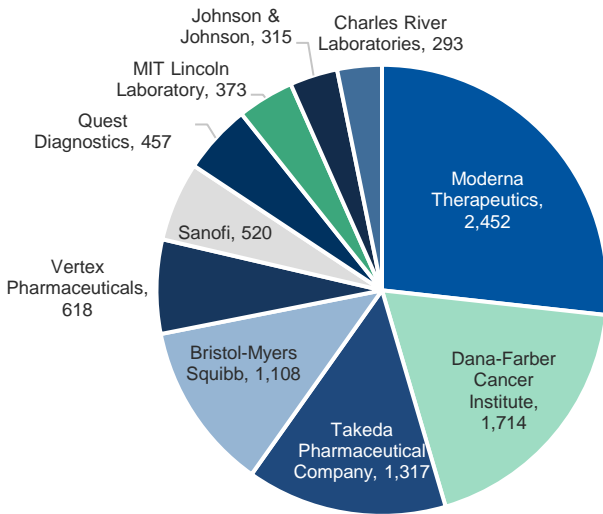


Key Insights

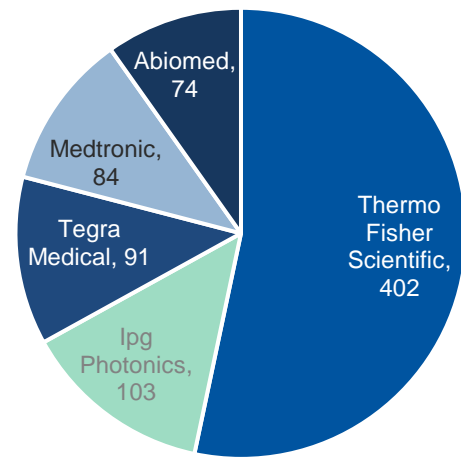
- Moderna, Dana-Farber, Takeda, and Bristol-Myers Squibb dominated hiring in 2023 largely due to new facilities and product launches
- Outside of Biopharma, hospitals and colleges were the main sources of life sciences hiring, with the exception of Thermo Fisher Scientific, who is a large medical devices employer
- A significant number of Biopharma jobs are not located in the Boston area though 80% are in Suffolk or Middlesex County.

Appendix B contains a list of the top 25 employers across industries

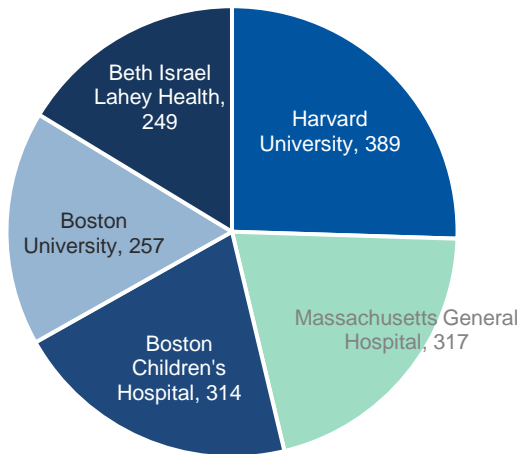
Promising Roles in Biopharma - Top 10 Companies



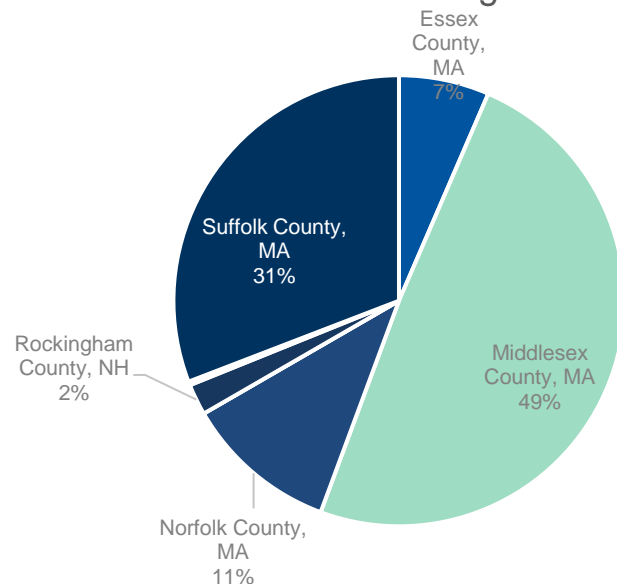
Promising Roles in Medical Devices - Top 5 Companies



