

2014

TALENT INTEGRATION

California Workforce Trends in the Life Science Industry



CALIFORNIA WORKFORCE TRENDS IN THE LIFE SCIENCE INDUSTRY

The life science industry is under pressure to find new ways to deliver value to its stakeholders, fast and economically. As the climate for the life science industry changes, so does the demand for the right kind of people to take the industry to a new level. In an effort to understand this demand, the BayBio and Biocom Institutes, supporting Northern and Southern California's Life Science Industry Associations, respectively, present a statewide study of the current and projected workforce trends in the life science industry in 2014.

The 2014 California Workforce Trends report will be of value to:

- Educators and trainers who must prepare the right talent for the industry
- Recruiters who must identify appropriate talent to meet the industry's changing needs
- Human resources professionals who need to develop their professional staff
- Legislators who can steer training dollars towards the industry's most pressing talent needs, and incentivize industry-academic collaboration
- Company executives who recognize the value of integrated talent as a key resource for achieving a competitive edge in a fast-moving environment

ABOUT THE STUDY

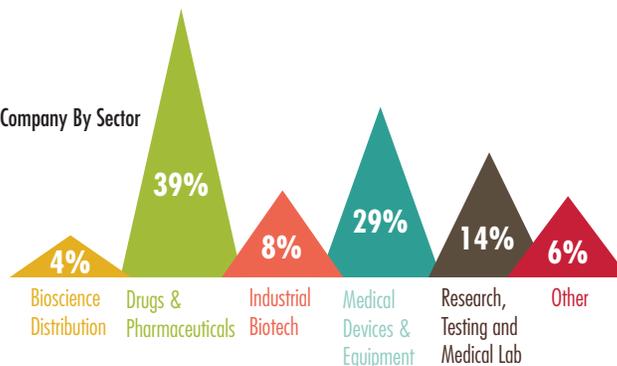
The BayBio Institute, Biocom Institute, and their partner organizations are committed to providing the life science industry with the most current information on workforce trends. The 2014 analysis of the current and future workforce needs of the life science industry in California is based on the aggregation of statewide data from 31 qualitative interviews with key industry decision makers - CEOs, research and development leaders, and business development, manufacturing and human resources executives - in February and March 2014, over 16,000 online job postings in life sciences from 2013 collected by Burning Glass Technologies, and an additional 119 quantitative survey responses from San Francisco Bay Area companies in March and April 2014. The 119 survey responses are statistically representative of the 1,000+ San Francisco Bay Area life science companies. Figure 1 profiles these companies by size and industry sector.

Figure 1

Company By Size



Company By Sector



CREATING VALUE

“[We are looking for] ... individuals with creative vision and technical expertise.”

Health care transformation, shifts in the regulatory environment, and the rapidly changing reimbursement landscape require companies to find new ways to create value for the marketplace and industry stakeholders. As a result of external engagements, the focus is shifting to “pharma-economics, government affairs, market access, manufacturing and quality, [and] supply chain systems.” The industry is “pushing away from building out certain areas of expertise internally” and is becoming “more virtual and external facing.” New industries are emerging at the intersection of disciplines, and innovation is creating demand for new specialized knowledge. This analysis will assist key stakeholders in preparing for programmatic change to meet the industry’s demand for talent.



DEMAND FOR INTEGRATED THINKERS

In this fast-paced environment, the industry is in need of professionals who can scale business globally, form and maintain successful partnerships and in-sector networks, build an efficient infrastructure for product development and delivery, and form and work in teams across disciplines and geographies.

The ability to translate strategic vision into daily operations, project into the future and take action promptly are key skills for pivotal positions in the life sciences.

INTEGRATION

The overriding theme present in conversations with industry executives was integration and its implications for needed talent.

1

A convergence of disciplines and the need “to marry technical disciplines,” such as engineering and biology, chemistry and information technology.

2

External collaborations to manage innovation, development and commercialization programs across the value chain and geographically.

3

Integration of science expertise and business acumen in leaders capable of “translating science into something tangible.”

“[We need] good interfacers with a variety of people: engineers, health care professionals, etc.”

