2021 Life Sciences Workforce Conference
Key Insights from Breakout Sessions

Common Themes:

Despite the very different focus of these seven sessions, several common themes emerged:

- There is a shortage of talent entering the industry, and retention of talent is increasingly difficult.
- There is a desire within the industry to increase the diversity of the workforce, and an increasing willingness to explore non-traditional means of recruitment and onboarding new employees to achieve this goal.
- There is a large and growing need for people who have cross-functional skill sets in biology and chemistry and in data science and computer programming.
- Students at all levels – from high school through graduate school – need more opportunities to learn about careers in the life sciences. Increased access to professional mentors and to internships or other experiential learning opportunities will drive more students into the industry, which will help companies grow and diversify their applicant pools and future workforce.

1. Inspiring College Students to Pursue STEM Careers

Facilitators:

Fred D. Ledley
Director, Center for Integration of Science and Industry, Bentley University

Elizabeth Zulick, PhD, MPH
Director of the Lowell Institute School, Northeastern University

Main ideas:

Too few students are pursuing STEM degrees compared to demand. The problem is two-fold: not enough freshmen start out in STEM, and about 50% of students who start as STEM majors are switching to other majors before graduation.

Students often feel they had to make a choice between business and science. Science feels too risky, as they only hear about bench scientists who have an "a-ah" moment. The biggest college major is business, but if all STEM degrees are combined, it's bigger. Some feel that the biggest competition for life science students is other technology majors.

Discussion:

Students are very interested in working in the life science industry but have little to no opportunity to partake in internships that would deepen their interest and help them transition into professional careers after graduation.

There is a perception that even entry level jobs require an advanced degree.

There is a lot of interest among recent graduates to enter business fields like venture capital, project management, business development, etc.

The expense of wet bench laboratories can prevent or limit smaller colleges from offering these rich experiences to students. Although their cost is high, there are creative virtual approaches that will allow students to "see" the results of experimentation in a much more cost-effective manner.

> **Potential talent is lost to the life sciences industry for several reasons: students major in (or transfer to) business or fields like data science where jobs are more apparent. Improving career awareness through mentorship and internship opportunities will help guide young people towards biotech careers.**

Mentorship is important. Educators offered several methods for creating mentoring programs. Having a staff person match up mentors and mentees has some success but creating events where students and mentors can meet and then students select someone to be their mentor seems to work better.

There are more requirements for life science students to have experience in programming like Python and R for bioinformatics and/or data science-related internships (which seem to be in demand). How do we encourage students early on in their college careers to see the value in course completion in computer science to make themselves more desirable candidates for a wider variety of roles?

Coop programs at Northeastern University are highly valued by students and by industry hiring managers because students are with a project for long enough to really learn something of value and also become significantly valuable to the company during this extended period of time. Northeastern graduates are universally sought after by industry when they are looking for their first "real" job because they have this real world experience.
Investment banks are now building direct relationships with college freshman (sending them swag, calling them on holidays, wishing them happy birthdays etc.) and hoping to instill a sense of loyalty. They find this was necessary to ensure a robust pipeline of the best and brightest when competing against big tech companies like Google and Facebook.

2. Ending Talent Wars: Growing the Clinical Research Talent Pool

Facilitator:

Manny Lazaro
Vice President, Head of Global Clinical Development Operations, Jounce Therapeutics

Main ideas:

The number of clinical trials registered has blossomed in recent years. There are over 300,000 clinical trials are ongoing right now worldwide.
Clinical operations across this industry are challenged to find talent in terms of both numbers and qualifications in order to support all of the great work that science is bringing to us.

Discussion:

At smaller biotech companies who are new to the clinic, individuals often wear many hats and are responsible for a variety of procedures and documents. Members of the Clinical Operations team are usually tasked with developing tracking systems customized to each trial. It is very hard to break into small biopharma – we need people who can hit ground running from day 1. At big pharma and at clinical research organizations (CROs), you have more trials ongoing, and more people in specialized roles with a limited number of responsibilities. Companies are more mature, so their processes are more established. There are often technological systems built into the practice to automate some of the work.

The entry point for this career track is often the Clinical Trial Associates (CTAs). CTAs come from a wide range of backgrounds. Many come from academia; some of Jounce's CTAs have been Clinical Research Coordinators at the research sites, so they understand the implementation and conduct of clinical protocols, informed consent, study procedures. These are all fantastic skills to bring over to industry.