Promising Roles in Hospitals and Colleges - Top 5 Employers



County Breakdown of Promising Roles in 2023 Postings





Key Insights:

- Life Sciences roles within Biopharma are overall higher-paying than similar roles in Medical Devices
- Supporting Roles contain a wide variety of roles, some of which are much higher-paying than others, particularly non-entry level roles
- In hospitals and colleges, many non entry-level positions are research associate roles which are typically training roles for higher-level positions

Industry	Median Annual Salary (Entry-Level)	Median Annual Salary (Non Entry-Level)
Life Sciences Roles within Biopharma	\$65K	\$111K
Supporting Roles within Biopharma	\$73K	\$175K
Life Sciences Roles within Medical Devices	\$55K	\$101K
Life Sciences Roles within Hospitals and Colleges	\$77K	\$63K (note: many of these positions are Research Associate roles)



Definition of the Alliance’s Target Population, Underrepresented Talent:

- For the purposes of this report, “underrepresented talent” is defined as (1) 17-54 years old, (2) At least a HS Diploma / GED but less than BA, (3) probable work authorization based on citizenship status and work history, (4) fall below an income threshold of 344% of the poverty line (\$47k for a family of 1)
- Two geographical boundaries are included here: (1) Within Boston MSA, (2) Within the City of Boston

Population of Underrepresented Talent

people who meet the definition:

- 101,780 within the city of Boston
- 442,834 within the Boston MSA

Racial Breakdown of Underrepresented Talent

% Non-Asian POC

- 54% in the city of Boston
- 43% in the Boston MSA

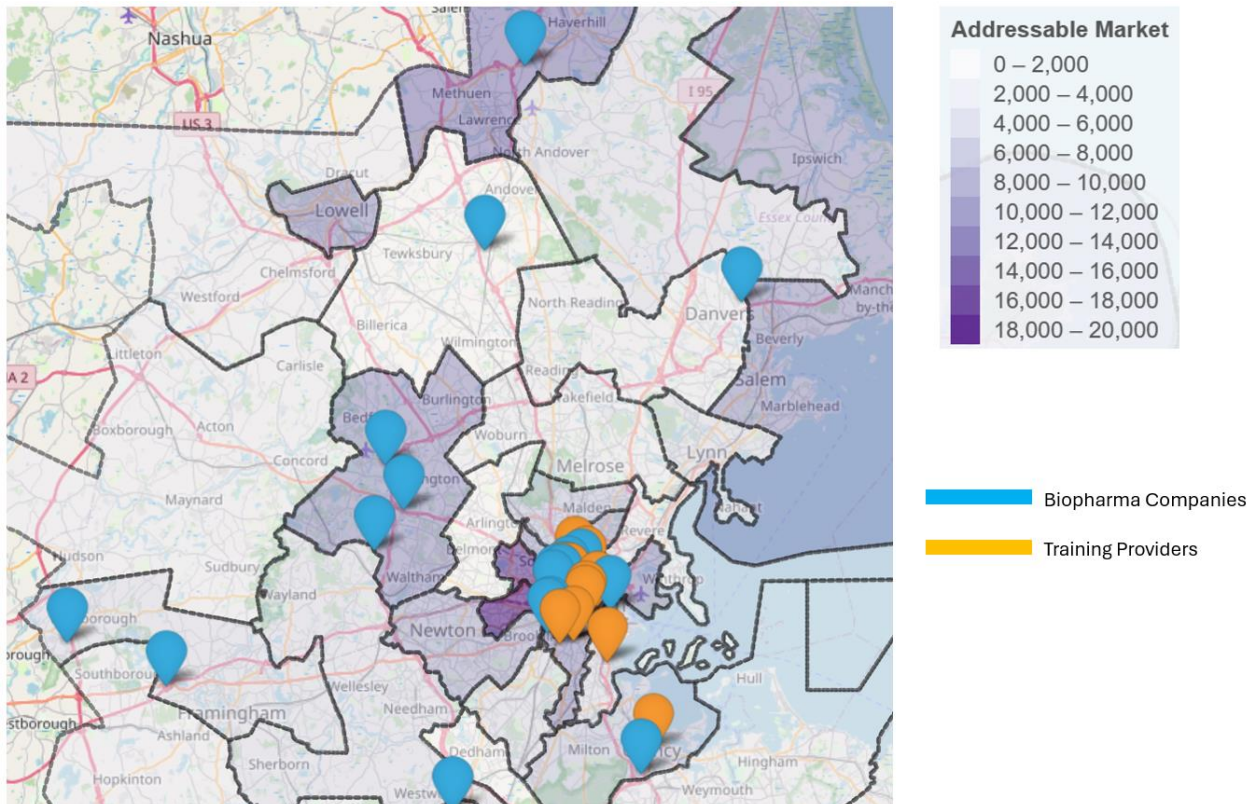
	Number in Boston MSA	%	Number in City of Boston	%
Asian/Pacific Islander	37,230	8%	7,836	8%
Black/African American	55,515	13%	22,216	22%
Hispanic/Latino	94,442	21%	24,916	24%
Multiracial/Another category	41,121	9%	8,450	8%
Native American	240	0%	99	0%
White	214,286	48%	38,263	38%

