

Biological Technicians Labor Market Information Report Berkeley City College

Prepared by the San Francisco Bay Center of Excellence
for Labor Market Research
April 2019

Recommendation

Based on all available data, there appears to be a significant undersupply of Biological Technicians compared to the demand for this occupation in the Bay region and in the East Bay sub-region (Alameda and Contra Costa Counties.) There is a projected annual gap of about 301 students in the Bay region and 99 students in the East Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0430.00 - Biotechnology and Biomedical Technology in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Berkeley City College and in the region.

Introduction

This report profiles Biological Technicians in the 12 county Bay region and in the East Bay sub-region for a proposed new Biotechnology Laboratory Assistant program at Berkeley City College.

- **Biological Technicians (SOC 19-4021):** Assist biological and medical scientists in laboratories. Set up, operate, and maintain laboratory instruments and equipment, monitor experiments, make observations, and calculate and record results. May analyze organic substances, such as blood, food, and drugs.

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 35%

Occupational Demand

Table 1. Employment Outlook for Biological Technicians in Bay Region

| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Openings | Average Annual Openings | 10% Hourly Wage | Median Hourly Wage |
|------------------------|-----------|-----------|-------------|---------------|---------------|-------------------------|-----------------|--------------------|
| Biological Technicians | 4,496 | 4,959 | 463 | 10% | 2,716 | 543 | \$16.69 | \$25.60 |

Source: EMSI 2019.1

Bay Region includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Biological Technicians in East Bay Sub-Region

| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Openings | Average Annual Openings | 10% Hourly Wage | Median Hourly Wage |
|------------------------|-----------|-----------|-------------|---------------|---------------|-------------------------|-----------------|--------------------|
| Biological Technicians | 1,730 | 1,907 | 176 | 10% | 1,025 | 205 | \$16.20 | \$23.99 |

Source: EMSI 2019.1

East Bay Sub-Region includes Alameda and Contra Costa Counties

Job Postings in Bay Region and East Bay Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (March 2018 - Feb 2019)

| Occupation | Bay Region | East Bay |
|------------------------|------------|----------|
| Biological Technicians | 1,377 | 354 |

Source: Burning Glass

Table 4. Top Job Titles for Biological Technicians for latest 12 months (March 2018 - Feb 2019)

| Common Title | Bay | East Bay | Common Title | Bay | East Bay |
|---|-----|----------|---|-----|----------|
| Research Associate | 555 | 134 | Research Associate, Information And Technology Industry | 15 | 3 |
| Development Associate | 98 | 24 | Senior Research Associate, Oncology | 11 | 0 |
| Staff Research Associate | 68 | 26 | Research Associate, Cell Culturing | 9 | 3 |
| Research Technician | 52 | 17 | Research Associate, Oncology | 9 | 0 |
| Biological Science Technician | 36 | 10 | Research Associate, Drug Discovery | 8 | 0 |
| Research Associate, Laboratory | 32 | 0 | Research Associate, Flow Cytometry | 8 | 4 |
| Senior Associate Research Associate, Research | 31 | 9 | Research Associate, Genome, Engineering | 8 | 4 |
| Senior Research Associate | 26 | 1 | Research Associate, Pharmacology | 8 | 1 |
| Research Associate, Engineering | 19 | 3 | Biological Technician | 7 | 5 |
| Staff Research Associate, C++ | 19 | 19 | Medical Device Specialist, Microbiology | 7 | 3 |

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Biological Technicians in Bay Region

| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2017) | Jobs in Industry (2022) | % Change (2017-22) | % in Industry (2017) |
|---|-------------------------|-------------------------|--------------------|----------------------|
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 1,504 | 1,572 | 1% | 34.1% |
| Research and Development in Biotechnology (except Nanobiotechnology) (541714) | 769 | 818 | 44% | 17.7% |
| Colleges, Universities, and Professional Schools (State Government) (902612) | 356 | 357 | (3%) | 7.8% |
| Colleges, Universities, and Professional Schools (611310) | 323 | 324 | 6% | 7.0% |
| Pharmaceutical Preparation Manufacturing (325412) | 323 | 311 | 2% | 6.7% |
| Federal Government, Civilian, Excluding Postal Service (901199) | 167 | 165 | (2%) | 3.6% |
| General Medical and Surgical Hospitals (622110) | 139 | 138 | (5%) | 3.0% |
| Testing Laboratories (541380) | 128 | 130 | 1% | 2.8% |
| Medicinal and Botanical Manufacturing (325411) | 100 | 111 | 42% | 2.4% |
| State Government, Excluding Education and Hospitals (902999) | 65 | 66 | 6% | 1.4% |
| Colleges, Universities, and Professional Schools (Local Government) (903612) | 65 | 64 | 5% | 1.4% |
| Local Government, Excluding Education and Hospitals (903999) | 56 | 57 | 5% | 1.2% |
| In-Vitro Diagnostic Substance Manufacturing (325413) | 51 | 53 | 29% | 1.1% |
| Research and Development in Nanotechnology (541713) | 56 | 48 | (16%) | 1.1% |

Source: EMSI 2019.1

Table 6. Top Employers Posting Jobs for Biological Technicians in Bay Region and East Bay Sub-Region (March 2018 - Feb 2019)

| Employer | Bay | Employer | Bay | Employer | East Bay |
|--|-----|---------------------------|-----|-----------------------------------|----------|
| Bristol-Myers Squibb | 34 | Buck Institute | 12 | Uc San Diego | 26 |
| Gladstone Institutes | 33 | Rd Partners | 12 | University Of California Berkeley | 19 |
| Prime Therapeutics | 31 | Intrexon Corporation | 10 | Zymergen | 16 |
| Ngm Biopharmaceuticals | 27 | Orchard Therapeutics | 9 | University California | 12 |
| Uc San Diego | 26 | Synthego | 9 | 10X Genomics | 7 |
| University California | 25 | 10X Genomics | 8 | Gilead Sciences | 7 |
| Zymergen | 20 | Audentes Therapeutics | 8 | University Of Carlifornia | 7 |
| Biophase Solutions Incorporated | 19 | Fluidigm Corporation | 8 | Sangamo Therapeutics | 6 |
| University Of California Berkeley | 19 | Fountain Group | 8 | Caribou Biosciences, Inc | 5 |
| Biomarin Pharmaceutical Incorporated | 18 | Twist Bioscience | 8 | Covance Incorporated | 5 |
| Gilead Sciences | 17 | Bsi | 7 | Kite Pharma | 5 |
| Bepc | 15 | Chan Zuckerberg Biohub | 7 | Pivot Bio | 5 |
| Ascent | 14 | Nektar Therapeutics | 7 | US Government | 5 |
| Department Interior | 14 | Sangamo Therapeutics | 7 | Aduro Biotech, Inc | 4 |
| US Government | 13 | UC San Francisco | 7 | Bio-Rad Laboratories | 4 |
| University Of California San Francisco | 13 | University Of Carlifornia | 7 | Caribou Biosciences | 4 |

Source: Burning Glass

Educational Supply

There are 9 community colleges in the Bay Region issuing 242 awards on average annually (last 3 years) on TOP 0430.00 - Biotechnology and Biomedical Technology. There are five colleges in the East Bay Sub-Region issuing 106 awards on average annually (last 3 years) on this TOP code.

Table 7. Awards on TOP 0430.00 - Biotechnology and Biomedical Technology in the Bay Region

| College | Sub-Region | Headcount | Associates | Certificates | Total |
|-------------------------------------|---------------|------------|------------|--------------|------------|
| Berkeley City | East Bay | 57 | 4 | 4 | 8 |
| Contra Costa | East Bay | 28 | 2 | 6 | 8 |
| Laney | East Bay | 96 | 9 | 41 | 50 |
| Merritt | East Bay | 177 | | 3 | 3 |
| Ohlone | East Bay | 140 | 4 | 33 | 37 |
| San Francisco | Mid-Peninsula | 301 | 5 | 55 | 60 |
| San Mateo | Mid-Peninsula | n/a | 1 | 5 | 6 |
| Skyline | Mid-Peninsula | 52 | 4 | 0 | 4 |
| Solano | North Bay | 88 | 27 | 38 | 65 |
| Total Bay Region | | 939 | 56 | 186 | 242 |
| Total SC-Monterey Sub-Region | | 498 | 19 | 87 | 106 |

Source: IPEDS, Data Mart and Launchboard

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 543 annual openings for Biological Technicians and 242 annual (3-year average) awards for an annual undersupply of 301 students. In the East Bay Sub-Region, there is also a gap with 205 annual openings and 106 annual (3-year average) awards for an annual undersupply of 99 students.

