CENTER OF EXCELLENCE FOR LABOR MARKET RESEARCH
LOS ANGELES

Labor Market Analysis: 0430.00 – Biotechnology and Biomedical Technology

Biological Technology* – *Associate of Science (A.S.) degree; Certificate of Achievement
Biological Technology–Laboratory Assistant* – *Certificate of Achievement
Biological Technology–Laboratory Skills* – *Certificate of Achievement
Biological Technology–Stem Cell Culture* – *Associate of Science (A.S.) degree; Certificate of Achievement
Biological Technology–Stem Cell-Based Biomanufacturing* – *Associate of Science (A.S.) degree; Certificate of Achievement
Biological Technology–Computational Biology* – *Certificate of Achievement

Los Angeles Center of Excellence, February 2026

Program Endorsement:	Endorsed: All Criteria Met ☐	Endorsed: Some Criteria Met ☒	Not Endorsed ☐

Program Endorsement Criteria		
Supply Gap:	Yes ☑	No ☐
Living Wage: (Entry-Level, 25th)	Yes ☐	No ☑
Education:	Yes ☑	No ☐
Emerging Occupation(s)		
	Yes ☑	No ☐

SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations[1] or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year.

Based on the available data, there appears to be a supply gap for the four identified middle-skill occupations in the region. While the majority of annual openings have entry-level wages that are lower than the self-sufficiency standard wage in both Los Angeles and Orange counties, more than one-third of current workers in the field have completed an associate degree or less education as their highest level of educational attainment.

<u>Recommendation:</u> Due to two of three program endorsement criteria being met, the Los Angeles Center of Excellence for Labor Market Research (LA COE) endorses this proposed program.

[1] Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree. The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

Key Findings

Supply Gap

- 3,822 annual job openings are projected in the region through 2029. This number is greater than the three-year average of 368 awards conferred by educational institutions in the region.
    - However, the *inspectors, testers, sorters, samplers, and weighers* (51-9061) occupation is employed across various manufacturing and scientific industries, including the emerging field of biotechnology. Since the SOC code does not solely represent this occupation within the biotechnology field, **the number of annual job openings is likely overstated.**
    - Over the past 12 months, there were **12,212 online job postings related to these middle-skill biotechnology occupations**. The highest number of job postings were for clinical laboratory scientists, quality inspectors, quality control inspectors, laboratory technicians, and quality control technicians.

Living Wage

- 93% of annual job openings for these middle-skill biotechnology occupations have entry-level wages **below** Los Angeles County's self-sufficiency standard hourly wage ($24.03/hour).[2]

Educational Attainment

- 68% of the annual job openings typically require a high school diploma or equivalent for middle-skill occupations related to biotechnology in the LA/OC region.
- 49%-83% of workers in the field have completed some college/associate degree or less educational attainment, according to national educational attainment data.

Community college supply

- 15 community colleges issued awards related to biotechnology in the greater LA/OC region.
- 280 awards (degrees and certificates) were conferred on average each year between 2022 and 2024.

Other postsecondary supply

- 4 educational institutions in the LA/OC region have conferred awards in programs related to biotechnology over the past three years.
- 88 awards were conferred on average each year by other postsecondary institutions throughout the greater LA/OC region between 2021 and 2023.

TARGET OCCUPATIONS

LA COE prepared this report to provide regional labor market and postsecondary supply data related to four middle-skill and one emerging occupation. Although some of the occupations in this report typically require a bachelor's degree, they are considered middle-skill because approximately one-third of workers in the field have completed some college or an associate degree. For full occupation descriptions, please see Appendix.

[2] Center for Women's Welfare, University of Washington. (2024). *The self-sufficiency standard for California 2024.* http://selfsufficiencystandard.org/California.