Ecosystem Map



Key Insights

- Locations of roles by top employers in Biopharma were largely outside of the city of Boston (for example, in manufacturing locations like Norton, MA). Transportation may be a challenge in connecting Boston residents to these roles (lack of car transport, expensive commuter rail transportation, and ongoing challenges with the MBTA)





Key Insights

- There is significant opportunity to increase income of our target population; 75% and 64% of the population earn less than \$20K in the city and MSA respectively
- Compared to the Boston MSA, the City of Boston's target population has significantly greater needs: 60% of the population is at or below poverty in the city, compared to 42% in the MSA
- Outside the city of Boston, key areas of need include the North Shore, Lawrence / Lowell / Haverhill, and the Brockton area
- Over half of the residents in the City of Boston have some college. This is likely because there are many active students in the city
- 85% of the city's population has recent work experience, and most have worked in the past year

Employment Status

	Number in Boston MSA	%	Number in City of Boston	%
Employed full-time	143,055	32%	25,216	25%
Employed part-time	120,575	27%	29,702	29%
Unemployed	41,512	9%	11,702	11%
Not in labor force	137,692	31%	35,160	35%

Education Level

Education	Number in Boston MSA	%	Number in City of Boston	%
GED	21,342	5%	5,373	5%
HS Diploma	185,695	42%	38,580	38%
Some college	195,135	44%	51,222	50%
AA degree	40,662	9%	6,605	6%

Poverty Level

	Number in Boston MSA	%	Number in City of Boston	%
At or below poverty	186,548	42%	61,024	60%
101-150% poverty	47,970	11%	10,306	10%
151-200% poverty	50,831	11%	7,294	7%
201-250% poverty	59,937	14%	10,882	11%
251-300% poverty	55,616	13%	6,616	7%
301-350% poverty	41,932	9%	5,658	6%

Income Level

	Number in Boston MSA	%	Number in City of Boston	%
No Income	63,768	14%	17,762	17%
Less than \$20k	220,288	50%	58,792	58%
\$20k-\$40k	105,560	24%	17,175	17%
\$40k-\$60k	41,077	9%	6,597	6%
\$60k-\$80k	9,436	2%	1,454	1%
\$80k-\$100k	2,037	0%		
\$100k-\$150k	465	0%		
At least \$150k	203			

Work History

Work History	Number in Boston MSA	%	Number in City of Boston	%
Worked in past year	332,360	75%	74,097	73%
Worked 1-5 years ago, but not in the past year	48,986	11%	11,242	11%
Did not work past 5 years	61,488	14%	16,441	16%



