



# Bioscience

The (non-agriculture) Bioscience industry cluster includes businesses primarily engaged in manufacturing pharmaceuticals & medicines, medical equipment & supplies, electromedical & electrotherapeutic apparatus, analytical laboratory instruments and irradiation apparatus. Also included are establishments conducting bioscience research and medical laboratories.

## Industry Cluster Profile

In 2012, Bioscience businesses employed an average of 3,820 workers. Bioscience accounted for 1.0 percent of jobs in the state’s private sector.

Overall, Bioscience workers earned an annual average wage of \$73,047 in 2012, significantly higher than the private sector average (\$44,581) due, in part, to the higher skill and education requirements of the industry. In 2012, Rhode Island’s 150 Bioscience establishments paid over \$279 million in wages, accounting for 1.6 percent of the total private sector wages paid that year.

Between 2002 and 2012, employment in the Ocean State’s Bioscience industry cluster increased by 42.4 percent, while the private sector lost 2.8 percent of its employment during this period.

Due to the Recession, employment growth in Bioscience has slowed in recent years. The industry cluster lost 1.3 percent from 2006 to 2012, while total private employment in the state declined by 6.0 percent.

Bioscience is comprised of six industry groups: Pharmaceutical & Medicine Manufacturing, Medical Equipment & Supplies Manufacturing, Electromedical Manufacturing, Analytical Laboratory Instrument & Irradiation Apparatus Manufacturing, Research & Development in Biotechnology, and Laboratories for DNA Testing, Toxicology, Blood Analysis, & Forensic Testing (Medical Laboratories).

### Bioscience Employment in Rhode Island

Industry	Annual Average Employment			2002-2012		2006-2012	
	2002	2006	2012	Change	% Change	Change	% Change
<b>Total Private &amp; Government</b>	468,451	480,589	451,357	-17,094	-3.6%	-29,232	-6.1%
<b>Total Private Only</b>	404,079	417,706	392,758	-11,321	-2.8%	-24,948	-6.0%
<b>Total for Bioscience</b>	2,682	3,870	3,820	1,138	42.4%	-50	-1.3%
Pharmaceutical & Medicine Manufacturing	688	1,884	1,391	703	102.2%	-493	-26.2%
Medical Equipment & Supplies Manufacturing	1,407	1,297	1,466	59	4.2%	169	13.0%
Electromedical Manufacturing	10	153	176	166	1660.0%	23	15.0%
Analytical Laboratory Instrument & Irradiation Apparatus Manufacturing	110	91	92	-18	-16.4%	1	1.1%
Research & Development in Biotechnology	150	64	126	-24	-16.0%	62	96.9%
Medical Laboratories	317	381	569	252	79.5%	188	49.3%

Pharmaceutical & Medicine Manufacturing employed an average of 1,391 workers in 2012 and accounted for 36.4 percent of Bioscience employment in Rhode Island. Pharmaceutical & Medicine Manufacturing establishments paid an average of \$103,996, the second highest wage of the six Bioscience industry groups.