Biological Technicians in 12 County Bay Region and in East Bay Sub-Region, 2019

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0430.00 - Biotechnology and Biomedical Technology

| 2015-16 | Bay (All CTE Programs) | Berkeley City College (All CTE Programs) | State (0430.00) | Bay (0430.00) | East Bay (0430.00) | Berkeley City College (0430.00) |
|---|------------------------|--|-----------------|---------------|--------------------|---------------------------------|
| % Employed Four Quarters After Exit | 74% | 54% | 72% | 73% | 66% | n/a |
| Median Quarterly Earnings Two Quarters After Exit | \$10,550 | \$7,380 | \$9,134 | \$9,871 | \$9,228 | n/a |
| Median % Change in Earnings | 46% | 38% | 82% | 107% | 44% | n/a |
| % of Students Earning a Living Wage | 63% | 45% | 54% | 57% | 60% | n/a |

Source: Launchboard Pipeline (version available on 3/26/19)

Skills and Education

Table 9. Top Skills for Biological Technicians in Bay Region (March 2018 - Feb 2019)

| Skill | Postings | Skill | Postings | Skill | Postings |
|---|----------|--|----------|---------------------------------|----------|
| Molecular Biology | 809 | qPCR | 229 | Record Keeping | 115 |
| Experiments | 635 | Tissue Culture | 174 | Quality Assurance and Control | 112 |
| Biology | 583 | Microscope | 167 | Drug Discovery | 111 |
| Cell Culturing | 549 | Chemistry | 164 | Protein Expression | 101 |
| Biochemistry | 506 | Fluorescence-activated cell sorting (FACS) | 164 | Prepare Compounds and Reagents | 99 |
| Cell Biology | 467 | Assay Development | 159 | Molecular Cloning | 96 |
| Biochemical and Cell-Based Assays | 381 | Oncology | 141 | Sterile Procedures / Techniques | 95 |
| Flow Cytometry | 378 | Transfection | 137 | Fluorescence | 93 |
| Biotechnology | 358 | Microbiology | 134 | Genetics | 90 |
| DNA | 357 | Cancer knowledge | 133 | Laboratory Equipment | 83 |
| Immunology | 317 | Genome | 131 | DNA Analysis | 82 |
| Enzyme-Linked Immunosorbent Assay (ELISA) | 290 | Next Generation Sequencing (NGS) | 128 | Experimental Design | 81 |
| Data Analysis | 287 | Proteins | 128 | Protein Purification | 79 |
| Mammalian Cell Culture | 275 | Electrophoresis | 124 | Scheduling | 79 |
| Western Blot | 236 | CRISPR | 117 | Lab Safety | 78 |

Table 10. Education Requirements for Biological Technicians in Bay Region

Note: 11% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

| Education (minimum advertised) | Latest 12 Mos. Postings |
|------------------------------------|-------------------------|
| High school or vocational training | 16 (5%) |
| Associate Degree | 170 (49%) |
| Bachelor's Degree or Higher | 162 (47%) |

Source: Burning Glass

Methodology

Occupations for this report were identified by use of skills listed in O*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Biological Technicians in 12 County Bay Region and in East Bay Sub-Region, 2019

Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCCO Data Mart.

Sources

O*Net Online
Labor Insight/Jobs (Burning Glass)
Economic Modeling Specialists International (EMSI)
CTE LaunchBoard www.calpassplus.org/Launchboard/
Statewide CTE Outcomes Survey
Employment Development Department Unemployment Insurance Dataset
Living Insight Center for Community Economic Development
Chancellor's Office MIS system

Contacts

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