

# LIFE SCIENCES & BIOTECHNOLOGY

MIDDLE-SKILL JOBS IN THE SAN DIEGO-IMPERIAL REGION



# Life Sciences & Biotechnology

This summary highlights key points from the Life Sciences & Biotechnology section of a broader study, *Sector Analysis: Demand and Supply of Middle-Skill Jobs in the Priority & Emerging Sectors*. The Life Sciences & Biotechnology (LS & Biotech) sector focuses on finding solutions for the world's great challenges in health care, agriculture, and sustainability. Firms include research, testing and medical laboratories that are engaged in the discovery, development and commercialization of new products. The LS & Biotech sector encompasses many segments, including pharmaceuticals, biomedical devices, M-Health (mobile health) or wireless health, agricultural and industrial biotechnology (e.g., biofuels, biodegradable materials), and bioscience-related distribution and trade. The LS & Biotech sector is an economic driver and job producer; for every job created in this sector, nearly five other jobs are generated throughout the San Diego-Imperial Region.

## Sector Overview



**59,844**  
people employed



**7% (3,950)**  
5-year projected job growth



**1,686**  
businesses



**17%**  
of the sector's  
employment in California



**\$161,080**  
average earnings  
per job



**13%**  
of the sector's  
businesses in California

The LS & Biotech sector accounts for 59,844 jobs in the San Diego-Imperial region and 17% of all LS & Biotech jobs in California. There are approximately 1,686 establishments in the region, making up 13% of California's Life Sciences & Biotechnology businesses. This sector is projected to grow 7% (or 3,950 jobs) in the next five years in the region. The average earnings per LS & Biotech job is \$161,080.<sup>1</sup>

## Sample of Local Employers and Resources



BIOCOM  
Pfizer

Illumina  
San Diego Science Alliance

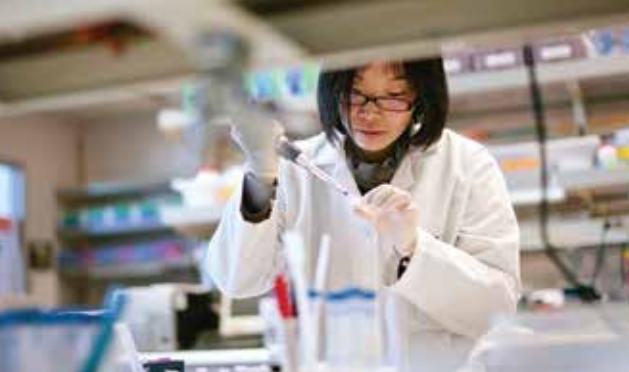
Alere Incorporated  
Celgene Corporation

UC San Diego  
Leidos

Thermo Fisher Scientific  
CareFusion

The Life Sciences & Biotech sector has several employers and resources, including programs from the San Diego-Imperial region's community colleges in biotechnology, medical laboratory technology, industrial quality control, and more. MiraCosta College just recently launched a Bachelor of Science program in biomanufacturing.

<sup>1</sup>Source: Emsi. Class of Worker: QCEW + Non-QCEW + Self-Employed. Timeframe: 2018-2023. Data set 2019.01.



## Middle-Skill and Pathway Jobs

Life Sciences & Biotechnology occupations can be categorized into two groups: middle-skill jobs and pathway jobs. Middle-skill jobs are occupations that community college students would be best prepared for after obtaining a certificate or degree. Middle-skill jobs are also known as “technician-level” jobs. Pathway jobs require at least a bachelor’s degree or higher.

### Middle-Skill Jobs Attainable with a Community College Education, San Diego-Imperial Region (2018-2023)

Occupational Title	Annual Job Openings Demand	Entry-Level <sup>2</sup> Hourly Earnings	Median Hourly Earnings
Inspectors, Testers, Sorters, Samplers, and Weighers	616	\$14.38	\$19.02
Clinical Laboratory Technologists and Technicians	318	\$17.34	\$25.91
Biological Technicians	293	\$19.82	\$24.22
Manufacturing Production Technicians* and Manufacturing Engineering Technologists* (part of Engineering Technicians, Except Drafters, All Other) <sup>3</sup>	192	\$26.30	\$33.17
Quality Control Analysts* (part of Life, Physical, and Social Science Technicians, All Other)	132	\$19.00	\$26.01
Chemical Technicians	74	\$17.14	\$22.62