Appendix A: Deep Dive – Top 10 Roles

Role	2023 Demand	Average Wage	Top 5 Employers																				
Research Associate	3,331 Not including colleges / universities: 2,088 <ul style="list-style-type: none"> Colleges & Universities: 40% Biopharma & Medical Labs: 41% Hospitals: 17% Medical Devices: 1% 	\$70K	<p><i>Including colleges / universities:</i></p> <table border="1"> <tr><td>Northeastern University</td><td>181</td></tr> <tr><td>Boston University</td><td>217</td></tr> <tr><td>Moderna Therapeutics</td><td>297</td></tr> <tr><td>Harvard University</td><td>364</td></tr> <tr><td>Dana-Farber Cancer Institute</td><td>425</td></tr> </table> <p><i>Not including colleges / universities:</i></p> <table border="1"> <tr><td>Beth Israel Lahey Health</td><td>129</td></tr> <tr><td>Boston Children's Hospital</td><td>155</td></tr> <tr><td>Massachusetts General Hospital</td><td>174</td></tr> <tr><td>Moderna Therapeutics</td><td>297</td></tr> <tr><td>Dana-Farber Cancer Institute</td><td>425</td></tr> </table>	Northeastern University	181	Boston University	217	Moderna Therapeutics	297	Harvard University	364	Dana-Farber Cancer Institute	425	Beth Israel Lahey Health	129	Boston Children's Hospital	155	Massachusetts General Hospital	174	Moderna Therapeutics	297	Dana-Farber Cancer Institute	425
Northeastern University	181																						
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Boston Children's Hospital	155																						
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Moderna Therapeutics	297																						
Dana-Farber Cancer Institute	425																						
Laboratory Technician	1,217	\$51K	<table border="1"> <tr><td>Takeda Pharmaceutical Company</td><td>61</td></tr> <tr><td>Bristol-Myers Squibb</td><td>96</td></tr> <tr><td>Quest Diagnostics</td><td>117</td></tr> <tr><td>Charles River Laboratories</td><td>119</td></tr> <tr><td>Beth Israel Lahey Health</td><td>128</td></tr> </table>	Takeda Pharmaceutical Company	61	Bristol-Myers Squibb	96	Quest Diagnostics	117	Charles River Laboratories	119	Beth Israel Lahey Health	128										
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Bristol-Myers Squibb	96																						
Quest Diagnostics	117																						
Charles River Laboratories	119																						
Beth Israel Lahey Health	128																						
Clinical Research Coordinator / Clinical Trial Manager	1,115	\$148K	<table border="1"> <tr><td>Takeda Pharmaceutical Company</td><td>61</td></tr> <tr><td>Bristol-Myers Squibb</td><td>96</td></tr> <tr><td>Quest Diagnostics</td><td>117</td></tr> <tr><td>Charles River Laboratories</td><td>119</td></tr> <tr><td>Beth Israel Lahey Health</td><td>128</td></tr> </table>	Takeda Pharmaceutical Company	61	Bristol-Myers Squibb	96	Quest Diagnostics	117	Charles River Laboratories	119	Beth Israel Lahey Health	128										
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Beth Israel Lahey Health	128																						
Quality Inspector / Technician & Quality Manager (shown together because Quality Manager is a more senior level of Quality Inspector / Technician role)	Inspector / Technician: 1,078 Quality Manager: 640	Inspector / Technician: \$81K Manager: \$149K	<table border="1"> <tr><td>Pfizer</td><td>46</td></tr> <tr><td>Vertex Pharmaceuticals</td><td>74</td></tr> <tr><td>Bristol-Myers Squibb</td><td>86</td></tr> <tr><td>Takeda Pharmaceutical Company</td><td>97</td></tr> <tr><td>Thermo Fisher Scientific</td><td>122</td></tr> <tr><td>Moderna Therapeutics</td><td>439</td></tr> </table>	Pfizer	46	Vertex Pharmaceuticals	74	Bristol-Myers Squibb	86	Takeda Pharmaceutical Company	97	Thermo Fisher Scientific	122	Moderna Therapeutics	439								
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Takeda Pharmaceutical Company	97																						
Thermo Fisher Scientific	122																						
Moderna Therapeutics	439																						
Manufacturing Technician & Manufacturing Manager (shown together because Manufacturing Manager is a more senior level of Technician role)	Technician: 1,038 Manager: 976	Technician: \$71K Manager: \$111K	<table border="1"> <tr><td>Convenientmd</td><td>103</td></tr> <tr><td>Thermo Fisher Scientific</td><td>146</td></tr> <tr><td>Beth Israel Lahey Health</td><td>191</td></tr> <tr><td>Bristol-Myers Squibb</td><td>218</td></tr> <tr><td>Moderna Therapeutics</td><td>287</td></tr> </table>	Convenientmd	103	Thermo Fisher Scientific	146	Beth Israel Lahey Health	191	Bristol-Myers Squibb	218	Moderna Therapeutics	287										
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Bristol-Myers Squibb	218																						
Moderna Therapeutics	287																						