“We increasingly need people who are able to be more flexible in their ability to execute on research and development programs and to do this more and more through external collaborations.”

“[We need] people who understand what it takes to translate science into something tangible.”

The value propositions articulated by companies are supported by their long-term plans for talent development and acquisition. For their organization's pivotal positions, executives are looking for passionate and committed individuals who are able to translate strategic vision into daily operations and who understand how to create access to highly complex science for physicians, patients, payors, policy makers and other stakeholders. Skills that enable scientists, engineers, and business professionals to work in teams, multitask, problem-solve and communicate complement the “own-it” philosophy in which “employees are encouraged to be champions of their own actions and products.”



CHALLENGES AT THE TOP

Within industry, there is often a disconnect between science and business-oriented functions such as process development, manufacturing and marketing. Transition from vertical specialization to horizontal integration within a company has proved to be difficult. There is no well-defined plan for leadership succession and no blueprint for “how best to accelerate leadership practices for highly scientific/tech people.” Companies are challenged to find the best combination of talent that brings together the specialized knowledge and business skills necessary for building teams that “drive product development that is ... manufacturable, drives patient adherence, and integrates with advancing delivery platforms.”

“One of the toughest things I’ve seen is people trying to make the transition from academia to a corporate environment. Many of the things that made them successful as an academic - individual success, long cycle innovation with little or no ROI - don’t necessarily translate to success in a company.”

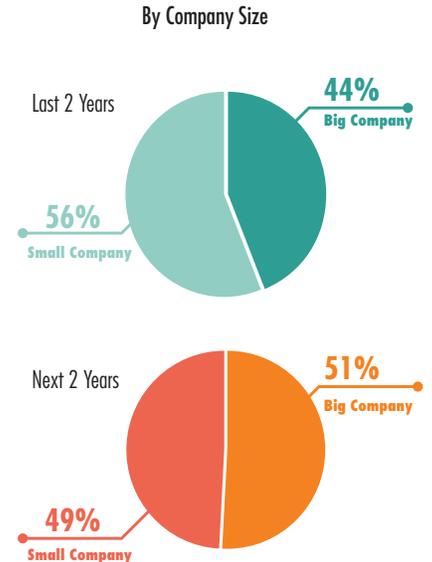
On the academic side, the challenges lie in the discrepancy in how success is measured in academia versus the corporate world. Some companies report an inability of PhDs to “outfocus.” The traditional R&D practices are giving way to “virtual environment[s] where various elements of the research are performed at different sites and across multiple organizations.” Curricula do not always reflect the true needs of the industry by staying current with the technical and compliance requirements necessary for conducting business.

WHO IS HIRING,

AND WHAT ARE THEY LOOKING FOR?

Figures 2-4 are based on the quantitative survey of 119 companies and gives a snapshot of the actual and expected job placements by participating companies. Over the last two years, 56% of new jobs were created by companies with fewer than 50 employees. The overall number of hires is expected to increase, with the Drugs and Pharmaceutical sector experiencing the highest growth over the next two years. The industry continues to be heavily science-driven, ranging from the demand for lab technicians at the entry level to high profile PhDs with expertise at the intersection of two disciplines. These findings are in accord with the data aggregated by Burning Glass from over 16,000 job postings in the life science industry (Figures 5 and 6). The opportunities in Regulatory, Compliance, and Quality are noteworthy.