> **The best advice to anyone looking to get started in clinical research is to start at a larger pharmaceutical company or a CRO. Most of these large corporations not only have administrative systems in place but they offer training programs, boot camps, etc. to train newcomers in these systems and provide a path into these careers.**

It's not necessary for CTAs to have scientific or medical training, although it helps. They need to be very organized, good at scheduling, using Excel, and passionate about the work. Increasingly, expertise in data analytics will be vital to this field. Jounce is one of several local biotech companies who have partnered with MassBioEd as employers for the first Clinical Trial Associate Apprenticeship Program cohort. This program will recruit and train new people who otherwise wouldn't have access to this career path and enable them to begin their career as CTAs.

3. Big Tech vs. Biotech: Winning the Competition for Talent in Data Science

Facilitators:

Jay Mettetal
Director of Early Oncology Bioscience, AstraZeneca

Sarita Pillai
Vice President and Director of STEM & Workforce Success, Education Development Center

Main Ideas:

The life sciences have a huge and growing need to incorporate technical skills such as data analysis, robotics and automation, computer science, artificial intelligence, statistics, engineering, etc. In addition to the overall competition for talent within our industry, people with these skills often gravitate towards other sectors, such as high tech, finance, retail, marketing, etc. All industries are now competing for these individuals.

Industry Perspective – Jay Mettetal:

Data science has been integrated into life sciences for a long time but has become more of the forefront now. You can see from MassBioEd's employment outlook report that is even a bigger crunch at this point. There is a competition for the same talent pool with big tech that we do need to be respective of and there are some differences across those industries:

- Life sciences is a longer, slower pace than you might have in tech where things change day to day, month to month.
- The risk tolerance is different when developing an app v. medicine.

Often, when you think about robotics and automation, you think they will take our jobs. My view is not that they will take our jobs but that they will change them. In future, there will be a blurring of lines between data and non-data jobs.

At this point the industry needs Masters and PhD level students. There is not much opportunity for BA/BS graduates.

Education Perspective – Sarita Pillai:

Representation and higher ed is changing. This speaks to need for a longer plan to develop a robust data science pathway in MA and points to continued need for programming. But this alone is not enough. We need to look at traditional pathways for students *and adults* to enter and transition into industry through non-traditional pathways, such as certification, apprenticeship, etc.

There is data that highlights the critical importance of engaging K-12 students in industry awareness to highlight opportunities for careers.

The H1B program allows foreign talent to come into country – this is an example of a short-term solution but not sustainable or scalable.

We need a more competent federal education policy across sectors that institutionalizes data science and life sciences, and takes into consideration funding flows, training for teachers, college prep programs, etc. We have a lot to learn from our international counterparts where there are more comprehensive federal policies. While federal policy and funding are crucial, they are not enough. This issue requires significant investment in industry and other sectors.

The EDC, MassBioEd, and the Mass Life Sciences Center recently collaborated on a multi-stage effort to address data science workforce challenge. We held a four -part panel series to raise awareness of the issue.

Discussion:

The solution needs to be multi-year with multi stakeholders. Attending both to growth and diversity is the only way to address this challenge.

Short-term Strategies, "Picking Fruit":

- Increase opportunities to train existing life science workers by providing short term educational opportunities (bootcamps, certificate programs) to teach programming, data analysis, etc. to those already trained in the science so that they can pursue career changes to take advantage of all those job postings.
- Increase visibility of life science careers to those who have existing data science skills set.
- Organize hackathons where people get together to solve a problem, make a data set publicly available and give prize to teams that do the best job.
- How do we make people realize they could use their math / computer skills to cure cancer rather than develop the next iPhone app?
- Increasing retention of people that we do get into the role. There is a lot of competition. What are things that would influence them to stay?

Long-term Strategies, "Planting Seeds":

- How do we enhance multi-disciplinary education? Getting more life science problems into data science and AI course work or vice versa (using computers in biology and chemistry classes).
- Reimagining the K-12 math curriculum to focus on data science and statistics and contextualizing math content to show applications in all forms of science.
- Integrating critical thinking, problem solving, and communication (agnostic that are translatable) into K-12 education.
- Guidance counselors need to play a central role by preparing students to make better choices and by making them aware of the array of opportunities.
- Companies must make a visible and sincere commitment to diversity, taking a mission-critical approach to organizational change, and making it a desirable destination for future employees.