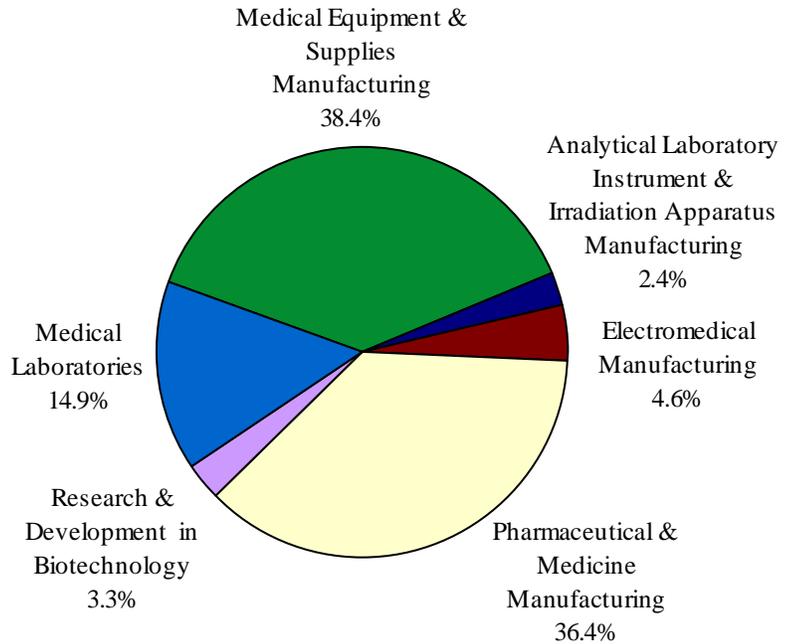
Medical Equipment & Supplies Manufacturing establishments employed an average of 1,466 workers in 2012, accounting for the largest percentage (38.4%) of the state's Bioscience employment. Medical Equipment & Supplies Manufacturing establishments paid an average of \$54,553 in 2012, lower than the Bioscience industry cluster average but still higher than the statewide private employment average (\$44,581).

Electromedical Manufacturing companies employed an average of 176 workers in 2012, representing 4.6 percent of total Bioscience employment. Workers in Electromedical Manufacturing earned an average annual wage of \$57,442 in 2012.

Analytical Laboratory Instrument & Irradiation Apparatus Manufacturing establishments employed 92 workers, accounting for 2.4 percent of Bioscience employment. Workers in this industry group earned an average of \$49,093.

Businesses in Research & Development in Biotechnology employed an average of 126 workers in 2012, or 3.3 percent of total Bioscience employment, and paid an average of \$106,906, the highest annual salary of the six Bioscience industry clusters.

### Bioscience Employment by Industry, 2012



<b>Bioscience in Rhode Island</b>				
<b>2012</b>				
<b>Industry</b>	<b>Number of Units</b>	<b>Average Employment</b>	<b>Total Wages</b>	<b>Average Wage</b>
<b>Total Private &amp; Government</b>	<b>35,289</b>	<b>451,357</b>	<b>\$21,063,313,935</b>	<b>\$46,667</b>
<b>Total Private Only</b>	<b>34,572</b>	<b>392,758</b>	<b>\$17,509,572,721</b>	<b>\$44,581</b>
<b>Total for Bioscience</b>	<b>150</b>	<b>3,820</b>	<b>\$279,040,634</b>	<b>\$73,047</b>
Pharmaceutical & Medicine Manufacturing	12	1,391	\$144,658,966	\$103,996
Medical Equipment & Supplies Manufacturing	62	1,466	\$79,974,951	\$54,553
Electromedical Manufacturing	7	176	\$10,109,764	\$57,442
Analytical Laboratory Instrument & Irradiation Apparatus Manufacturing	6	92	\$4,516,573	\$49,093
Research & Development in Biotechnology	26	126	\$13,470,167	\$106,906
Medical Laboratories	37	569	\$26,310,213	\$46,239

## Bioscience Employment as Percent of Private Sector Employment, 2012

Industry	US	CT	MA	ME	NH	RI	VT
<b>Total Private &amp; Government</b>	131,696,378	1,627,748	3,242,273	583,196	612,419	451,357	299,519
<b>Total Private Only</b>	110,645,869	1,391,749	2,828,275	486,542	527,252	392,758	247,087
<b>Total for Bioscience</b>	0.9%	1.4%	2.2%	0.7%	0.7%	1.0%	0.6%
Pharmaceutical & Medicine Manufacturing	0.2%	0.4%	0.3%	0.3%	0.2%	0.4%	0.2%
Medical Equipment & Supplies Manufacturing	0.3%	0.5%	0.4%	0.2%	0.4%	0.4%	0.2%
Electromedical Manufacturing	0.1%	0.0%	0.1%	0.0%	*	0.0%	0.0%
Analytical Laboratory Instrument & Irradiation Apparatus Manufacturing	0.0%	0.1%	0.2%	*	0.1%	0.0%	0.2%
Research & Development in Biotechnology	0.1%	0.1%	1.0%	*	0.1%	0.0%	0.0%
Medical Laboratories	0.2%	0.1%	0.1%	0.2%	0.0%	0.1%	0.0%