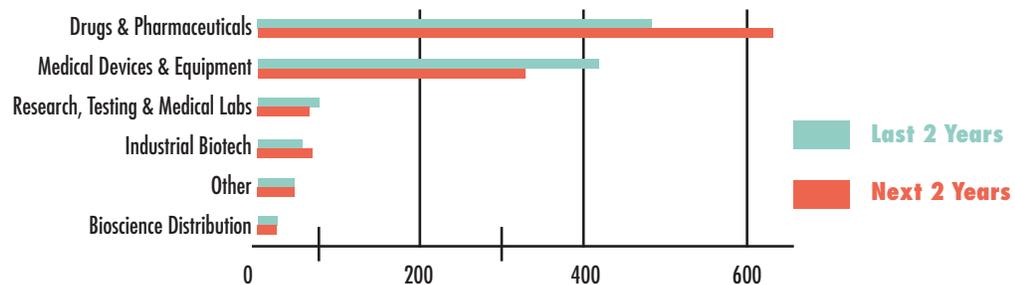
Figure 2



Based on the quantitative survey of 119 SF Bay Area companies

Figure 3

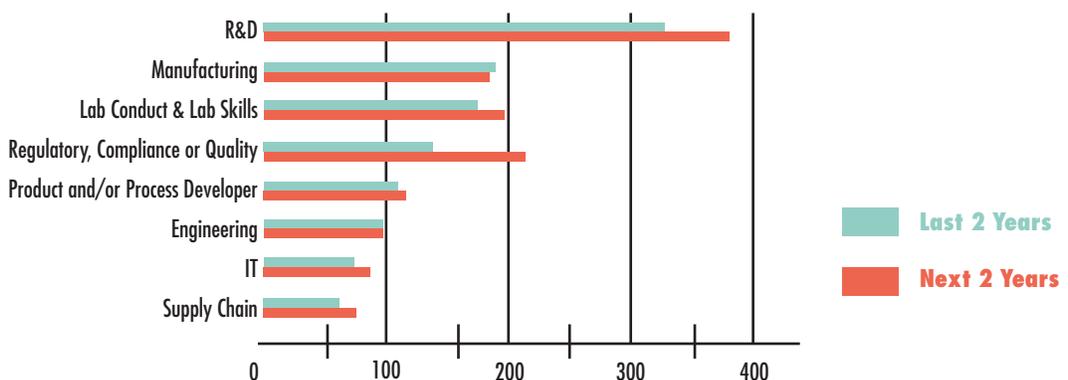
Total Hires By Sector (Actual & Expected)



Based on the quantitative survey of 119 SF Bay Area companies

Figure 4

Total Hires By Functional Area (Actual & Expected)



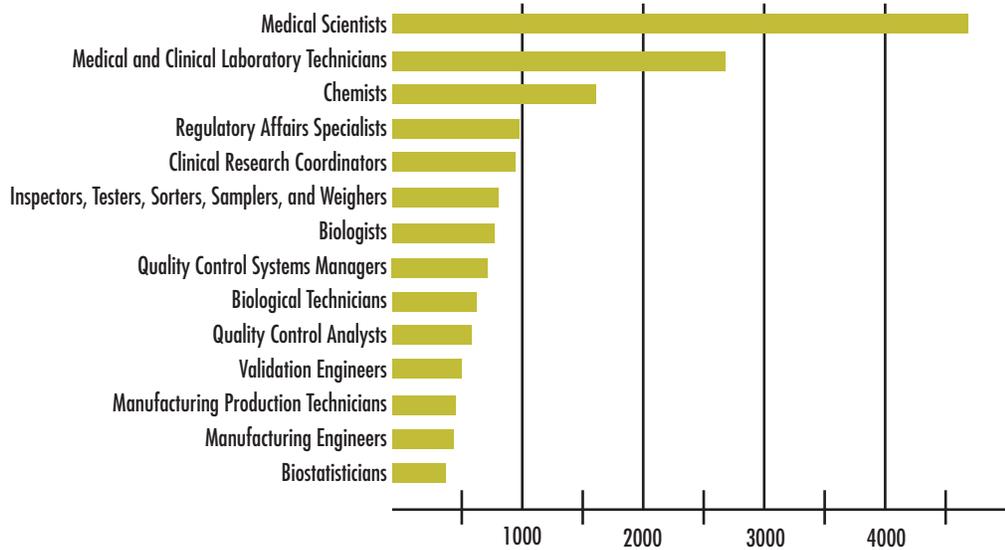
Based on the quantitative survey of 119 SF Bay Area companies

WHAT ARE THEY LOOKING FOR? (Con't)

There is a substantial demand for individuals with experience on the regulatory side “who can represent the interface of science and technology, influence regulators and defend marketing applications.”