- Companies should invest in partnerships with education stakeholders to support programming in K-12, after school, community college, and so on, that will help build a workforce that looks like America in the long term.
- Industry representatives should attend state association of math and science teachers to help them to understand where the world is going and where the jobs are going to be for their students.
- College students not aware at all of importance of combining biotech with data science. It's important to publicize the synergistic affect.
- From a PR perspective, the pharma industry doesn't always have the greatest visibility and awareness in public psyche. Are there ways to making people aware of what's happening on the scientific fronts? Medical schools have seen surges in applications since COVID.

> **Providing authentic examples of how data is analyzed and utilized within life science applications is essential to guiding students towards these careers.**
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> **Lack of awareness of the scientific applications of computational skill sets extinguishes the potential of many young people to enter these career paths. The lure of big, well-known big tech companies siphons off many graduates who could put their skills to work curing cancer rather than developing social media apps.**

4. Hiring and Securing Foreign-Born Talent

Facilitator:

Jennifer Machat
Director of Early Career Talent, Diversity Outreach & Employer Branding for NA, Sanofi

Main Ideas:

Challenges to Securing Foreign-Born Talent:

- Practicality concerns due to lengthy visa process
- The U.S. government offers a limited number of H-1B visas
- Some companies don't advertise that they're willing to sponsor foreign applicants even if they are willing to for the right candidate.

Discussion:

Foreign-born students on the STEM extension of optional practical training (OPT) are in a good starting place to obtain their first industry job. For these students, the STEM extension allows employers three years (three tries) to get their H-1B approved, and the person can be employed during this time. It makes the risk more acceptable to employers looking to make a new hire.

It is also helpful for students to have a J-1 visa. Students should be aware that many companies will sponsor the right person, so be proactive if you are applying for a new job. Even companies that state they will not hire anyone requiring sponsorship will make exceptions for the right applicant. Network with current employees and seek assistance from recruiters.

> **Life Science companies have a large percentage of foreign-born workers. The attainment of an H-1B visa can be a difficult process but companies are willing to make the effort for the right candidate. Students and job seekers must be proactive in seeking sponsorship.**

Life sciences R&D has a lot of foreign-born talent, furthermore, the higher the level, the higher the percentage of foreign-born employees. But these employees may need immigration support. Companies have a difficult time convincing the U.S. government that there are not enough U.S citizens who can do this type of work. In fact, requiring work authorization can recue the potential candidate pool by at least 50%. High tech companies like Google and Facebook will sponsor foreign born employees, creating more competition for those with data science expertise.

Some companies start recruiting students in their freshman or sophomore years, offering internships and promising sponsorship upon graduation. This can build loyalty and keep them focused on a career in biopharma and less likely to be diverted into other industries.
At Sanofi, human resources professionals often network among different locations to help current employees in different countries to move upward within the company.

5. Meeting the Growing Demand for Biomanufacturing Talent

Facilitators:

Craig Meinhardt
Director, Engineering, Maintenance, and Utilities & Environmental, Health and Safety, Pfizer

Jeffrey Savard
Director of Manufacturing, Bristol Myers Squibb

Main Ideas:

There is increasing difficulty to fill positions in biomanufacturing due to growing demand. Our need for a diverse, equitable workforce is needed more than ever before to meet the needs of this growing industry. Companies have been getting creative on how to source talent. There are challenges in retaining talent.

Discussion:

> **Biomanufacturing is growing across Massachusetts and the need for workers is increasing. Companies are more open to hiring candidates from non-traditional backgrounds and are partnering with other organizations to identify, recruit, and train new employees.**

Different community colleges report different perspectives on students' interest in biomanufacturing careers, some saying their numbers have decreased in recent years, and others claiming increases in both enrollment and interest in the field.

The schedules of a biomanufacturing professional are not conducive to good work/life balance and difficult for workers with families.

Companies are getting more creative in meeting the needs for current and future talent. One way to meet these challenges is to partner with organizations like Jewish Vocational Services and MassBioEd, for vetted and trained professionals. We can build a formal pipeline of workers that are ready to go and have been vetted by these organizations. In the past we would have never considered folks from retail but now, with the skills they possess, we would now consider them.

The MassBioEd Apprenticeship has delivered many diverse candidates who are new to the industry yet will bring transferable skills to their new roles.