### Pathway Jobs, San Diego-Imperial Region (2018-2023)

Occupational Title	Annual Job Openings Demand	Entry-Level <sup>4</sup> Hourly Earnings	Median Hourly Earnings
First-Line Supervisors of Production and Operating Workers	475	\$22.23	\$29.67
Compliance Officers (includes Regulatory Affairs Specialists)	453	\$28.86	\$39.51
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	430	\$23.00	\$32.49
Medical Scientists, Except Epidemiologists	393	\$37.39	\$49.31
Manufacturing Engineers*, Biochemical Engineers*, and Validation Engineers* (part of Engineers, All Other)	213	\$36.72	\$48.54
Chemists	135	\$26.00	\$34.89
Biological Scientists, All Other	125	\$31.98	\$39.98
Biochemists and Biophysicists	109	\$34.99	\$43.71
Laboratory Managers* and Clinical Research Coordinators* (part of Natural Sciences Managers)	101	\$55.55	\$68.39
Biostatisticians* and Clinical Data Managers* (part of Statisticians)	82	\$39.50	\$50.82
Microbiologists	78	\$31.86	\$54.31
Biomedical Engineers	65	\$33.65	\$44.44

<sup>2</sup> Individuals at the 25th percentile earn entry-level wages, while individuals at the median level earn median wages due to a more experience, more training, etc.

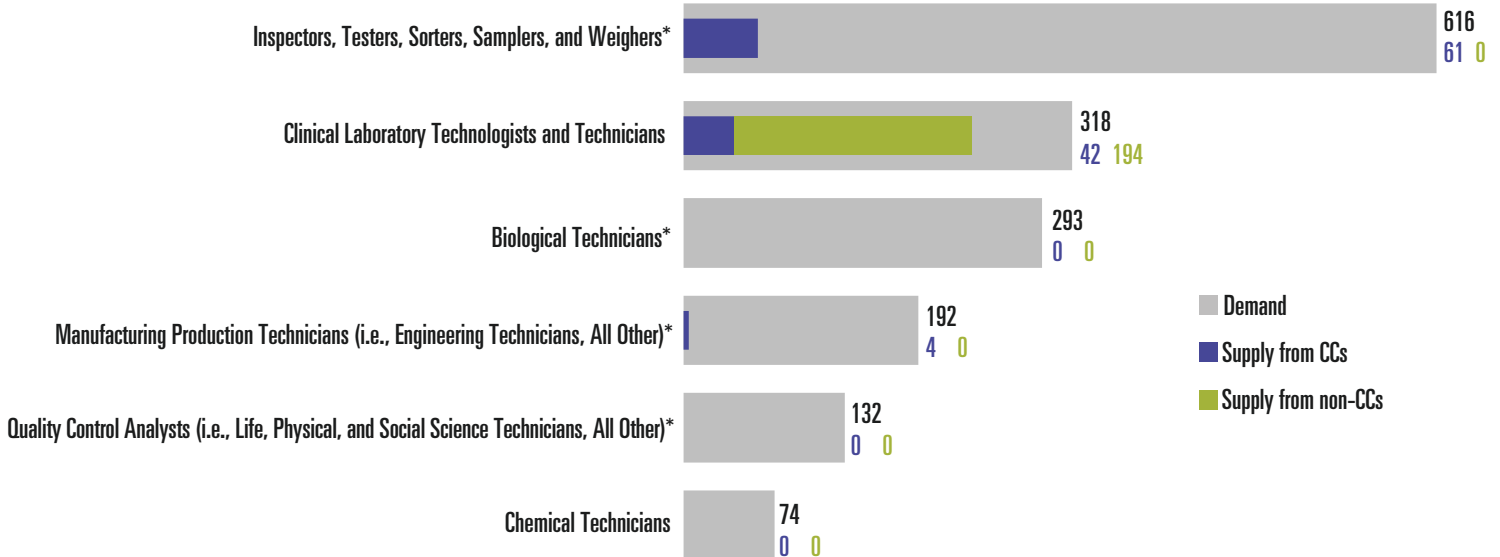
<sup>3</sup> Occupations with an asterisk (\*) are emerging jobs that are a part of a larger Standard Occupational Classification (SOC) code; therefore, the annual job openings for these occupations may be overestimated. The SOC system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc/).

<sup>4</sup> Individuals at the 25th percentile earn entry-level wages, while individuals at the median level earn median wages due to a more experience, more training, etc.

# Labor Market Demand, Program Supply, and Supply Gaps

Top middle-skill jobs are defined as occupations with the most labor market demand, stable employment growth, and entry-level wages at or above the Self-Sufficiency Standard. Comparing labor market demand with program supply suggests that the **top middle-skill jobs in this sector have supply gaps in the San Diego-Imperial region**. Labor market demand is defined as the number of average annual job openings per year that employers expect to fill for a particular occupation. Program supply is the number of awards (e.g., degrees, certificates) from community colleges and other providers.