Figure 5

California Life Science Job Postings



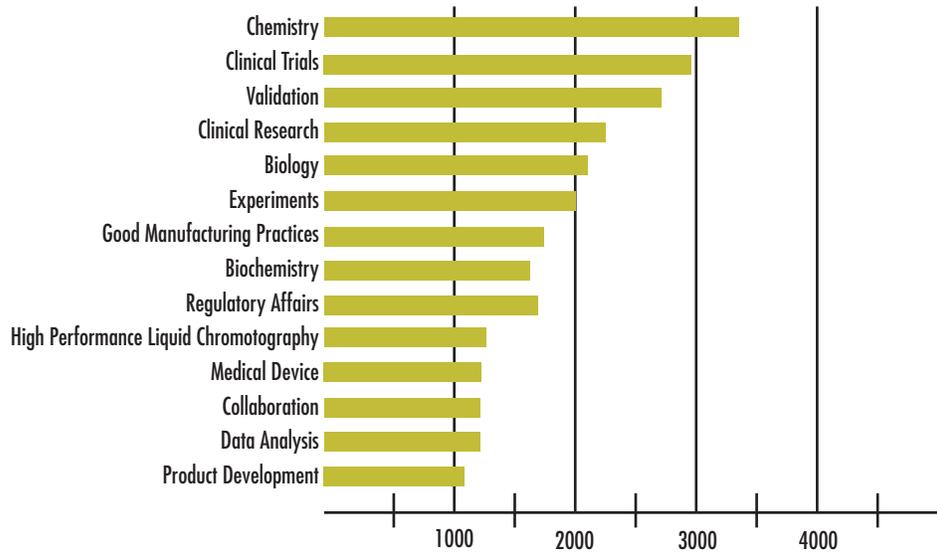
Top 14 jobs have been obtained from 2013 Labor/Insights Jobs in California by Burning Glass Technologies (Sample size=~16,000)

“... in an environment that changes as quickly as ours, the skills and capabilities need to change just as fast.”

“Automation and use of robotics has created a need for lower cost data management and IT skills. It has also caused both upskilling (for PhD-level jobs) and downskilling for the lower-level jobs.”

Figure 6

California Life Science Skills Based on Job Postings



Top 14 skills have been obtained from 2013 Labor/Insights Jobs in California by Burning Glass Technologies (Sample size=~16,000)

WANTED

The need for individuals with college degrees is still substantial, but companies are increasingly requiring more of their job candidates in terms of requisite skills.

Both the quantitative survey and the Burning Glass Technologies data (Figure 7) confirm that the majority of positions in the industry require a college degree of four years or higher (55% and 23%, respectively, based on the survey; 62% and 23%, respectively, based on online job postings.). Though not specifically measured in this study, this does not reflect the number of community college biotech program hires that already possess a 4-year degree, but who go back to these college biotech programs to pick up additional technical skills.

Importantly, at the community college level, industry continues to vet skill-based certificate programs, which is key for developing technician-level talent. More than 60% of companies surveyed claimed that industry-vetted certificates will “assist in hiring decisions,” and half of the companies expect they will “reduce training costs.”

HIRING INDIVIDUALS

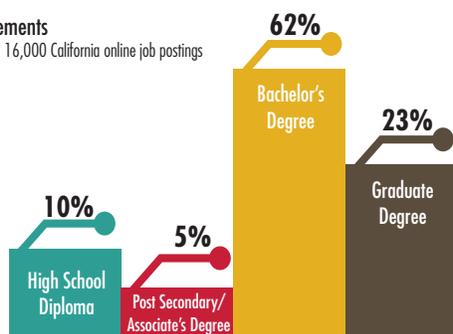
As a result of the shift from in-company training to hiring individuals with the requisite skills, companies are requiring more from their job candidates:

- 1 Greater depth of knowledge, especially in emerging disciplines, e.g. genomics, new therapeutic modalities, precision medicine. There is also a developing need for people with expertise in data modeling and information management.
- 2 Cross-disciplinary training e.g. mechanical engineering and chemistry, microbiology and toxicology.
- 3 A blend of classroom experimental work with practical industry experience. Companies are looking for “a better balance between hands-on lab training and a didactic education.”

