



Minnesota is home to a large, specialized, and growing bioscience industry. State employers have increased employment by 4.3 percent since 2014 to reach 54,414 industry jobs that span 1,780 business establishments across the state. Job gains have come from throughout the industry with all five major subsectors contributing to the overall growth. The state has a 55 percent greater concentration of bioscience employment relative to the national average—its location quotient is 1.55. Among the subsectors, Minnesota has a specialized concentration in three—medical devices and equipment; agricultural feedstock and industrial biosciences; and bioscience-related distribution. The state’s bioscience companies have received \$1.1 billion in venture capital investments since 2014 which is among the top tier of states in volume. The state continues to be a leader in the medical device subsector, so it is not surprising that the focus in both venture funding and patent awards is in this area.

## Bioscience Performance Metrics

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

| Metric   | Minnesota  | United States | Quintile |
|--|------------|---------------|----------|
| <b>Bioscience Industry, 2016</b>                                     |            |               |          |
| Bioscience Industry Employment                                       | 54,414     | 1,743,639     | II       |
| Bioscience Industry Location Quotient                                | 1.55       | n/a           | I        |
| Bioscience Industry Establishments                                   | 1,780      | 85,702        | II       |
| <b>Academic Bioscience R&amp;D Expenditures, FY 2016</b>             |            |               |          |
| Bioscience R&D (\$ thousands)  | \$656,762  | \$41,972,205  | II       |
| Bioscience Share of Total R&D  | 72%        | 62%           | I        |
| Bioscience R&D Per Capita  | \$119      | \$130         | III      |
| <b>NIH Funding, FY 2017</b>  |            |               |          |
| Funding (\$ thousands)   | \$557,124  | \$26,150,485  | II       |
| Funding Per Capita   | \$100      | \$80          | I        |
| <b>Bioscience Venture Capital Investments, 2014-17 (\$ millions)</b> | \$1,131.61 | \$66,168.62   | I        |
| <b>Bioscience and Related Patents, 2014-17</b>                       | 6,813      | 102,862       | I        |

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                                       | Minnesota |                  | United States |                  |
|--|-----------|------------------|---------------|------------------|
|  | 2016      | 2014-2016 Change | 2016          | 2014-2016 Change |
| <b>Agricultural Feedstock and Industrial Biosciences</b> |           |                  |               |                  |
| Establishments   | 50        | -5.7%            | 1,709         | -3.2%            |
| Employment   | 1,786     | 1.5%             | 68,027        | -1.2%            |
| Location Quotient  | 1.30      |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 10.59     |                  |               |                  |
| Total Employment Impact                                  | 18,910    |                  |               |                  |
| Average Annual Wage                                      | \$66,641  | 0.3%             | \$80,961      | 2.7%             |
| <b>Bioscience-Related Distribution</b>                   |           |                  |               |                  |
| Establishments   | 890       | -5.4%            | 39,149        | 3.8%             |
| Employment   | 11,524    | 2.7%             | 469,640       | 3.7%             |
| Location Quotient  | 1.22      |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 2.38      |                  |               |                  |
| Total Employment Impact                                  | 27,438    |                  |               |                  |
| Average Annual Wage                                      | \$96,991  | 9.2%             | \$93,677      | 2.7%             |
| <b>Drugs and Pharmaceuticals</b>                         |           |                  |               |                  |
| Establishments   | 64        | 23.1%            | 3,754         | 13.7%            |
| Employment   | 3,519     | 7.7%             | 299,113       | 2.0%             |
| Location Quotient  | 0.58      |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 4.86      |                  |               |                  |
| Total Employment Impact                                  | 17,114    |                  |               |                  |
| Average Annual Wage                                      | \$81,458  | 7.7%             | \$113,815     | -3.2%            |
| <b>Medical Devices and Equipment</b>                     |           |                  |               |                  |
| Establishments   | 343       | 6.9%             | 8,083         | 5.9%             |
| Employment   | 27,555    | 4.2%             | 359,293       | 2.9%             |
| Location Quotient  | 3.80      |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 3.30      |                  |               |                  |
| Total Employment Impact                                  | 90,867    |                  |               |                  |
| Average Annual Wage                                      | \$103,236 | 5.9%             | \$84,746      | 6.5%             |
| <b>Research, Testing and Medical Laboratories</b>        |           |                  |               |                  |
| Establishments   | 433       | 8.1%             | 33,007        | 13.1%            |
| Employment   | 10,030    | 6.1%             | 547,566       | 8.2%             |
| Location Quotient  | 0.91      |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 2.54      |                  |               |                  |
| Total Employment Impact                                  | 25,506    |                  |               |                  |
| Average Annual Wage                                      | \$100,292 | -2.3%            | \$106,942     | 5.5%             |
| <b>Total Bioscience Industry</b>                         |           |                  |               |                  |
| Establishments   | 1,780     | 0.7%             | 85,702        | 7.7%             |
| Employment   | 54,414    | 4.3%             | 1,743,639     | 4.4%             |
| Location Quotient  | 1.55      |                  | n/a           |                  |
| Direct-Effect Employment Multiplier                      | 3.30      |                  |               |                  |
| Total Employment Impact                                  | 179,834   |                  |               |                  |
| Average Annual Wage                                      | \$98,761  | 4.9%             | \$98,961      | 3.1%             |
| <b>Total Private Sector</b>                              |           |                  |               |                  |
| Establishments   | 154,861   | -1.9%            | 9,243,034     | 3.4%             |
| Employment   | 2,438,476 | 3.4%             | 120,884,570   | 4.2%             |
| Average Annual Wage                                      | \$54,636  | 5.2%             | \$53,354      | 4.3%             |