## Life Sciences & Biotech Top Middle-Skill Jobs: Demand vs. Supply, San Diego-Imperial Region



The asterisk (\*) above indicates that four top middle-skill jobs (Inspectors, Testers, Sorters, Samplers & Weighers; Biological Technicians; Manufacturing Production Technicians; and Quality Control Analysts) have the same Taxonomy of Programs (TOP) code, Biotechnology and Biomedical Technology (TOP 043000). TOP 043000 supplies only 61 awards, but trains for four different occupations with a total labor market demand of 1,233 annual openings, suggesting a **supply gap of 1,172 awards**.

## Demand vs. Supply for Biotechnology and Biomedical Technology (TOP 043000), San Diego-Imperial Region



<sup>5</sup> The Self-Sufficiency Standard is the hourly wage that a single adult needs to earn to meet basic needs in San Diego County. [selfsufficiency.org](http://selfsufficiency.org).

<sup>6</sup> TOP is a system of numerical codes used at the state level to collect and report information on community college programs and courses throughout the state that have similar outcomes.

<sup>7</sup> Other Engineering and Related Industrial Technologies (TOP 099900) also trains for Manufacturing Production Technicians and provides 4 awards in the region. However, TOP 099900 is a general TOP code and trains for multiple occupations; therefore, it was removed from the supply analysis.

# Key Findings and Recommendations

Between July and December 2018, industry experts and community colleges in the San Diego-Imperial region met and reviewed labor market demand and program supply for middle-skill jobs in the Priority and Emerging Sectors. The objectives of the meetings were to identify labor market supply gaps in middle-skill jobs; understand where programs exist or do not exist to fill in the supply gaps; and discuss how the region's community colleges could close the supply gaps. The following summarizes the findings and recommendations for the Life Sciences & Biotechnology sector.

- 1 The sector has large labor market demand, but small program supply:** Programs such as Biotechnology and Biomedical Technology (TOP 043000) have large supply gaps and small completion numbers.

To increase retention and success of students in Life Sciences & Biotechnology programs, faculty, deans, and the Deputy Sector Navigator (DSN) for this sector should review program and course data to determine the specific barriers that prevent students from successfully completing a program (e.g., challenging introductory courses, differing pre-requisites across colleges for higher level courses).

- 2 Enrollment numbers are low for existing programs:** While there is high labor market demand, few students enroll in existing Life Sciences & Biotechnology programs. Furthermore, there are not a significant number of K-12 programs that prepare students for postsecondary Life Sciences & Biotechnology programs.

To increase enrollment numbers, the colleges should conduct a marketing campaign that educates K-12 students about career opportunities in Life Sciences & Biotechnology and informs incumbent workers (i.e., current industry professionals) about affordable community college programs for upskilling or professional development. The colleges should also work with middle school and high school counselors, faculty, and other stakeholders to encourage students to enroll in existing community college programs if their interests and strengths align with the sector's jobs.

- 3 Developing programs south of Interstate 8 (I-8) is challenging to attract students:** Life Sciences & Biotechnology jobs and employers are primarily clustered around State Route 52 (SR 52) and SR 78. Students residing elsewhere in the region are not exposed to Life Sciences & Biotechnology companies and are unfamiliar with jobs in this sector.

To increase exposure to this sector, the DSN for Life Sciences & Biotechnology should work with middle school and high school stakeholders to develop programs that align with community college programs and prepare students for the laboratory, training, and work environments in this sector. The DSN should also work with employers to set up tours or other events to expose students to the world of work.

- 4 Employers are filling the middle-skill jobs gap with candidates who have bachelor's degrees or higher:** This leads to high turnover once an overqualified individual gets his/her "foot through the door" and moves on to higher positions.

To promote community college programs to employers as a solution to the cost of turnover, the region should work with employers to change their hiring culture; more middle-skill jobs need to be advertised as jobs that require associate degrees (e.g., "no bachelor's degree" listed on the online job posting).

- 5 Knowledge, Skills, and Abilities (KSAs) for the sector have not been validated by employers:** This brief examines job gaps, but does not explore the specific KSAs taught at the colleges and compare them to the labor market's demand for Life Sciences & Biotechnology KSAs.

To determine if the region's community colleges are training for the right KSAs, the Life Sciences & Biotechnology DSN should convene employers in a "regional advisory group" where employers can review program KSAs, provide feedback, and validate the KSAs' current relevance and demand in the labor market.



## Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.



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