Appendix A: Deep Dive – Top 10 Roles (continued)

Role	2023 Demand	Average Wage	Top 5 Employers												
Manufacturing Machine Operator	874	\$64K	<table border="1"> <thead> <tr> <th>Employer</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>Beth Israel Lahey Health</td> <td>40</td> </tr> <tr> <td>Labcorp Drug Development</td> <td>54</td> </tr> <tr> <td>Ipg Photonics</td> <td>55</td> </tr> <tr> <td>Tegra Medical</td> <td>56</td> </tr> <tr> <td>Bristol-Myers Squibb</td> <td>67</td> </tr> </tbody> </table>	Employer	Count	Beth Israel Lahey Health	40	Labcorp Drug Development	54	Ipg Photonics	55	Tegra Medical	56	Bristol-Myers Squibb	67
Employer	Count														
Beth Israel Lahey Health	40														
Labcorp Drug Development	54														
Ipg Photonics	55														
Tegra Medical	56														
Bristol-Myers Squibb	67														
Production / Warehouse Worker	860	\$49K	<table border="1"> <thead> <tr> <th>Employer</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>Beth Israel Lahey Health</td> <td>57</td> </tr> <tr> <td>Vertex Pharmaceuticals</td> <td>62</td> </tr> <tr> <td>Thermo Fisher Scientific</td> <td>74</td> </tr> <tr> <td>Bristol-Myers Squibb</td> <td>93</td> </tr> <tr> <td>Moderna Therapeutics</td> <td>264</td> </tr> </tbody> </table>	Employer	Count	Beth Israel Lahey Health	57	Vertex Pharmaceuticals	62	Thermo Fisher Scientific	74	Bristol-Myers Squibb	93	Moderna Therapeutics	264
Employer	Count														
Beth Israel Lahey Health	57														
Vertex Pharmaceuticals	62														
Thermo Fisher Scientific	74														
Bristol-Myers Squibb	93														
Moderna Therapeutics	264														
Facilities / Operations Coordinator	620	\$79K	<table border="1"> <thead> <tr> <th>Employer</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>Takeda Pharmaceutical Company</td> <td>34</td> </tr> <tr> <td>Thermo Fisher Scientific</td> <td>35</td> </tr> <tr> <td>Dana-Farber Cancer Institute</td> <td>38</td> </tr> <tr> <td>Bristol-Myers Squibb</td> <td>87</td> </tr> <tr> <td>Moderna Therapeutics</td> <td>88</td> </tr> </tbody> </table>	Employer	Count	Takeda Pharmaceutical Company	34	Thermo Fisher Scientific	35	Dana-Farber Cancer Institute	38	Bristol-Myers Squibb	87	Moderna Therapeutics	88
Employer	Count														
Takeda Pharmaceutical Company	34														
Thermo Fisher Scientific	35														
Dana-Farber Cancer Institute	38														
Bristol-Myers Squibb	87														
Moderna Therapeutics	88														



