




CENTER OF EXCELLENCE  
FOR LABOR MARKET RESEARCH  
**ORANGE COUNTY**

A photograph of two scientists in a laboratory. They are wearing white lab coats, blue hairnets, safety goggles, and blue gloves. They are looking at something on a lab bench. The background is slightly blurred, showing lab equipment.

ORANGE COUNTY SECTOR PROFILE  
SUPPLEMENTAL APPENDICES:  
**LIFE SCIENCES AND  
BIOTECHNOLOGY**  
**2024**

**ORANGE COUNTY  
REGIONAL CONSORTIUM**

**WORKFORCE  
DEVELOPMENT ALLIANCE**



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## INTRODUCTION

The Orange County Center of Excellence for Labor Market Research (OC COE) is releasing a series of 12 sector profiles to provide a comprehensive analysis of Orange County's occupational landscape. This series dives into each of the 12 community college sectors, offering historical and projected occupational insights while building upon foundational research established through the Orange County Labor Market Overview.

In addition to the profiles themselves, supplemental appendices for each sector are being issued to provide detailed demand and supply data. The data in these appendices are presented to the region with the intent of being utilized for grant applications, project proposals, and the like. The full [Life Sciences and Biotechnology Sector Profile](#) is available on the COE Website.

Occupations are denoted throughout this report in italics, with their corresponding SOC code in parentheses. Middle-skill occupations have no special notation however above middle-skill occupations are denoted with a <sup>^</sup>. There are no below middle-skill occupations in this sector; if there had been, they would have been denoted with an <sup>\*</sup>. Occupations that are on U.S. News & World Report's 2024 100 Best Jobs list are denoted by a #, such as *Bioengineers and Biomedical Engineers (17-2031)<sup>^</sup>#*.

By examining this labor market data, in conjunction with the individual sector profiles, the OC COE seeks to highlight underlying dynamics and intricacies shaping each sector in Orange County. Community colleges and regional stakeholders can use this information for strategic planning and data-informed decision making to address workforce needs in this sector.

## APPENDIX E: LIFE SCIENCES AND BIOTECHNOLOGY DEMAND – LABOR MARKET DATA

Exhibit 23 shows the traditional labor market data points for all 8 occupations analyzed in the Life Sciences and Biotechnology Sector Profile. Middle-skill occupations are denoted with medium shading and above middle-skill occupations are indicated with dark shading. There are no below middle-skill occupations in this sector.

**Exhibit 23: Occupational Demand for the 8 Life Sciences and Biotechnology Occupations**

Skill Level	SOC	Occupation	2022 Jobs	2027 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
Middle-Skill	51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	7,160	7,132	(28)	0%	885	\$17.73	\$22.16	\$29.01	High school diploma or equivalent	None	Moderate-term on-the-job training
	29-2018	Clinical Laboratory Technologists and Technicians	3,512	4,050	538	15%	368	\$23.26	\$28.44	\$40.75	Bachelor's degree	None	None
	19-4099	Life, Physical, and Social Science Technicians, All Other	1,067	1,110	43	4%	142	\$20.41	\$23.23	\$32.10	Associate degree	None	None
	49-9062	Medical Equipment Repairers	868	938	70	8%	108	\$23.02	\$30.90	\$40.61	Associate degree	None	Moderate-term on-the-job training
	19-4031	Chemical Technicians	798	816	18	2%	102	\$19.27	\$24.17	\$31.40	Associate degree	None	Moderate-term on-the-job training
	19-4021	Biological Technicians	353	395	42	12%	57	\$21.98	\$28.50	\$35.17	Bachelor's degree	None	None
Above Middle-Skill	19-1029	Biological Scientists, All Other	648	682	34	5%	63	\$31.24	\$47.38	\$60.47	Bachelor's degree	None	None
	17-2031	Bioengineers and Biomedical Engineers	405	437	32	8%	30	\$40.23	\$48.98	\$61.61	Bachelor's degree	None	None

## APPENDIX F: LIFE SCIENCES AND BIOTECHNOLOGY SUPPLY – COMMUNITY COLLEGE AND NON-COMMUNITY COLLEGE AWARDS

This appendix provides labor market supply information, which equates to educational awards, for the Life Sciences and Biotechnology sector.