- ***Biological Technicians* (19-4021)**[3]
- ***Chemical Technicians* (19-4031)**[4]
- ***Clinical Laboratory Technologists and Technicians* (29-2018)** This occupation includes the 2018 SOC occupations:[5]
    - ***Medical and Clinical Laboratory Technologists* (29-2011)**
    - ***Medical and Clinical Laboratory Technicians* (29-2012)**
- ***Inspectors, Testers, Sorters, Samplers, and Weighers* (51-9061)**[6]

and one emerging occupation:

- ***Quality Control Analysts* (19-4099.01)** Conduct tests to determine quality of raw materials, bulk intermediate and finished products. May conduct stability sample tests.[7]

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these middle-skill biotechnology occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 2% through 2029. However, there will be more than 3,800 job openings per year through 2029 due to retirements and workers leaving the field. It is important to note that the *inspectors, testers, sorters, samplers, and weighers* (51-9061) occupation is employed across various manufacturing and scientific industries, including the emerging field of biotechnology. Therefore, the data in Exhibit 1 is likely overstated for biotechnology *inspectors, testers, sorters, samplers, and weighers*. The majority of jobs in 2024 for these middle-skill biotechnology occupations (69%) were located in Los Angeles County.

Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties[8]

Geography	2024 Jobs	2029 Jobs	2024-2029 Change	2024-2029 % Change	Annual Openings
Los Angeles	26,062	25,358	(704)	(3%)	2,598
Orange	11,888	11,885	(3)	(0%)	1,224
Total	**37,950**	**37,243**	**(707)**	**(2%)**	**3,822**

Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. The average percentage of workers aged 55+ across all occupations in the Los Angeles/Orange County region is 26%; occupations with a larger share of workers aged 55 and older typically have greater replacement needs to offset the amount of

[3] Biological Technicians (bls.gov)
[4] Chemical Technicians (bls.gov)
[5] Clinical Laboratory Technologists and Technicians (bls.gov)
[6] Quality Control Inspectors (bls.gov)
[7] Quality Control Analysts (onetonline.org)
[8] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

impending retirements. On average, 81% of workers across all occupations in California are employed full-time.

Exhibit 2: Detailed employment and occupational demand, Los Angeles County[9]

Occupation	2024 Jobs	2029 Jobs	5-Yr % Change	Annual Openings	% Aged 55 and older	% Full Time Workers
Biological Technicians	1,405	1,472	5%	177	14%	Data unavail.
Chemical Technicians	1,351	1,291	(4%)	155	27%	100%
Clinical Laboratory Technologists and Technicians	7,629	7,799	2%	523	23%	100%
Inspectors, Testers, Sorters, Samplers, and Weighers	15,678	14,796	(6%)	1,744	34%	91%
Total	**26,062**	**25,358**	**(3%)**	**2,598**	**-**	**-**

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill biotechnology occupations in Los Angeles County as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater Los Angeles/Orange County region.

Los Angeles County

The majority, 93%, of annual openings for middle-skill biotechnology occupations have entry-level wages below the self-sufficiency standard wage for one adult ($24.03 in Los Angeles County). Typical entry-level hourly wages are in a range between $19.88 and $24.73. (Exhibit 3).

One occupation has entry-level wages above the self-sufficiency standard wage:

- *Biological technicians*, $24.73

Experienced workers can expect to earn wages between $29.71 and $39.42, which are higher than the self-sufficiency standard.

Exhibit 3: Earnings for occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)	Median Annual Earnings*
Biological Technicians	$24.73	$30.83	$39.42	$64,100

[9] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Occupation	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)	Median Annual Earnings*
Chemical Technicians	$22.59	$24.33	$30.22	$50,600
Clinical Laboratory Technologists and Technicians	$23.13	$29.67	$38.10	$61,700
Inspectors, Testers, Sorters, Samplers, and Weighers	$19.88	$23.50	$29.71	$48,900

*Rounded to the nearest $100

Orange County

All four occupations have entry-level wages below the self-sufficiency standard wage for one adult ($27.13 in Orange County). Typical entry-level hourly wages are in a range between $20.63 and $24.07 (Exhibit 4). Experienced workers can expect to earn wages between $30.76 and $39.68, which are higher than the self-sufficiency standard.

