



Hawaii has a modest industry presence in the biosciences, with its firms operating 208 business establishments that employed 3,161 in 2016. The majority of jobs are in the research, testing and medical labs subsector which employs two of three Hawaiian bioscience workers. That subsector experienced a small employment gain from 2014 through 2016, though overall the bioscience industry had an employment decline of 2.6 percent. Hawaiian inventors have been awarded 193 patents in bioscience-related technology classes since 2014, with the majority in medical and surgical devices.

## Bioscience Performance Metrics

### Summary of State Performance in Selected Bioscience-related Metrics

| Metric   | Hawaii    | United States | Quintile |
|--|-----------|---------------|----------|
| <b>Bioscience Industry, 2016</b>                                     |           |               |          |
| Bioscience Industry Employment                                       | 3,161     | 1,743,639     | V        |
| Bioscience Industry Location Quotient                                | 0.42      | n/a           | V        |
| Bioscience Industry Establishments                                   | 208       | 85,702        | V        |
| <b>Academic Bioscience R&amp;D Expenditures, FY 2016</b>             |           |               |          |
| Bioscience R&D (\$ thousands)  | \$134,437 | \$41,972,205  | IV       |
| Bioscience Share of Total R&D  | 43%       | 62%           | V        |
| Bioscience R&D Per Capita  | \$94      | \$130         | III      |
| <b>NIH Funding, FY 2017</b>  |           |               |          |
| Funding (\$ thousands)   | \$49,501  | \$26,150,485  | IV       |
| Funding Per Capita   | \$35      | \$80          | IV       |
| <b>Bioscience Venture Capital Investments, 2014-17 (\$ millions)</b> | \$19.84   | \$66,168.62   | IV       |
| <b>Bioscience and Related Patents, 2014-17</b>                       | 193       | 102,862       | V        |

State ranking figures for bioscience performance metrics are calculated as quintiles, where I = top quintile, III = middle quintile, and V = bottom quintile. For source notes, see end of State Profile.

| Industry Subsector                                       | Hawaii   |                  | United States |                  |
|--|----------|------------------|---------------|------------------|
|  | 2016     | 2014-2016 Change | 2016          | 2014-2016 Change |
| <b>Agricultural Feedstock and Industrial Biosciences</b> |          |                  |               |                  |
| Establishments   | 6        | -14.3%           | 1,709         | -3.2%            |
| Employment   | 35       | -55.6%           | 68,027        | -1.2%            |
| Location Quotient  | 0.12     |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 6.03     |                  |               |                  |
| Total Employment Impact                                  | 214      |                  |               |                  |
| Average Annual Wage                                      | \$25,017 | -44.0%           | \$80,961      | 2.7%             |
| <b>Bioscience-Related Distribution</b>                   |          |                  |               |                  |
| Establishments   | 82       | -6.7%            | 39,149        | 3.8%             |
| Employment   | 777      | -1.7%            | 469,640       | 3.7%             |
| Location Quotient  | 0.38     |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 1.93     |                  |               |                  |
| Total Employment Impact                                  | 1,497    |                  |               |                  |
| Average Annual Wage                                      | \$61,189 | 1.7%             | \$93,677      | 2.7%             |
| <b>Drugs and Pharmaceuticals</b>                         |          |                  |               |                  |
| Establishments   | 3        | -25.0%           | 3,754         | 13.7%            |
| Employment   | 58       | -40.6%           | 299,113       | 2.0%             |
| Location Quotient  | 0.04     |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 4.20     |                  |               |                  |
| Total Employment Impact                                  | 244      |                  |               |                  |
| Average Annual Wage                                      | \$51,767 | -8.2%            | \$113,815     | -3.2%            |
| <b>Medical Devices and Equipment</b>                     |          |                  |               |                  |
| Establishments   | 1        | -37.5%           | 8,083         | 5.9%             |
| Employment   | 14       | 12.9%            | 359,293       | 2.9%             |
| Location Quotient  | 0.01     |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 2.42     |                  |               |                  |
| Total Employment Impact                                  | 33       |                  |               |                  |
| Average Annual Wage                                      | \$70,964 | 44.7%            | \$84,746      | 6.5%             |
| <b>Research, Testing and Medical Laboratories</b>        |          |                  |               |                  |
| Establishments   | 116      | 11.4%            | 33,007        | 13.1%            |
| Employment   | 2,277    | 0.5%             | 547,566       | 8.2%             |
| Location Quotient  | 0.96     |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 1.85     |                  |               |                  |
| Total Employment Impact                                  | 4,205    |                  |               |                  |
| Average Annual Wage                                      | \$58,705 | 0.8%             | \$106,942     | 5.5%             |
| <b>Total Bioscience Industry</b>                         |          |                  |               |                  |
| Establishments   | 208      | 1.5%             | 85,702        | 7.7%             |
| Employment   | 3,161    | -2.6%            | 1,743,639     | 4.4%             |
| Location Quotient  | 0.42     |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 1.96     |                  |               |                  |
| Total Employment Impact                                  | 6,193    |                  |               |                  |
| Average Annual Wage                                      | \$58,863 | 1.0%             | \$98,961      | 3.1%             |
| <b>Total Private Sector</b>                              |          |                  |               |                  |
| Establishments   | 37,750   | 3.8%             | 9,243,034     | 3.4%             |
| Employment   | 524,647  | 4.1%             | 120,884,570   | 4.2%             |
| Average Annual Wage                                      | \$45,540 | 7.0%             | \$53,354      | 4.3%             |