Appendix B: Top 25 Employers of Promising Roles

	Company	Category	Unique Postings (Jan 2023 - Dec 2023)
1	Moderna Therapeutics	Biopharma	2,452
2	Dana-Farber Cancer Institute	Biopharma	1,714
3	Takeda Pharmaceutical Company	Biopharma	1,317
4	Bristol-Myers Squibb	Biopharma	1,108
5	Vertex Pharmaceuticals	Biopharma	618
6	Sanofi	Biopharma	520
7	Quest Diagnostics	Biopharma	457
8	Thermo Fisher Scientific	Medical Devices	402
9	Harvard University	Hospitals & Colleges	389
10	MIT Lincoln Laboratory	Biopharma	373
11	Massachusetts General Hospital	Hospitals & Colleges	317
12	Johnson & Johnson	Biopharma	315
13	Boston Children's Hospital	Hospitals & Colleges	314
14	Charles River Laboratories	Biopharma	293
15	Pfizer	Biopharma	270
16	Boston University	Hospitals & Colleges	257
17	Beth Israel Lahey Health	Hospitals & Colleges	249
18	PCI Synthesis	Biopharma	240
19	Lonza	Biopharma	209
20	Northeastern University	Hospitals & Colleges	209
21	Broad Institute	Biopharma	201
22	Eurofins	Biopharma	179
23	Labcorp Drug Development	Biopharma	160
24	GlaxoSmithKline	Biopharma	158
25	Merck	Biopharma	143



Appendix C: List of Promising Roles (Categorized as LOT Specialized Occupations in Lightcast)