Figure 7

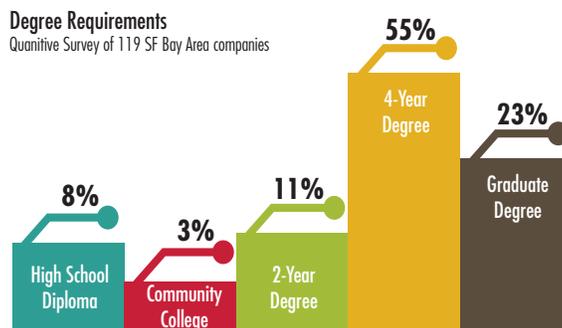
Degree Requirements

Sample Size approx. 16,000 California online job postings



Degree Requirements

Quantitative Survey of 119 SF Bay Area companies



“Know your field [engineering, finance or marketing] well, we can teach the biologics.”

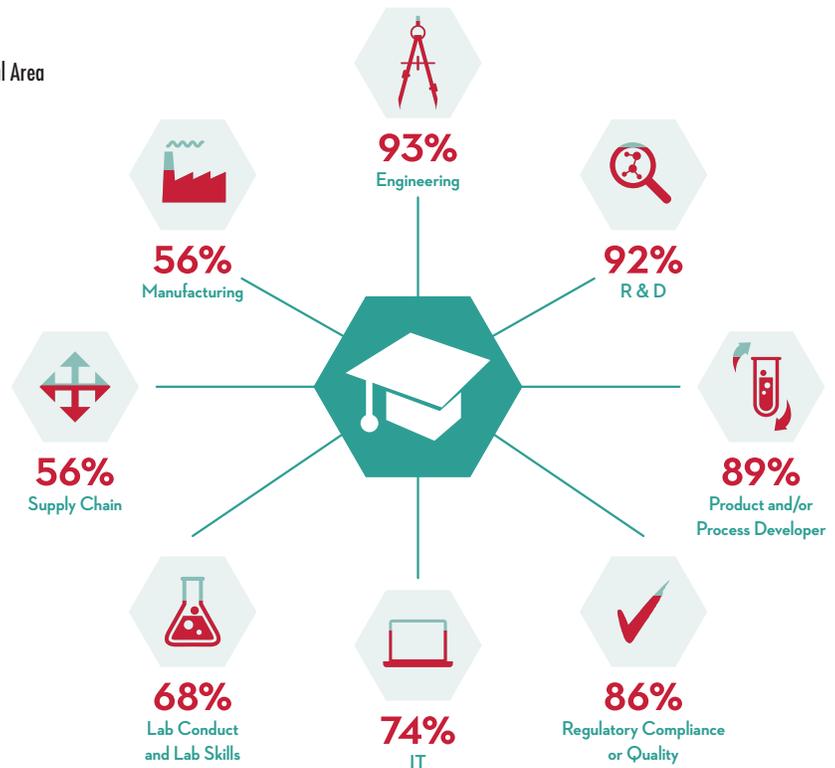
Those big companies that are still relying on in-company training and internship programs are more likely to form long-term alliances with educational institutions to establish a pipeline of talent. Anecdotally, many small companies are yet to realize the benefit of internships over the cost of increased bureaucracy and time spent for onboarding and initial training, though there are indications that this is changing. Based on the quantitative survey, over half of the internships are offered to college students, including graduate students. In-house training and job shadowing are most likely to be offered by companies with more than 50 employees, and companies prefer interns who possess cross-functional skills and cross-discipline expertise.

Figure 8

Jobs Requiring College Degree by Functional Area

Quantitative Survey of 119 SF Bay Area companies

Figure 8 profiles the functional areas in which companies require a 4-year or graduate college degree. 93% of the companies interviewed require a college degree for their engineering positions. In R&D, more and more emphasis is given to the skills associated with the “D”, which can be more broadly defined as the development of the value proposition defined by the market.