Exhibit 24 shows the distribution of community college awards in Orange County by program in the Life Sciences and Biotechnology sector.

**Exhibit 24: Life Sciences and Biotechnology Community College Awards by Program, 2020-2023**

TOP	Program	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
0430.00	Biotechnology and Biomedical Technology	41	55	100	65
0934.60	Biomedical Instrumentation	-	-	1	0
0934.70	Electron Microscopy	-	-	-	-
0954.00	Chemical Technology	-	-	-	-
0955.00	Laboratory Science Technology	-	-	-	-
0956.80	Industrial Quality Control	-	-	-	-
1205.00	Medical Laboratory Technology	27	17	25	23
<b>Total/Average</b>		<b>68</b>	<b>72</b>	<b>126</b>	<b>89</b>

Exhibit 25 details Life Sciences and Biotechnology sector supply award counts by Orange County community college.

**Exhibit 25: Life Sciences and Biotechnology Community College Awards by College, 2020-2023**

College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
Coastline	-	-	-	-
Cypress	-	-	-	-
Fullerton	13	3	12	9
Golden West	-	-	-	-
Irvine Valley	14	23	11	16
North Orange Adult	-	-	-	-
Orange Coast	-	-	-	-
Saddleback	27	17	25	23
Santa Ana	5	13	21	13
Santiago Canyon	9	16	57	27
<b>Total/Average</b>	<b>68</b>	<b>72</b>	<b>126</b>	<b>89</b>

Exhibit 26 provides the number of Life Sciences and Biotechnology sector awards conferred by non-community college programs.

**Exhibit 26: Life Sciences and Biotechnology Non-Community College Awards by Program, 2019-2022**

CIP	Program	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
14.0501	Bioengineering and Biomedical Engineering	178	188	221	196
15.0401	Biomedical Technology/Technician	46	50	39	45
26.0101	Biology/Biological Sciences, General	1,080	1,022	1,007	1,036
26.0202	Biochemistry	86	95	95	92
26.0401	Cell/Cellular Biology and Histology	4	9	3	5
26.0403	Anatomy	4	-	7	4
26.0406	Cell/Cellular and Molecular Biology	11	14	6	10
26.0503	Medical Microbiology and Bacteriology	3	3	2	3
26.0508	Microbiology and Immunology	18	22	24	21
26.0801	Genetics, General	3	9	6	6
26.0910	Pathology/Experimental Pathology	1	1	-	1
26.1001	Pharmacology	8	10	11	10
26.1199	Biomathematics, Bioinformatics, and Computational Biology, Other	8	6	4	6
26.1201	Biotechnology	29	31	14	25
26.1310	Ecology and Evolutionary Biology	14	12	19	15
26.1399	Ecology, Evolution, Systematics and Population Biology, Other	13	10	8	10
26.1501	Neuroscience	8	8	13	10
26.1503	Neurobiology and Anatomy	51	62	60	58
26.1504	Neurobiology and Behavior	15	18	23	19
30.2701	Human Biology	62	92	106	87
40.0501	Chemistry, General	268	211	208	229
40.0509	Environmental Chemistry	-	-	1	0
<b>Total/Average</b>		<b>1,910</b>	<b>1,873</b>	<b>1,877</b>	<b>1,887</b>

Exhibit 27 includes the number of Life Sciences and Biotechnology sector awards conferred by non-community college institutions.

