Iowa’s bioscience industry is sizable, specialized in its employment concentration, and has grown slightly since 2007. The state’s bioscience firms employed more than 23,000 in 2012 across 1,253 business establishments. Iowa is a national leader in the agricultural feedstock and chemicals subsector where the state accounts for nearly 10 percent of U.S. employment, has a very high and specialized concentration relative to the national average (location quotient is 8.65), and has grown rapidly since 2007 (up 9 percent). Iowa also has a specialized employment concentration in bioscience-related distribution. The state’s research, testing, and medical lab subsector is emerging with nearly 32 percent job growth since 2007. Academic R&D in the biosciences is highly concentrated in Iowa both relative to all university R&D and on a per capita basis where Iowa has $154 in R&D per resident compared with $119 for the U.S. Iowa’s 1,789 bioscience patents since 2009 are concentrated in biotechnology which includes genetic seed advancements and improvements in a classification for multicellular living organisms (which also includes human biotech) and thus overlaps with and highlights key agbioscience innovation.

### Bioscience Performance Metrics

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

<table>
<thead>
<tr>
<th>Metric</th>
<th>Iowa</th>
<th>United States</th>
<th>Quintile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bioscience Industry, 2012</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioscience Industry Employment</td>
<td>23,152</td>
<td>1,619,746</td>
<td>III</td>
</tr>
<tr>
<td>Bioscience Industry Location Quotient</td>
<td>1.28</td>
<td>n/a</td>
<td>II</td>
</tr>
<tr>
<td>Bioscience Industry Establishments</td>
<td>1,253</td>
<td>73,088</td>
<td>III</td>
</tr>
<tr>
<td><strong>Academic Bioscience R&amp;D Expenditures, FY 2012</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioscience R&amp;D ($ thousands)</td>
<td>$476,634</td>
<td>$38,139,876</td>
<td>III</td>
</tr>
<tr>
<td>Bioscience Share of Total R&amp;D</td>
<td>68%</td>
<td>61%</td>
<td>II</td>
</tr>
<tr>
<td>Bioscience R&amp;D Per Capita</td>
<td>$154</td>
<td>$119</td>
<td>II</td>
</tr>
<tr>
<td><strong>NIH Funding, FY 2013</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding ($ thousands)</td>
<td>$167,301</td>
<td>$22,293,255</td>
<td>III</td>
</tr>
<tr>
<td>Funding Per Capita</td>
<td>$54</td>
<td>$70</td>
<td>III</td>
</tr>
<tr>
<td><strong>Bioscience Venture Capital Investments, 2009–13 ($ millions)</strong></td>
<td>$104.3</td>
<td>$49,401.7</td>
<td>III</td>
</tr>
<tr>
<td><strong>Bioscience and Related Patents, 2009–13</strong></td>
<td>1,789</td>
<td>100,238</td>
<td>III</td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agricultural Feedstock &amp; Chemicals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>131</td>
<td>17.0%</td>
<td>1,772</td>
<td>5.2%</td>
</tr>
<tr>
<td>Employment</td>
<td>7,379</td>
<td>9.1%</td>
<td>76,404</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>8.65</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Direct-Effect Employment Multiplier</td>
<td>19.6</td>
<td></td>
<td>18.1</td>
<td></td>
</tr>
<tr>
<td>Total Employment Impact</td>
<td>144,303</td>
<td></td>
<td>1,382,637</td>
<td></td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$67,176</td>
<td>9.7%</td>
<td>$75,828</td>
<td>14.2%</td>
</tr>
<tr>
<td><strong>Bioscience-Related Distribution</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>844</td>
<td>-7.9%</td>
<td>36,793</td>
<td>1.4%</td>
</tr>
<tr>
<td>Employment</td>
<td>9,911</td>
<td>-5.1%</td>
<td>442,016</td>
<td>-3.9%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>2.13</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Direct-Effect Employment Multiplier</td>
<td>2.5</td>
<td></td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Total Employment Impact</td>
<td>24,699</td>
<td></td>
<td>1,199,015</td>
<td></td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$66,462</td>
<td>12.0%</td>
<td>$85,188</td>
<td>11.5%</td>
</tr>
<tr>
<td><strong>Drugs and Pharmaceuticals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>39</td>
<td>-2.5%</td>
<td>3,057</td>
<td>12.0%</td>
</tr>
<tr>
<td>Employment</td>
<td>2,500</td>
<td>-11.5%</td>
<td>284,331</td>
<td>-10.9%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>0.79</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Direct-Effect Employment Multiplier</td>
<td>6.3</td>
<td></td>
<td>9.9</td>
<td></td>
</tr>
<tr>
<td>Total Employment Impact</td>
<td>15,725</td>
<td></td>
<td>2,673,265</td>
<td></td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$64,189</td>
<td>20.4%</td>
<td>$106,576</td>
<td>13.9%</td>
</tr>
<tr>
<td><strong>Medical Devices and Equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>48</td>
<td>-14.3%</td>
<td>7,235</td>
<td>12.0%</td>
</tr>
<tr>
<td>Employment</td>
<td>1,282</td>
<td>-6.5%</td>
<td>349,432</td>
<td>1.4%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>0.33</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Direct-Effect Employment Multiplier</td>
<td>2.9</td>
<td></td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Total Employment Impact</td>
<td>3,772</td>
<td></td>
<td>1,318,459</td>
<td></td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$43,187</td>
<td>-70.6%</td>
<td>$75,695</td>
<td>10.7%</td>
</tr>
<tr>
<td><strong>Research, Testing, and Medical Laboratories</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>191</td>
<td>25.5%</td>
<td>24,231</td>
<td>31.0%</td>
</tr>
<tr>
<td>Employment</td>
<td>2,080</td>
<td>31.6%</td>
<td>467,563</td>
<td>9.7%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>0.40</td>
<td></td>
<td>n/a</td>
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</tr>
<tr>
<td>Direct-Effect Employment Multiplier</td>
<td>2.4</td>
<td></td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Total Employment Impact</td>
<td>4,971</td>
<td></td>
<td>1,284,196</td>
<td></td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$61,717</td>
<td>24.6%</td>
<td>$91,248</td>
<td>15.9%</td>
</tr>
<tr>
<td><strong>Total Bioscience Industry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>1,253</td>
<td>-1.9%</td>
<td>73,088</td>
<td>11.4%</td>
</tr>
<tr>
<td>Employment</td>
<td>23,152</td>
<td></td>
<td>1,619,746</td>
<td>-0.4%</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>1.28</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Direct-Effect Employment Multiplier</td>
<td>6.4</td>
<td></td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Total Employment Impact</td>
<td>148,353</td>
<td></td>
<td>7,857,572</td>
<td></td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$64,729</td>
<td>1.6%</td>
<td>$88,202</td>
<td>12.8%</td>
</tr>
<tr>
<td><strong>Total Private Sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishments</td>
<td>89,237</td>
<td>1.8%</td>
<td>8,699,564</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Employment</td>
<td>1,240,664</td>
<td></td>
<td>111,137,206</td>
<td>-3.1%</td>
</tr>
<tr>
<td>Average Annual Wage</td>
<td>$39,761</td>
<td>12.8%</td>
<td>$49,130</td>
<td>11.1%</td>
</tr>
</tbody>
</table>