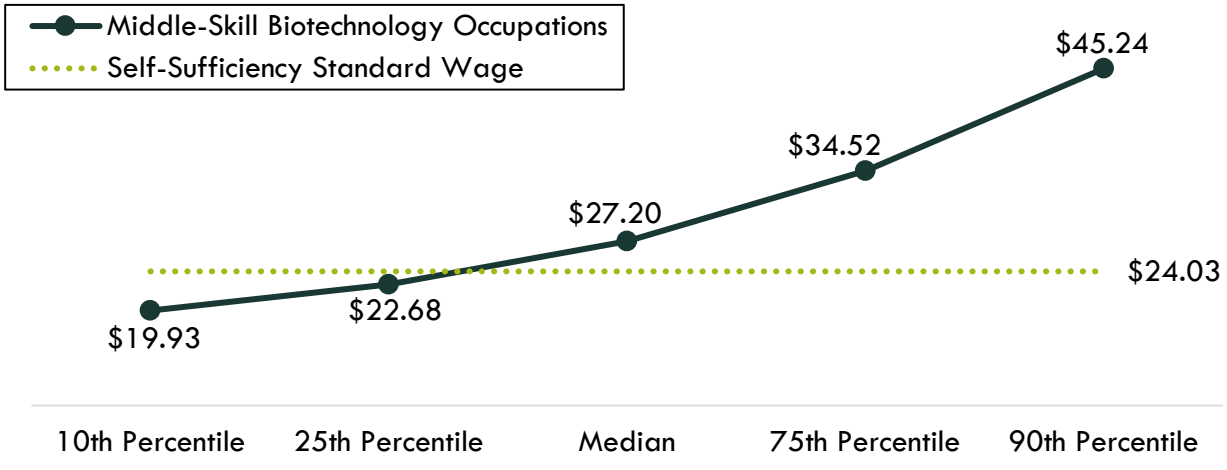
Exhibit 4: Earnings for occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)	Median Annual Earnings*
Biological Technicians	$23.41	$29.19	$37.33	$60,700
Chemical Technicians	$23.35	$25.15	$31.24	$52,300
Clinical Laboratory Technologists and Technicians	$24.07	$30.89	$39.68	$64,200
Inspectors, Testers, Sorters, Samplers, and Weighers	$20.63	$24.35	$30.76	$50,700

*Rounded to the nearest $100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are $22.68; this is below the living wage for one single adult in Los Angeles County ($24.03). Exhibit 5 shows the average hourly wage for the occupations in this report, for entry-level to experienced workers.

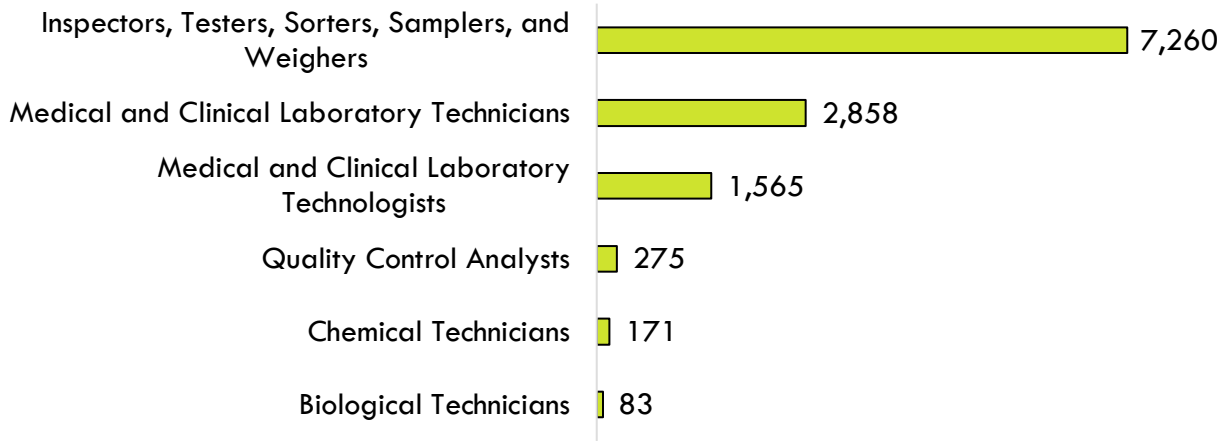
Exhibit 5: Average hourly earnings for target occupations, Los Angeles and Orange counties