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages  
\*Confidential data

Laboratories for DNA Testing, Toxicology, Blood Analysis, & Forensic Testing (Medical Laboratories) establishments employed an average of 569 workers in 2012, comprising 14.9 percent of total Bioscience employment in Rhode Island. Workers in this industry group were paid an average of \$46,239 annually, the lowest annual wage of the six Bioscience subsectors..

In 2012, Rhode Island's Bioscience employment averaged 1.0 percent of total private employment in the state, just slightly higher than the national average of 0.9 percent. In New England, Massachusetts (2.2%) and Connecticut (1.4%) Bioscience employment comprised a larger share of their state's total private employment than in Rhode Island.

## Occupations Profile

Overall, occupations commonly found in the Bioscience industry cluster have greater educational requirements than most jobs found in the private sector. Approximately 42 percent of the Bioscience workers are employed in occupations requiring a college degree (Associate or higher), compared to 28 percent of private sector workers.

Opportunities for individuals with out a high school diploma or GED are very limited in the Bioscience industry cluster. Just 2 percent of the workers in Bioscience are employed in occupations that do not require a high school diploma or equivalency, well below the percentage (25%) of such workers found in the private sector.

The statewide median wage for occupations commonly found in Bioscience industry cluster jobs generally exceed the national average but trail statewide median wages paid in Massachusetts and Connecticut. Wages for occupations most commonly found in the Bioscience industry cluster range from \$9.01 per hour for Hand Packers and Packagers to \$60.59 per hour for General and Operations Managers.

### Employment by Education & Training Requirements

Education Title	Cluster Share	Private Sector
Bachelor's degree or Higher	32%	22%
Associate's degree	10%	6%
Postsecondary non-degree award	7%	5%
Some college, no degree	1%	1%
High school diploma or equivalent	47%	42%
Less than high school	2%	25%
<b>Training Title</b>		
Internship/residency	0%	4%
Apprenticeship	0%	2%
Long-term on-the-job training	6%	5%
Moderate-term on-the-job training	27%	17%
Short-term on-the-job training	15%	40%
None	51%	32%



