

Program Endorsement Brief: 0430.00/Biotechnology and Biomedical Technology Biotechnology Research and Development Lab Technician

Orange County Center of Excellence, November 2019

Summary Analysis

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to three middle-skill occupations: Life, Physical, and Social Science Technicians, all other (19-4099), Medical and Clinical Laboratory Technicians (29-2012), and Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061), and one emerging occupation: Quality Control Analysts (19-4099.01). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.¹ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data there appears to be a supply gap for middle-skill biotechnology occupations in the region. **Therefore, the COE endorses this proposed program.** Reasons include:

Demand:

- Over the next five years, there is projected to be **4,001 jobs available annually** in the region due to retirements and workers leaving the field, **which is more than the 123 awards conferred annually** by educational institutions in the region.
 - However, the Life, Physical, and Social Science Technicians, all other (19-4099) SOC code includes a variety of emerging occupations, such as Quality Control Analysts, but also includes emerging occupations not within the biotechnology field. Also, the Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061) SOC code includes job counts across many different manufacturing sub-industries, not solely biotechnology. Since these SOC codes do not solely represent biotechnology occupations, **the number of annual job openings is likely overstated.**
- Over the past 12 months, there were **9,690 online job postings related to these middle-skill biotechnology occupations.** The highest number of job postings were for laboratory technician, quality inspector, laboratory assistant, quality control inspector, and quality control technician.
- The national-level educational attainment data indicates **between 33.9% and 37.7% of workers in the field have completed some college or an associate degree.**

¹ 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.

- However, it is worth noting that typical **entry-level hourly wages** for two of these middle-skill biotechnology occupations (Inspectors, Testers, Sorters, Samplers, and Weighers, and Life, Physical, and Social Science Technicians, all other) throughout the region are **\$14.56 and \$17.24, which are lower than the California Family Needs Calculator (living wage)** for one adult in the region (\$15.04 in Los Angeles County and \$17.36 in Orange County)².
- Experienced middle-skill biotechnology workers can expect to earn between **\$26.18 and \$37.90, which is higher than the living wage estimate for both counties.**

Supply:

- There are **8 community colleges** in the region that have biotechnology and biomedical technology programs, conferring an average of **62 awards annually** between 2015 and 2018.
- Between 2013 and 2016, there were an average of **61 awards conferred annually** in related training programs by non-community college institutions, all of which were generated by **1 individual four-year college** in the region.

Occupational Demand

Exhibit 1, on the following page, shows the five-year occupational demand projections for middle-skill biotechnology occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 3% through 2023. However, there will be more than 4,000 job openings per year through 2023 due to retirements and workers leaving the field.

It is important to note that Emsi uses a single aggregate code that combines Medical and Clinical Laboratory Technologists (29-2011), which is an above middle-skill occupation, and Medical and Clinical Laboratory Technicians (29-2012). Since these two occupations are combined within the dataset, it is likely that the demand and wage data for Medical and Clinical Laboratory Technicians is overstated. It is also important to note that Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061) work in many different manufacturing sub-industries, not only biotechnology. Therefore, the data for this occupation is likely overstated, as it includes Inspectors, Testers, Sorters, Samplers, and Weighers across all industries. Lastly, the Life, Physical, and Social Science Technicians, all other (19-4099) SOC code includes a variety of related emerging occupations such as Quality Control Analysts (19-4099.01); however, all of the included emerging occupations are not solely related to biotechnology. Therefore, the data in Exhibit 1 is likely overstated for life, physical, and social science technician occupations.

² Living wage data was pulled from California Family Needs Calculator on 10/24/19. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties³

Geography	2018 Jobs	2023 Jobs	2018-2023 Change	2018-2023 % Change	Annual Openings
Los Angeles	26,851	25,869	(982)	(4%)	2,739
Orange	11,696	11,615	(81)	(1%)	1,262
Total	38,547	37,483	(1,064)	(3%)	4,001

Wages—Typical entry-level hourly wages for middle-skill biotechnology occupations throughout the region are between \$14.56 and \$18.00.⁴ Entry-level wages for two of these occupations (Inspectors, Testers, Sorters, Samplers, and Weighers; and Life, Physical, and Social Science Technicians, all other) are lower than the California Family Needs Calculator (living wage) hourly wage for one adult in the region (\$15.04 in Los Angeles County and \$17.36 in Orange County)⁵. Experienced workers can expect to earn between \$26.18 and \$37.90, which is higher than the California Family Needs Calculator wage estimates for both counties. Regional average wages are below the average statewide wage of \$24.62 for these occupations. Wage information, by county, is included in Appendix A.