**Exhibit 27: Life Sciences and Biotechnology Non-Community College Awards by Institution, 2019-2021**

<b>Institution</b>	<b>2019-2020 Awards</b>	<b>2020-2021 Awards</b>	<b>2021-2022 Awards</b>	<b>3-Year Award Average</b>
California Intercontinental University	-	-	-	-
California State University-Fullerton	337	272	356	322
Chapman University	62	80	59	67
Concordia University-Irvine	27	24	34	28
Southern California Institute of Technology	65	60	42	56
University of California-Irvine	1,397	1,414	1,362	1,391
Vanguard University of Southern California	22	23	24	23
<b>Total/Average</b>	<b>1,910</b>	<b>1,873</b>	<b>1,877</b>	<b>1,887</b>

## APPENDIX G: LIFE SCIENCES AND BIOTECHNOLOGY CIP CODES

This appendix provides the list of CIP codes that crosswalk to the occupations in the Life Sciences and Biotechnology sector but did not have any supply (Exhibit 28).

**Exhibit 28: List of CIP with no Supply in Orange County**

CIP	Program	CIP	Program
14.0702	Chemical and Biomolecular Engineering	26.0509	Infectious Disease and Global Health
14.4501	Biological/Biosystems Engineering	26.0701	Zoology/Animal Biology
15.0702	Quality Control Technology/Technician	26.0702	Entomology
26.0102	Biomedical Sciences, General	26.0707	Animal Physiology
26.0204	Molecular Biology	26.0708	Animal Behavior and Ethology
26.0207	Structural Biology	26.0709	Wildlife Biology
26.0208	Photobiology	26.0802	Molecular Genetics
26.0209	Radiation Biology/Radiobiology	26.0803	Microbial and Eukaryotic Genetics
26.0210	Biochemistry and Molecular Biology	26.0804	Animal Genetics
26.0299	Biochemistry, Biophysics and Molecular Biology, Other	26.0805	Plant Genetics
26.0301	Botany/Plant Biology	26.0807	Genome Sciences/Genomics
26.0305	Plant Pathology/Phytopathology	26.0899	Genetics, Other
26.0307	Plant Physiology	26.1004	Toxicology
26.0308	Plant Molecular Biology	26.1101	Biometry/Biometrics
26.0399	Botany/Plant Biology, Other	26.1102	Biostatistics
26.0404	Developmental Biology and Embryology	26.1103	Bioinformatics
26.0407	Cell Biology and Anatomy	26.1104	Computational Biology
26.0499	Cell/Cellular Biology and Anatomical Sciences, Other	26.1301	Ecology
26.0502	Microbiology, General	26.1302	Marine Biology and Biological Oceanography
26.0504	Virology	26.1303	Evolutionary Biology
26.0505	Parasitology	26.1304	Aquatic Biology/Limnology
26.0506	Mycology	26.1305	Environmental Biology
26.0507	Immunology	26.1306	Population Biology



<b>CIP</b>	<b>Program</b>	<b>CIP</b>	<b>Program</b>
26.1307	Conservation Biology	41.0301	Chemical Technology/Technician
26.1308	Systematic Biology/Biological Systematics	41.0303	Chemical Process Technology
26.1311	Epidemiology and Biostatistics	41.0399	Physical Science Technologies/Technicians, Other
26.1502	Neuroanatomy	41.9999	Science Technologies/Technicians, Other
26.1599	Neurobiology and Neurosciences, Other	42.2706	Behavioral Neuroscience
26.9999	Biological and Biomedical Sciences, Other	51.0802	Clinical/Medical Laboratory Assistant
27.0306	Mathematical Biology	51.1001	Blood Bank Technology Specialist
30.3201	Marine Sciences	51.1002	Cytotechnology/Cytotechnologist
40.0401	Atmospheric Sciences and Meteorology, General	51.1003	Hematology Technology/Technician
40.0502	Analytical Chemistry	51.1004	Clinical/Medical Laboratory Technician
40.0503	Inorganic Chemistry	51.1005	Clinical Laboratory Science/Medical Technology/Technologist
40.0504	Organic Chemistry	51.1007	Histologic Technology/Histotechnologist
40.1001	Materials Science	51.1008	Histologic Technician
40.1002	Materials Chemistry	51.1010	Cytogenetics/Genetics/Clinical Genetics Technology/Technologist
41.0000	Science Technologies/Technicians, General	51.1099	Clinical/Medical Laboratory Science and Allied Professions, Other
41.0101	Biology/Biotechnology Technology/Technician		



### 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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