Note: U.S. employment metrics include Puerto Rico. Estimates of total impacts do not include Puerto Rico.
### Bioscience Research in Iowa

#### Bioscience Academic R&D Expenditures, FY 2012

- **Medical Sciences**: $230.6M
- **Biological Sciences**: $160.5M
- **Agricultural Sciences**: $49.1M
- **Other Life Sciences**: $36.1M
- **Bio/Biomedical Engineering**: $0.4M

#### NIH Awards, 2009–2013

- **2009**: $201.8M, $36.6M
- **2010**: $205.9M, $37.5M
- **2011**: $197.7M
- **2012**: $184.2M
- **2013**: $167.3M

### Bioscience Venture Capital in Iowa

#### Bioscience-Related Venture Capital Investments, 2009–2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Investments (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$24.6</td>
</tr>
<tr>
<td>2010</td>
<td>$51.5</td>
</tr>
<tr>
<td>2011</td>
<td>$28.3</td>
</tr>
<tr>
<td>2012</td>
<td>$0.0</td>
</tr>
<tr>
<td>2013</td>
<td>$0.0</td>
</tr>
</tbody>
</table>

#### Bioscience-Related Venture Capital Investments by Segment, 2009–2013

- **Biofuels**: $0.0
- **Biosensors**: $0.0
- **Biotech-Animal**: $0.0
- **Biotech-Equipment**: $0.0
- **Biotech-Human**: $53.8
- **Biotech-Industrial**: $0.5
- **Biotech-Research**: $0.0
- **Med/Health-IT/Software**: $0.0
- **Med/Health-Products**: $0.0
- **Med/Health-Services**: $50.0
- **Medical Diagnostics**: $0.0
- **Medical Therapeutics**: $0.0
- **Pharmaceutical**: $0.0
Bioscience Patents in Iowa

### Bioscience-Related Patents, 2009–2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>272</td>
</tr>
<tr>
<td>2010</td>
<td>290</td>
</tr>
<tr>
<td>2011</td>
<td>322</td>
</tr>
<tr>
<td>2012</td>
<td>394</td>
</tr>
<tr>
<td>2013</td>
<td>511</td>
</tr>
</tbody>
</table>

### Bioscience-Related Patents by Segment, 2009–2013

- **Agricultural Bioscience**: 6 patents
- **Biochemistry**: 246 patents
- **Biotechnology**: 1,233 patents
- **Bioscience IT**: 5 patents
- **Biomedical Imaging**: 15 patents
- **Drugs and Pharmaceuticals**: 154 patents
- **Surgical and Medical Instruments**: 74 patents
- **Other Medical Devices and Equipment**: 17 patents
- **Other Bioscience-Related**: 39 patents

Source Notes

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

**Employment Multipliers**: IMPLAN Group, LLC 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), and NIH-managed funding for FY 2009 and FY 2010 from the American Recovery and Reinvestment Act (ARRA) website.

**Venture Capital**: Thomson Reuters Thomson ONE venture capital database.


For a more detailed discussion of the data and methodology used, please see the Appendix to the full national report.