Job Postings—There were 9,690 online job postings related to middle-skill biotechnology occupations listed in the past 12 months. The highest number of job postings were for laboratory technician, quality inspector, laboratory assistant, quality control inspector and quality control technician. The top skills were: quality assurance and control, quality management, micrometers, data entry and calipers. The top three employers, by number of job postings, in the region were: UCLA Health, Arconic, and Quest Diagnostics. Of the 9,690 online job postings, 54% list a minimum education requirement.

Educational Attainment—The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for Life, Physical, and Social Science Technicians, all other, and Medical and Clinical Laboratory Technicians, and a high school diploma for Inspectors, Testers, Sorters, Samplers, and Weighers. The national-level educational attainment data indicates between 33.9% and 37.7% of workers in the field have completed some college or an associate degree. Of the 54% of middle-skill biotechnology job postings listing a minimum education requirement in Los Angeles/Orange County, 86% (4,530) requested a high school diploma and 14% (715) requested an associate degree.

Supply

Community College Supply—Exhibit 2, shows the three-year average number of awards conferred by community colleges in the related TOP code: Biotechnology and Biomedical Technology (0430.00). The colleges with the most completions in the region are Pasadena, Citrus,

³ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁴ Entry-level wage is defined as the twenty-fifth percentile hourly wage. Wages for experienced workers are defined as the seventy-fifth percentile hourly wage.

⁵ Living wage data was pulled from California Family Needs Calculator on 11/13/19. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

and Santa Ana. Over the past 12 months, there were three other related program recommendation requests from regional community colleges.

Exhibit 2: Regional community college awards (certificates and degrees), 2015-2018

TOP Code	Program	College	2015-2016 Awards	2016-2017 Awards	2017-2018 Awards	3-Year Award Average
0430.00	Biotechnology and Biomedical Technology	Citrus	10	18	16	15
		LA Mission	0	0	14	5
		LA Trade	3	3	5	4
		Pasadena	14	16	19	16
		LA	27	37	54	39
		Fullerton	4	4	3	4
		Irvine	1	8	13	7
		Santa Ana	3	13	13	10
		Santiago Canyon	5	0	0	2
		OC	13	25	29	22
		Total/Average	40	62	83	62

Non-Community College Supply—It is important to consider the supply from other higher education institutions in the region that provide training programs for middle-skill biotechnology occupations. Exhibit 3 shows the annual and three-year average number of awards conferred by one local college in the related Classification of Instructional Programs (CIP) Code: Biomedical Technology/Technician (15.0401). Due to different data collection periods, the most recent three-year period of available data is from 2013 to 2016. Between 2013 and 2016, other colleges in the region conferred an average of 61 awards annually in related training programs.

Exhibit 3: Regional non-community college awards, 2013-2016

CIP Code	Program	College	2013-2014 Awards	2014-2015 Awards	2015-2016 Awards	3-Year Award Average
15.0401	Biomedical Technology/Technician	Southern California Institute of Technology	59	61	62	61
		Total/Average	59	61	62	61

Appendix A: Occupational demand and wage data by county

Exhibit 4. Los Angeles County

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)	16,613	15,147	(1,466)	(9%)	1,903	\$14.48	\$19.07	\$26.04
Clinical Laboratory Technologists and Technicians (29-2018)	8,354	8,777	423	5%	604	\$17.78	\$24.47	\$37.44
Life, Physical, and Social Science Technicians, All Other (19-4099)	1,883	1,944	61	3%	232	\$17.33	\$23.30	\$29.33
Total	26,851	25,869	(982)	(4%)	2,739			

Exhibit 5. Orange County

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)	7,984	7,606	(378)	(5%)	927	\$14.74	\$19.40	\$26.47
Clinical Laboratory Technologists and Technicians (29-2018)	2,954	3,198	244	8%	235	\$18.66	\$25.69	\$39.30
Life, Physical, and Social Science Technicians, All Other (19-4099)	758	811	53	7%	100	\$16.95	\$22.80	\$28.66
Total	11,696	11,615	(81)	(1%)	1,262			

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)	24,597	22,753	(1,844)	(7%)	2,830	\$14.56	\$19.17	\$26.18
Clinical Laboratory Technologists and Technicians (29-2018)	11,308	11,975	667	6%	838	\$18.00	\$24.80	\$37.90
Life, Physical, and Social Science Technicians, All Other (19-4099)	2,642	2,755	113	4%	332	\$17.24	\$23.15	\$29.13
Total	38,547	37,483	(1,064)	(3%)	4,001			

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- Employment Development Department, Unemployment Insurance Dataset
- Living Insight Center for Community Economic Development
- California Community Colleges Chancellor’s Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor’s Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

Jesse Crete, Director
 Center of Excellence, Orange County
crete_jesse@rsccd.edu

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