Account Representative (General)	Engine and Machine Fabricator / Assembler	Medical Assistant	Research Assistant
Accounting Clerk	Environmental Health and Safety (EHS) Coordinator	Medical Laboratory Technician	Research Associate (General)
Accounts Payable / Receivable Clerk	Environmental Health and Safety (EHS) Manager	Medical Laboratory Technologist	Research Technician
Administrative Clerk / Coordinator	Environmental Health and Safety (EHS) Technician	Medical Records / Health Information Technician	Restaurant / Food Service Manager
Administrative Supervisor	Event Planner	Medical Secretary	Retail Sales Associate (General)
Advertising / Promotions Manager	Executive Assistant	Medical Technologist	Risk Manager
Animal Care Worker / Manager	Facilities Manager	Medical Writer	Safety Manager (General)
Assistant General Manager	Facilities Specialist / Coordinator	Microbiology Laboratory Assistant	Safety Specialist (General)
Audio Visual Engineer	Field Sales Representative	MRI / CT Technician / Technologist	Sales Delivery Driver (General)
Auditor (General)	Financial Analyst (General)	Network Analyst / Specialist	Sales Representative (General)
Billing Specialist (General)	Financial Services Representative	Occupational Health and Safety (OHS) Specialist	Scheduler / Operations Coordinator
Biological Technician	Fundraising / Development Specialist	Office / Administrative Assistant (General)	Security / Defense Intelligence Analyst
Biomedical Equipment Technician	General Engineering Technician / Technologist	Office Manager (General)	Security Manager
Building and General Maintenance Technician	Grants Manager / Administrator	Operations Analyst (General)	Security Officer (General)
Business Analyst (General)	Graphic Designer	Operations and Maintenance Specialist	Shipping / Receiving Clerk
Business Development Specialist	Grinder / Sharpener	Operations Manager (General)	Social / Human Service Assistant
Business Intelligence Analyst	Health and Safety Engineer	Operations Project Manager	Social / Human Services Specialist
Buyer (General)	Health Educator (General)	Operations Research Analyst	Software QA Engineer / Tester
Calibration Technician	Health Technician / Technologist (Other)	Operations Supervisor (General)	Stationary Engineer / Boiler Operator
Call Center Representative	Healthcare Administrator (General)	Packager	Supplier Quality Engineer
Cargo Coordinator / Freight Forwarder	Help Desk Technician / Analyst	Packaging Machine Operator	Supply Chain Analyst
Chemical Operator	Histotechnologist / Histotechnician	Patient Advocate / Navigator	Supply Chain Manager
Chemical Technician	Human Resources Assistant	Patient Safety Specialist	Supply Chain Specialist (General)
Claims Processor	Human Resources Manager	Payroll Manager	Talent Management Specialist
Client Service Representative / Associate	Human Resources Specialist	Pharmaceutical Sales Representative	Technical Consultant / Analyst
Clinical Coordinator	HVAC Mechanic / Installer	Pharmacy Technician	Technical Product Manager
Clinical Data Manager	Industrial / Mechanical Engineering Technician	Phlebotomist	Technical Program Manager
Clinical Laboratory Technician	Industrial Automation Technician	Policy Analyst	Technical Sales Specialist
Clinical Project Manager	Industrial Mechanic	Precision / Fine Instrument Repairer	Technical Support Engineer / Analyst
Clinical Quality Manager	Instrumentation Technician	Pricing Analyst	Technical Writer
Clinical Research Associate	Internal Audit Manager	Process Development Engineer	Telecommunications Specialist / Engineer
Clinical Research Coordinator	Interpreter / Translator	Process Engineer (General)	Test Technician
Clinical Trial Manager	Inventory / Supply Specialist	Process Manager	Tractor-Trailer Truck Driver (General)
CNC Operator	Inventory Associate	Procurement / Sourcing Manager	Training and Development Manager
Communications / Public Relations Specialist	IT Manager	Procurement / Sourcing Specialist	Training and Development Specialist
Communications Manager (General)	IT Operations / Networking Manager	Product Line Manager	Utilities & Power Distribution Engineer
Compensation / Benefits Analyst	IT Project Manager (General)	Production Fabricator / Assembler	Validation Specialist
Compensation / Benefits Manager	IT Specialist / Engineer	Production Planner	Veterinary Technician / Technologist
Compensation / Benefits Specialist	Laboratory Analyst	Production Plant Manager (General)	
Compliance Officer / Analyst	Laboratory Manager	Production Supervisor (General)	
Contracts Administrator	Laboratory Specimen Processor	Production Worker	
Contracts Analyst	Laboratory Technician (General)	Program Coordinator	
Contracts Manager	Laborer / Warehouse Worker	Program Manager (General)	
Controls / Valve Technician	Light Truck Delivery Driver	Project / Program Administrative Assistant	
Courier / Messenger	Logistics Analyst	Project Coordinator	
Curriculum and Instructional Designer / Developer	Logistics Coordinator	Project Manager (General)	
Customer Service Representative (General)	Logistics Specialist	Quality Assurance Auditor	
Cyber Security Analyst	Machinist	Quality Assurance Manager	
Cyber Security Specialist / Technician	Maintenance Manager	Quality Assurance Specialist	
Cytogenetic Technologist / Cytotechnologist	Maintenance Supervisor	Quality Assurance Supervisor	
Data Analyst	Manufacturing / Production Technician (General)	Quality Control Analyst	
Data Manager	Manufacturing Machine Operator (General)	Quality Control Laboratory Technician	
Data Specialist	Manufacturing Manager	Quality Control Manager	
Digital Content Manager	Manufacturing Process Engineer	Quality Inspector (General)	
Distribution Manager	Manufacturing Production Supervisor	Quality Manager (General)	
Document Control / Management Specialist	Manufacturing Project Manager	Quality Technician (General)	
Electrician	Market Research Analyst (General)	Radiologic Technician / Technologist	
Electronic / Electrical Assembler	Marketing Assistant / Associate	Recruiter (General)	
Electronics Field Engineer	Marketing Specialist (General)	Recruiting Manager	
Electronics Technician (General)	Materials Manager	Registrar / Patient Service Representative	
Eligibility Specialist	Materials Planner	Regulatory Affairs Specialist	
		Repair / Service Technician	
		Research Analyst	



Appendix D: MassBioEd Industry Categories

North American Industry Classification System (NAICS) Codes and Industry Sectors Associated with Life Sciences