JOB POSTINGS

There were 12,212 online job postings related to middle-skill biotechnology occupations listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (59%) were for *inspectors, testers, sorters, samplers and weighers*, followed by *medical and clinical laboratory technicians* (23%) and *medical and clinical laboratory technologists* (13%).

Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties



Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
• Clinical laboratory scientists • Quality inspectors • Quality control inspectors • Laboratory technicians • Quality control technicians • Laboratory assistants	• Auditing • Calipers • Micrometer • Quality management • Laboratory equipment • Clinical laboratory science • Chemistry/biology	• Aerotek* • Volt* • Actalent* • Quest Diagnostics • University of California • Kelly Services* • Cedars-Sinai

*Staffing company

In the greater Los Angeles/Orange County region, 62% of the middle-skill biotechnology job postings listed a minimum educational requirement. Exhibit 8 details the number and percentage of job postings by educational level.

Exhibit 8: Education levels requested in job postings for target occupations, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	2,360	31%
Associate degree	772	10%
High school diploma or vocational training	4,472	59%

EDUCATIONAL ATTAINMENT

In the greater Los Angeles/Orange County region, the majority of annual job openings (68%) typically require a high school diploma or equivalent (Exhibit 9). However, the national-level data indicates between 49% and 83% of workers in the field have completed an associate degree or less education as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

Exhibit 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
Biological Technicians	Bachelor's degree
Clinical Laboratory Technologists and Technicians	Bachelor's degree
Chemical Technicians	Associate degree
Inspectors, Testers, Sorters, Samplers, and Weighers	High school diploma or equivalent

EDUCATIONAL SUPPLY

Community College Supply

Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Santiago Canyon, LA Mission, and Santa Ana.

Exhibit 10: Regional community college awards (certificates and degrees), 2022-2024

TOP Code	Program	College	2021-22 Awards	2022-23 Awards	2023-24 Awards	3-Year Average
0430.00	Biotechnology and Biomedical Technology	Citrus	9	14	20	14
		Compton	-	-	2	1
		East LA	4	-	2	2
		Glendale	-	12	16	9
		LA Mission	38	42	47	42
		LA Pierce	-	-	5	2

TOP Code	Program	College	2021-22 Awards	2022-23 Awards	2023-24 Awards	3-Year Average
		LA Trade-Tech	13	3	7	8
		Pasadena	33	28	27	29
		West LA	-	7	9	5
		LA Subtotal	**97**	**106**	**135**	**113**
		Fullerton	3	12	39	18
		Irvine	23	11	5	13
		Santa Ana	13	20	55	29
		Santiago Canyon	16	57	86	53
		OC Subtotal	55	100	185	113
		Supply Subtotal/Average	**152**	**206**	**320**	**226**
0954.00	Chemical Technology	East LA	2	1	4	2
		LA Trade-Tech	11	-	3	5
		LA Subtotal	**13**	**1**	**7**	**7**
		Supply Subtotal/Average	**13**	**1**	**7**	**7**
0955.00	Laboratory Science Technology	Mt San Antonio	4	2	4	3
		LA Subtotal	**4**	**2**	**4**	**3**
		Supply Subtotal/Average	**4**	**2**	**4**	**3**
1205.00	Medical Laboratory Technology	Mt San Antonio	27	26	23	25
		LA Subtotal	**27**	**26**	**23**	**25**
		Saddleback	17	25	13	18
		OC Subtotal	**17**	**25**	**13**	**18**
		Supply Subtotal/Average	**44**	**51**	**36**	**44**
		Supply Total/Average	**213**	**260**	**367**	**280**

Exhibit 11 displays the community college awards broken down by award type. In this case, the majority of awards issued by community colleges are certificates (75%).