## Occupations Commonly Found in Bioscience

<u>Occupations</u>	<u>Estimated RI Employment</u>	<u>Educ. Training</u>		<u>Median Wages</u>			
		<u>Code</u>	<u>Code</u>	<u>US</u>	<u>RI</u>	<u>MA</u>	<u>CT</u>
Team Assemblers	540	7	4	\$13.29	\$11.22	\$13.46	\$14.63
Software Developers, Systems Software	310	3	6	\$47.59	\$47.82	\$52.40	\$41.31
Phlebotomists	270	5	6	\$14.29	\$17.29	\$16.86	\$16.64
Ophthalmic Laboratory Technicians	220	7	4	\$13.74	\$12.94	\$16.69	\$17.05
Electrical & Electronic Equipment Assemblers	210	7	5	\$13.85	\$15.26	\$15.90	\$13.10
Inspectors, Testers, Sorters, Samplers, & Weighers	210	7	4	\$16.57	\$15.41	\$18.75	\$20.22
General & Operations Managers	190	4	6	\$45.88	\$60.59	\$51.62	\$59.45
Mixing & Blending Machine Setters, Operators, & Tenders	140	7	4	\$16.27	\$14.67	\$17.28	\$17.95
Industrial Production Managers	130	3	6	\$42.88	\$45.11	\$47.69	\$47.05
Medical Scientists, Except Epidemiologists	130	1	6	\$37.01	\$34.73	\$42.61	\$45.13
Industrial Engineers	130	3	6	\$37.92	\$38.95	\$41.47	\$38.51
Magnetic Resonance Imaging Technologists	130	4	6	\$31.42	\$34.82	\$37.19	\$36.21
First-Line Supervisors of Production & Operating Workers	120	5	6	\$25.98	\$27.50	\$29.27	\$30.37
Machinists	120	7	3	\$18.99	\$21.00	\$21.75	\$20.83
Mechanical Engineers	120	3	6	\$38.74	\$43.67	\$42.45	\$39.28
First-Line Supervisors of Office & Administrative Support Workers	100	7	6	\$23.72	\$27.19	\$26.84	\$26.67
Office Clerks, General	90	7	5	\$13.21	\$15.01	\$15.63	\$15.80
Customer Service Representatives	80	7	5	\$14.70	\$16.26	\$17.65	\$17.72
Biological Technicians	80	3	6	\$19.11	\$17.37	\$20.80	\$22.75
Sales Representatives, Wholesale & Manufacturing, Medical & Clinical Laboratory Technicians	80	7	4	\$26.07	\$30.87	\$32.64	\$30.01
Diagnostic Medical Sonographers	80	4	6	\$17.90	\$28.50	\$18.10	\$22.78
Diagnostic Medical Sonographers	80	4	6	\$31.66	\$36.14	\$38.42	\$36.71
Laborers & Freight, Stock, & Material Movers, Hand	70	8	5	\$11.49	\$13.26	\$13.15	\$12.98
Electrical Engineers	70	3	6	\$42.27	\$47.78	\$47.24	\$40.59
Medical Secretaries	60	7	4	\$15.07	\$17.06	\$17.75	\$17.28
Computer-Controlled Machine Tool Operators, Metal & Plastic	60	7	4	\$17.10	\$16.21	\$20.70	\$18.67
Radiologic Technologists & Technicians	60	4	6	\$26.26	\$30.68	\$33.51	\$30.01
Maintenance & Repair Workers, General	60	7	4	\$16.93	\$18.04	\$20.54	\$20.32
Executive Secretaries & Executive Administrative Assistants	60	7	6	\$22.84	\$26.32	\$26.09	\$27.99
Secretaries & Administrative Assistants, Except Legal, Medical	60	7	5	\$15.58	\$18.07	\$19.37	\$18.60
Orthotists & Prosthetists	60	2	6	\$30.13	\$35.97	\$33.58	\$39.47
Multiple Machine Tool Setters, Operators & Tenders	60	7	4	\$16.33	\$16.77	\$16.07	\$17.52
Industrial Machinery Mechanics	60	7	3	\$22.56	\$21.39	\$25.34	\$25.27
Medical Appliance Technicians	50	7	3	\$17.35	\$16.53	\$19.54	\$15.39
Packers & Packagers, Hand	50	8	5	\$9.57	\$9.01	\$10.32	\$10.80
Molding, Coremaking, & Casting Machine Setters, Operators, & Tenders, Metal & Plastic	50	7	4	\$13.77	\$13.94	\$14.95	\$13.98
Logisticians	50	3	6	\$34.99	\$33.88	\$35.68	\$34.42
Chemists	50	3	6	\$34.50	\$35.85	\$39.00	\$38.33
Bookkeeping, Accounting, & Auditing Clerks	50	7	4	\$16.91	\$18.14	\$19.61	\$19.92

**Education Code & Description:** 1 Doctoral or professional degree; 2 Master's degree; 3 Bachelor's degree; 4 Associate degree; 5 Postsecondary non-degree award; 6 Some college, no degree; 7 High school diploma or equivalent; 8 Less than high school

**Training Code & Description:** 1 Internship/residency; 2 Apprenticeship; 3 Long-term on-the-job training; 4 Moderate-term on-the-job training; 5 Short-term on-the-job training; 6 None

Wages are from May 2012 OES Survey.