SMALL vs BIG

Workforce tactics by small (fewer than 50 employees) versus big (50 or more employees) companies differ based on their corresponding companies' competitive strategies: focus and flexibility for small companies, and scalability and efficiency for big companies.

Small companies tend to tap into their existing skill set and, when hiring, rely on ready access to a trained workforce, rather than developing talent internally. They practice flexibility and expandability across business functions, e.g. HR, Accounting, IT, and cultivate a “Silicon Valley” entrepreneur mindset.

For big companies, the demand for knowledge workers is coupled with the demand for professionals who can execute innovation, development, and commercialization programs through external collaborations.

Both small and large companies are building leaner infrastructures and look to hire the best-in-class in specialized knowledge, especially at the intersection of technical disciplines.

QUALIFICATION GAP

“[Many] students are not set up for success in industry.”

“Incorporate project management, business acumen and finance for scientific disciplines.”

“Build in curiosity to engage students with the scientific endeavor.”

A qualification gap exists between graduates and the positions for which the industry is hiring. This mismatch between industry requirements and graduate qualifications are summarized below:

Relevance - the lack of:

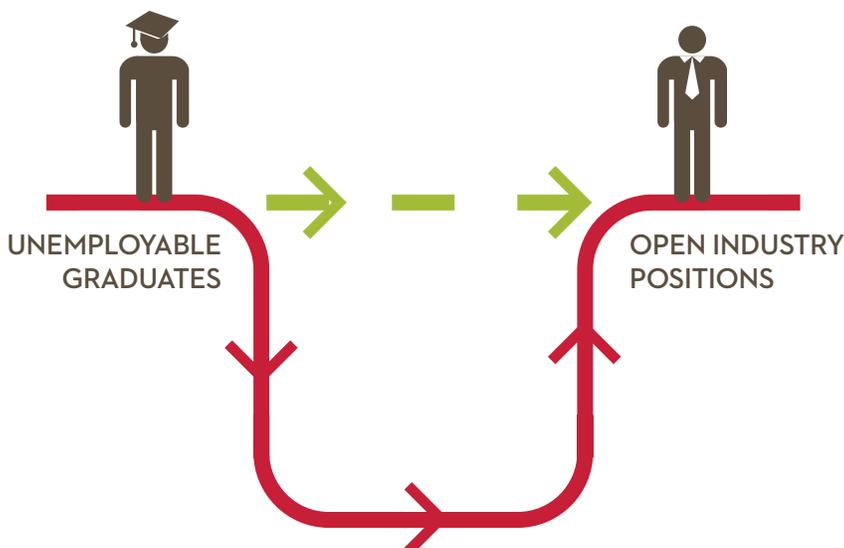
1. availability of up-to-date information for a quickly changing industry;
2. study programs outside the student’s discipline to create breadth;
3. application of industry standards to curricula; and
4. incorporation of project management, business acumen and finance for scientific disciplines.

Action Learning - the need to:

1. introduce action learning into curricula;
2. foster team-based project-oriented learning;
3. expand hands-on training for university students that offers a blend of classroom and experiential/industry work; and
4. increase practical exposure to key components of R&D.

Basic Education - the need to:

1. incorporate creativity and curiosity-based learning to engage students with the scientific endeavor; and
2. increase the development of basic skills, such as report writing and presentation, at the general education level.



CURRENT PRACTICE

Companies train a few interns in sector-specific skills to be hired for entry-level positions.

DESIRED PRACTICE

Cost-sharing to develop industry-relevant curricula and provide action learning for all science students.

“Translating the success of [collaboration] programs ... into careers relies on both university and private entity participation.”

The industry has the potential to have the highest impact on the long-term development of talent by fostering collaborations between companies and educational institutions. Individual companies, the life science industry at large, and academic institutions have important roles to play in collaborating to develop the necessary talent pipeline:

Companies

1. Communicate talent needs and skill requirements
2. Provide increased practical exposure to sector-specific skills
3. Expand engagement to include curricula development, outsourced research projects, mentorships, etc.