Exhibit 11: Community college awards by award type, 2022-2024

Award Type	# of Awards	% of Awards
A.A./A.S. degrees	69	25%
Certificates	210	75%
Noncredit awards	1	>1%
Total	**280**	**100%**

Other Postsecondary Supply

For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for biotechnology. Exhibit 12 shows the number of awards conferred by these institutions in relevant programs. Due to different data collection periods, the most recent data is from 2021 to 2023. Between 2021 and 2023, other postsecondary college institutions in the region conferred an average of 88 bachelor's and sub-baccalaureate awards. Sub-baccalaureate awards include associate degrees, postsecondary awards, and other academic awards that typically take fewer than four years to complete.

Exhibit 12: Other regional postsecondary awards, 2021-2023

CIP Code	Program	Postsecondary Institution	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
15.0702	Quality Control Technology/Technician	CSU-Dominguez Hills	3	3	1	2
26.1104	Computational Biology	Chapman Univ.	-	-	1	0
		USC	8	16	18	14
51.1004	Clinical/Medical Laboratory Technician	Regan Career Institute	1	8	12	7
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	CSU-Dominguez Hills	86	62	44	64
		Supply Total/Average	**98**	**89**	**76**	**88**

Exhibit 13 shows the breakdown of other postsecondary awards by award type. The majority of awards issued by other postsecondary schools are bachelor's degrees (92%).

Exhibit 13: Other postsecondary awards by award type, 2021-2023

Award Type	# of Awards	% of Awards
Bachelor's degrees	81	92%
Sub-baccalaureate awards	7	8%
Total	**88**	**100%**

Exhibit 14 shows the proportion of community college awards conferred in the greater Los Angeles/Orange County region compared to the number of other postsecondary awards for the programs in this report. The majority of awards conferred in these programs are awarded by community colleges in the greater Los Angeles/Orange County region.

Exhibit 14: Percentage of community college awards compared to other postsecondary institution awards in the Los Angeles/Orange County region

APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target occupations:

- ***Biological Technicians* (19-4021)** Assist biological and medical scientists. Set up, operate, and maintain laboratory instruments and equipment, monitor experiments, collect data and samples, make observations, and calculate and record results. May analyze organic substances, such as blood, food, and drugs.[10]
- ***Chemical Technicians* (19-4031)** Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials for research and development of new products or processes, quality control, maintenance of environmental standards, and other work involving experimental, theoretical, or practical application of chemistry and related sciences.[11]
- ***Clinical Laboratory Technologists and Technicians* (29-2018)** This occupation includes the 2018 SOC occupations: Medical and Clinical Laboratory Technologists (29-2011) and Medical and Clinical Laboratory Technicians (29-2012).[12]
    - ***Medical and Clinical Laboratory Technologists* (29-2011)** Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.
    - ***Medical and Clinical Laboratory Technicians* (29-2012)** Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.
- ***Inspectors, Testers, Sorters, Samplers, and Weighers* (51-9061)** Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled

[10] Biological Technicians (bls.gov)
[11] Chemical Technicians (bls.gov)
[12] Clinical Laboratory Technologists and Technicians (bls.gov)

parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.[13]

and one emerging occupation:

- ***Quality Control Analysts*** **(19-4099.01)** Conduct tests to determine quality of raw materials, bulk intermediate and finished products. May conduct stability sample tests.[14]

Contact information:
Luke Meyer, Director

Los Angeles Center of Excellence

Lmeyer7@mtsac.edu

If for any reason this document is not accessible or if you have specific needs for readability, please contact us and we will do our utmost to accommodate you with a modified version.

CENTER OF EXCELLENCE
FOR LABOR MARKET RESEARCH

POWERED BY
California Community Colleges

DATA SOURCES

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

[13] Quality Control Inspectors (bls.gov)
[14] Quality Control Analysts (onetonline.org)