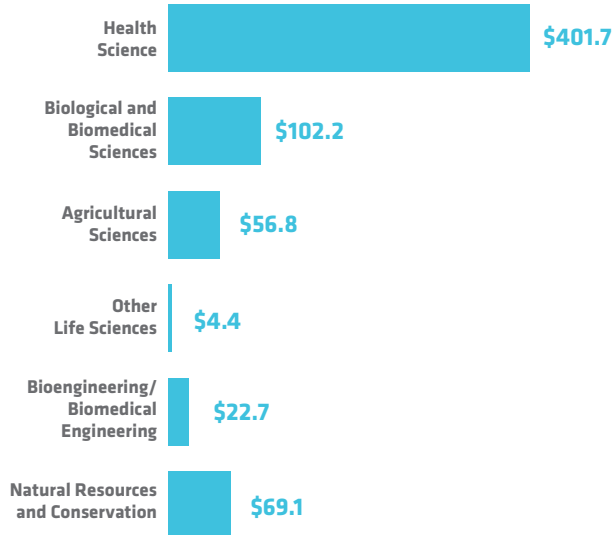
Note: U.S. employment metrics include Puerto Rico.

## Bioscience Research in Minnesota

### Bioscience Academic R&D Expenditures

\$ Millions

FY 2016



### NIH Awards

\$ Millions

FY 2014-2017

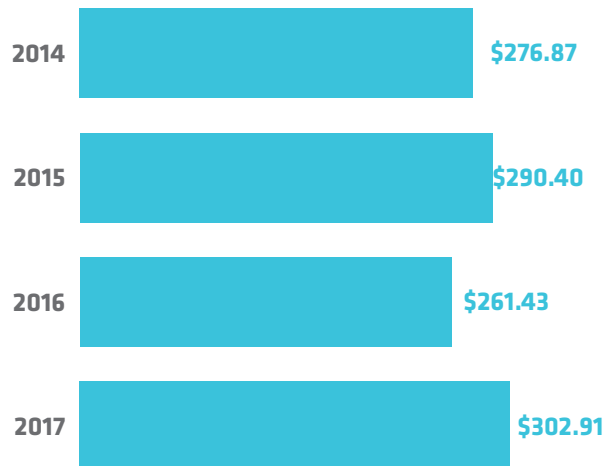


## Bioscience Venture Capital in Minnesota

### Bioscience-Related Venture Capital Investments

\$ Millions

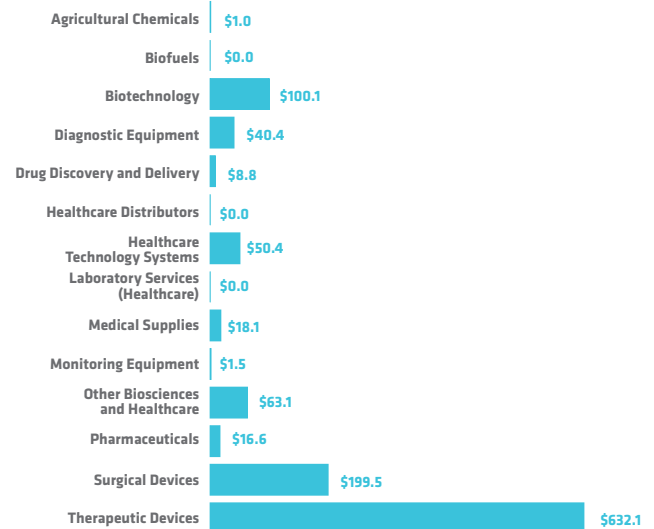
2014-2017



### Bioscience-Related Venture Capital Investments by Segment

\$ Millions

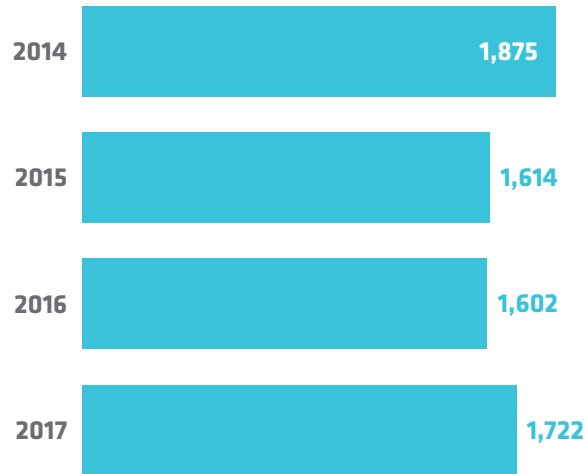
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## Bioscience Patents in Minnesota

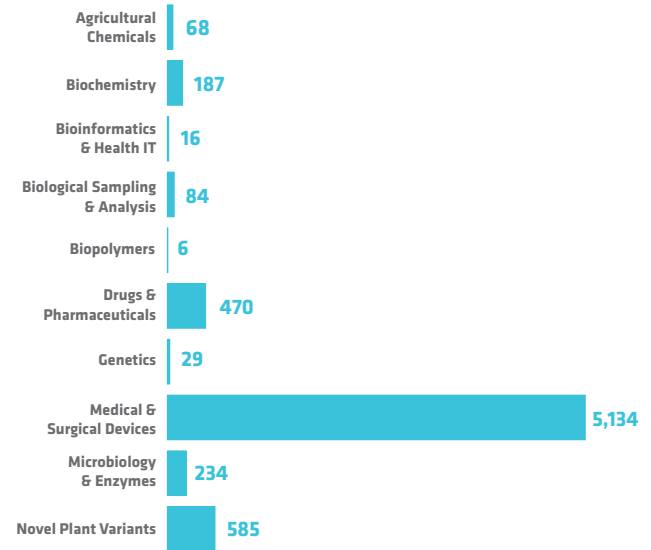
Bioscience-Related U.S. Patents

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.