Industry

1. Industry network development to connect stakeholders and provide a platform for sharing best practices
2. Collaborative “how to” models to build a long-term pipeline of talent for the industry

Academia

1. Recognize qualification gap and move with urgency to bring existing curricula up to speed
2. Create cross-disciplinary training
3. Align academic and industry success measures



With increased calls for functional, geographical and science/business integration, large and small companies would benefit from developing and participating in networks with other stakeholders designed to help them share and model best practices. Such networks will provide a platform for the industry to learn from companies that are engaged in successful academic partnerships that can help meet emerging integration challenges.

Collaborative “how to” models will help bridge the gap in skill requirements for educational institutions, decrease onboarding costs, and provide continuity in talent development for companies. This approach will require companies to move beyond traditional engagements with academia and demonstrate a stronger commitment to building curricula and providing opportunities for practical exposure to industry-relevant experience, which is vital for developing the talent needed to meet the industry’s new challenges and opportunities.

“We want people who want to change the world, ... [who are] passionate, collaborative and who know how to marry technical disciplines.”

“We want academia to think like business and to teach with a ‘results’ orientation vs. simply a ‘learning’ orientation. We want students to learn ‘fast failure’.”

“We need people who understand what testing in a regulated environment means...[and who understand] the differences ... from testing performed in academia.”



Thank you to all the life science companies and organizations that participated in the analysis, including the following 31 companies that provided in-depth interviews:

Abbott Diabetes Care
Amgen
Amyris Biotechnologies
AnaSpec
Arena Pharmaceuticals
BASF
Bolytic Lab Performance
Boehringer Ingelheim

Celgene
COI Pharmaceuticals
Conatus Pharmaceuticals
DuPont (Genencor)
Genomatica
Genomic Health
Gilead Sciences
Nano Precision Medical

NuVasive
OncoMed Pharmaceuticals
Pacific BioLabs
Pfizer (Rinat)
Pharmatek
Protelica BioSciences
Regulus Therapeutics
Sapphire Energy

Sequenom
Spiral Devices
Sutro Biopharma
Thermo Fisher Scientific
Vertex Pharmaceuticals
Zyomyx

REPORT BROUGHT TO YOU BY:



BayBio Institute strives to maintain Northern California's leadership in life science innovation through support of entrepreneurship, science education and life science career development, ensuring that the economic and intellectual power of the region's life science industry and its employees remains strong. www.baybio.org



Biocom Institute supports life science innovation and success in Southern California by providing our community of current and budding life science professionals with innovative, industry-vetted training programs and STEM outreach. www.biocom.org



The **East Bay Biomedical Manufacturing Network** is convened by a partnership of regional entities focused on building an East Bay biomedical, manufacturing network for business assistance, technology transfer, education and training, and economic development in the East Bay of the San Francisco Bay Area. www.biomedmfg.org

FUNDERS AND PARTNERS:



Design it - Build it - Ship it (DBS) is a U.S. Department of Labor-funded initiative in the East Bay under the Obama Administration's Trade Adjustment Assistance Community College Career Training (TAACCCT) program. The goal of DBS is to build an integrated, regional, industry-driven workforce development system in the East Bay that meets the needs of businesses for skilled workers.



CalBiotechCareers is part of the California Community Colleges "Doing What Matters for Jobs and the Economy" program. We support industry responsive, regional life sciences/biotechnology training programs that produce employable individuals with in-demand skills and the ability to adapt to a dynamic industry.

www.calbiotechcareers.org



Centers of Excellence support the community colleges by providing customized data on high growth, emerging, and economically-critical industries and occupations and their related workforce needs. These seven Centers, located strategically to study the regional economies of California, produce industry-validated environmental scan reports designed to enable community colleges to remain relevant and responsive in their offerings. www.coecc.net



The **Coalition of State Bioscience Institutes (CSBI)**, formed in 2012, is comprised of 42 state bioscience organizations and the Biotechnology Institute whose goal is to ensure America's leadership in bioscience innovation by delivering industry-led life science education, workforce development, and entrepreneurship programs through a nationally coordinated effort.

www.csbinstitutes.org

This product was partially funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U. S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, expressed or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability or ownership.