Hiring managers are trained on how to recruit and interview diverse candidates. Entry level talent is hired by a diverse panel of HR folks.

There is a big opportunity for industry to "advertise" careers in this field. Currently there is not much visibility until students are already on their way to a degree. Many more might enroll if they knew about the jobs and career potential.

6. Building Inclusivity and Belonging into Our Workplaces

Facilitators:

Wendy Richards
Director, Corporate Social Responsibility & Community Relations, Sanofi Genzyme

Michael Lampa
Drug Discovery Scientist, Sanofi Genzyme Oncology

Main Ideas of Discussion:

Retaining Diverse Employees and Creating a Sense of Belonging:

How do you make sure diverse talent is thriving inside an organization once they have been hired? Sanofi hosts a number of Employee Resource Groups to support various subgroup populations and instill a sense of belonging to employees. There are also mentoring programs that will match up mentors and mentees across seniority levels and functional areas.

Adopting metrics for actual hires and promotions of minorities and women is one of the few interventions that really works. It requires engaging in difficult conversations. Sanofi has recently announced internal metrics for hiring and promotion based on gender and racial equity. This is a new program designed to help them achieve their goals.

> **Efforts are being made to bring in diverse candidates for new jobs. But continued focus on inclusion and belonging must ensure that, once hired, employees from all backgrounds feel secure, comfortable, and valued.**

Managers must be educated on unconscious bias – Sanofi mandates this type of training for everyone above a certain managerial level.

Transparency in career ladders within each company are valuable – especially to outline tracks that are scientific vs. tracks that lead to management.

Question was asked about people who are "stuck" in entry level positions for many years and can't seem to make the jump to the next rung of the ladder. How to encourage these workers to reach out to supervisors and make it known they are interested in advancement, providing access to additional training, if necessary, to make these moves.

Diversifying Recruitment:

Providing paid internship opportunities is essential. Many low income, first generation students simply cannot afford to spend a summer working without compensation and so forego long term investment in their futures to engage in short term paid work that may not be viewed as important or relevant when they apply for their first job.

Many students of Color and those from otherwise under-represented backgrounds drop out of the STEM pipeline during their college years. The reasons are many and varied but need to be studies more.

Mentoring is essential for students who come from underserved backgrounds – they need to develop relationships with professionals who can advise them, guide them into career paths, and serve as role models.

Recruiting that is concentrated at a select few colleges and universities will not serve to increase the diversity of new talent coming into these jobs. Companies need to reach out to HBCUs, state universities, and community colleges to tap into a larger and more diverse group of potential candidates.

7. Shifting Strategies – Industry Opportunities to Fill the Talent Gap

Facilitator:

Krista Licata
Managing Director, LabCentral

Main Ideas:

We need to openly discuss if there is a "talent gap" vs. an "opportunity gap". The term "new collar" jobs encompasses mid-skilled, meaningful, well-paying careers that require some training, but not necessarily a traditional four year college degree, to enter.

Industry has to look hard at roles that require specific training and what that training is. Participants suggested that new collar jobs in the life sciences include roles other than biomanufacturing, although this is a prime example of the type of careers that fit in this category. Other career paths mentioned were research associates, project managers, and clinical associates.

Discussion:

The need for providing college and community college students with real world experiences was unanimously agreed upon. Employers always look for students with internships or coops on their resume, and those who graduate (even with a Bachelor's Degree) but did not have any such experience often face a tough time getting their first job. It is even more difficult for Associate's Degree graduates with no real world experience to break into the industry.

Providing career skills – applying, interviewing, resume writing – to students is important to help them understand what employers are looking for. Partnering with hiring managers to learn about the actual skill sets required for the job and what they are looking for in resumes would increase applicant number and diversity.

> **Non-traditional training programs that incorporate intensive education and work-related training side by side with on the job experience could bridge the gap and provide employers with a diverse group of work-ready candidates.**

In order to increase applicant number and the diversity of their applicant pool, employers should focus more on inherent qualities, values, and transferrable skills, incorporate behavioral interviewing, and assess technical competencies without regard to where these were learned. For new collar employees, transparent career ladders and publicized compensation progression based on increased training is important. Opportunities for continuing education will insure long term growth and success.

Mentorship and sponsorship are especially crucial for individuals that lack the network and the knowledge to navigate the industry, before and after entry into employment.