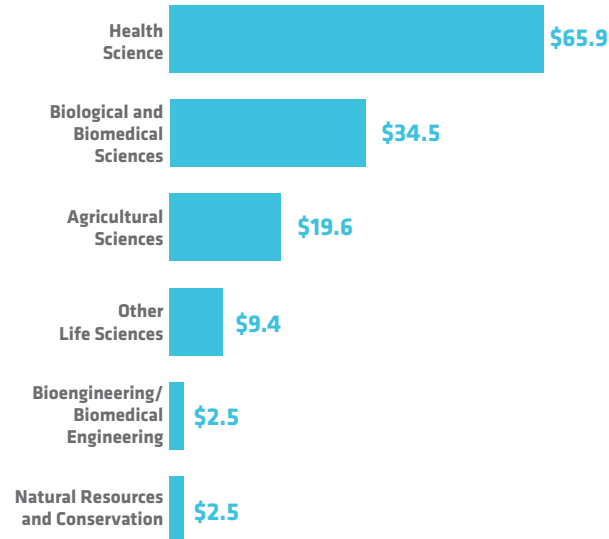
Note: U.S. employment metrics include Puerto Rico.

## Bioscience Research in Hawaii

### Bioscience Academic R&D Expenditures

\$ Millions

FY 2016



### NIH Awards

\$ Millions

FY 2014-2017

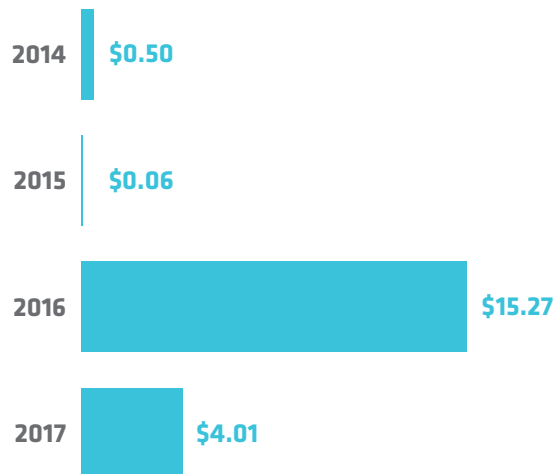


## Bioscience Venture Capital in Hawaii

### Bioscience-Related Venture Capital Investments

\$ Millions

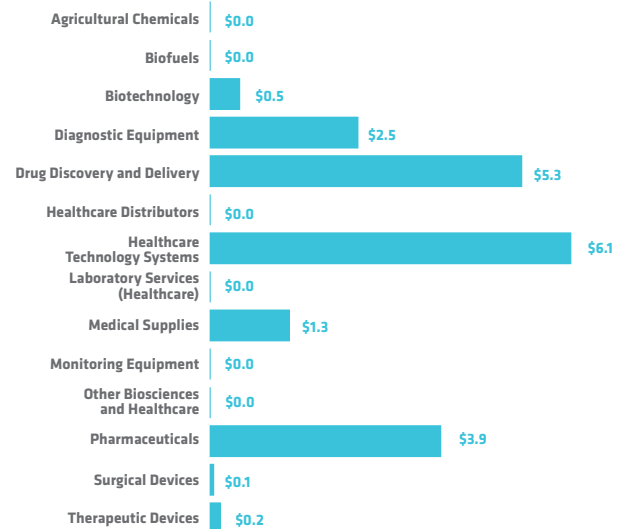
2014-2017



### Bioscience-Related Venture Capital Investments by Segment

\$ Millions

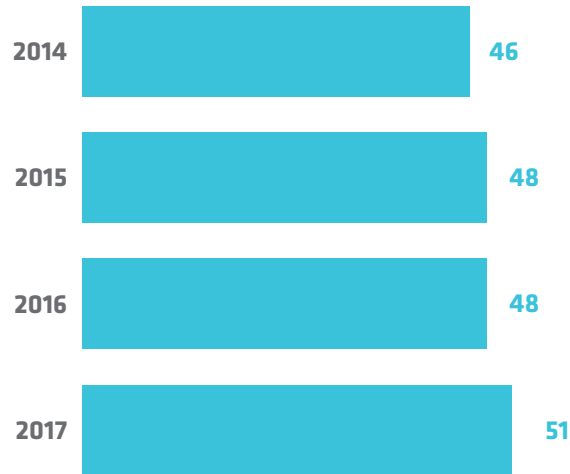
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## Bioscience Patents in Hawaii

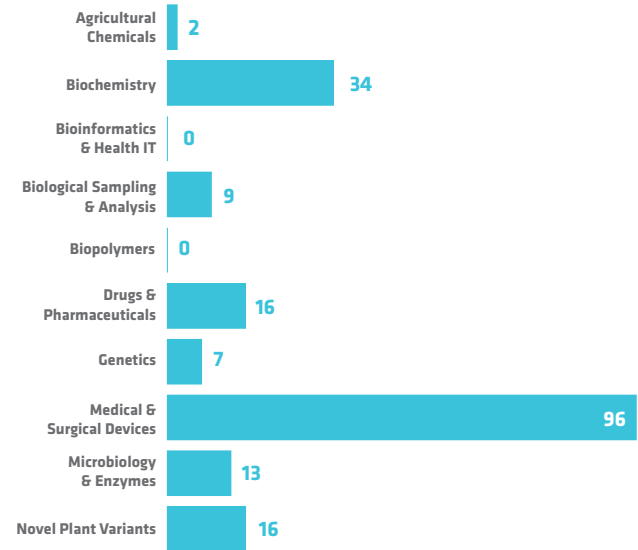
Bioscience-Related U.S. Patents

2014-2017



Bioscience-Related U.S. Patents by Segment

2014-2017



### Source Notes

**Employment, Establishments and Wages:** U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), enhanced file from IMPLAN.

**Employment Multipliers:** IMPLAN state-level Input/Output models.

**Academic R&D Expenditures:** National Science Foundation (NSF) Higher Education Research and Development (HERD) Survey.

**NIH Funding:** National Institutes of Health, NIH Awards by Location & Organization (summary information within RePORT database).

**Venture Capital:** PitchBook Data, Inc.

**Patents:** U.S. Patent & Trademark Office data from Clarivate Analytics' Derwent Innovation patent analysis database. For a more detailed discussion of the data and methodology used, please see the Appendix to the full national report.