



Oregon Bioscience
Association



Executive Summary

2025 Economic Impact Report

Measuring the Economic, Fiscal, and
Demographic Impacts of Oregon's Life and
Bioscience Industry, including Clark County,
Washington



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Dear Colleagues,

Bioscience in Oregon and Southwest Washington is driving innovation and economic growth like never before. In 2023, this powerhouse industry generated over \$11.5 billion in economic activity, creating nearly 28,000 high-paying jobs with an average annual salary of \$100,000. That's 50% higher than the state average. And, it's not just about the numbers—bioscience is about making life better for the employees and the surrounding communities. From developing cutting-edge medical devices and life-saving pharmaceuticals to pioneering research at universities and hospitals, this sector is shaping the future of healthcare, agriculture, and sustainability. The sector's growth is lifting communities, creating opportunities for women and racially and ethnically diverse workers, and positioning Oregon and Southwest Washington as a leader in the global market.

Importantly, bioscience in Oregon and Southwest Washington extends beyond big cities: Companies are spread across nearly every county in Oregon, meaning this economic boost benefits communities large and small. In fact, over half of the industry's products are exported, bringing new money into the region and strengthening our local economy.

The ripple effects show that the total economic impact reaches \$21 billion when you account for the supply chains and local spending driven by this thriving sector. With bioscience touching nearly every part of the economy—from healthcare and manufacturing to high-tech research—the potential for growth is limitless.

An up-and-coming bioscience hub, Oregon and Southwest Washington attract attention from across the globe. For business leaders, investors, policymakers, and anyone curious about the future, read on to learn more how bioscience is transforming our region. Dive in and discover how this innovative industry is shaping a more prosperous, healthier future for all.

Sincerely,



Liisa Bozinovic, Executive Director



INTRODUCTION

Pinnacle Economics, Inc., (“Pinnacle”) was engaged by the Oregon Bioscience Association (“Oregon Bio”) to measure the economic, fiscal, and demographic impacts of the bioscience industry in Oregon in 2023. This represents the seventh such study, and updates previous efforts that measured the bioscience industry in 2002, 2007, 2009, 2014, 2017, and 2020. This study continues with the expanded geographic scope to include Clark County, Washington. Similar to previous studies, the bioscience industry consists of the following two general categories:

1. Private bioscience represents bioscience-related activities carried out by private companies within five industry sectors: 1) agricultural feedstocks and chemicals manufacturing, 2) drugs and pharmaceutical manufacturing, 3) medical devices and equipment manufacturing, 4) research, testing, and medical laboratories, and 5) bioscience-related distribution. These industry sectors align with TEconomy Partners, LLC., and Biotechnology Innovation Organization’s 2022 industry definition.
2. Life science research at universities and hospitals.

To quantify the direct economic impacts (or dimensions) of the bioscience industry, Pinnacle relied on detailed, firm-level wage and employment data from the Oregon Employment Department (“OED”) and aggregated wage and employment data from the Washington Employment Security Department (“ESD”), as well as funding, expenditure, payroll, and employment data gathered by Pinnacle and Oregon Bio from research universities and hospitals in Oregon and Clark County. These direct measures were then augmented with additional data from economic impact models of Oregon and Clark County developed using the IMPLAN software.

The bioscience industry’s total economic impacts or contributions are larger than the industry itself because bioscience spending and incomes are linked to additional economic activity in other sectors of the economy. That is, the total economic impacts of the bioscience industry in Oregon and Clark County include the direct economic activity plus secondary or multiplier effects generated due to supply-chain (indirect impacts) and consumption-driven (induced impacts) spending in other industries. These multiplier effects were measured using IMPLAN economic impact models of the Oregon and Clark County economies in 2022. All dollars in this report are nominal dollars.

Alec Josephson, economist and president of Pinnacle Economics, is the sole author of this report. With over 30 years of economic consulting experience, Mr. Josephson is a nationally recognized expert in economic impact analysis and has directed, conducted, and/or authored well over 1,000 economic impact studies. See www.pinnacleecon.com.

Caution must be exercised with time series analyses, especially with significant events such as the coronavirus pandemic that began in 2020, as well as structural or definitional changes in industries (QCEW data) or the input-output modeling framework (IMPLAN). According to OED, “Occasionally employment levels in a QCEW dataset will suddenly shift for reasons unrelated to true economic change.” These reasons include boundary changes, changes in geocoding methodology, non-economic code changes, and multiple worksite reporters. (See OED’s “Annual Geocoded QCEW Data File User’s Guide & Data Dictionary,” September, 2021.) In the previous study, Pinnacle and Oregon Bio worked with OED economists at the beginning of this project to better understand potential changes to the underlying QCEW data, especially for some firms not having complete Oregon location data. OED confirmed that these businesses reported working in Oregon but may not have address data because they do not have a “brick and mortar” location, e.g., an employee working remotely from their Oregon residence for a company located outside of Oregon. In addition, the newer IMPLAN modeling framework has more industry sectors than the model used in the previous report, and this is especially relevant for bioscience-related distribution where the expanded IMPLAN sectoring framework went from one wholesale trade sector to nine wholesale trade sectors. While this change will affect the underlying economic impact numbers, it will also likely improve the reliability of the multiplier effects estimated by the IMPLAN model for this private bioscience sector.

The private bioscience industry is defined using North American Industry Classification System (“NAICS”) codes originally developed in Battelle and Biotechnology Innovation Organization (“BIO”) national studies conducted for 2006, 2007, 2010, and 2012. This definition was updated by TEconomy Partners, LLC, and BIO in their 2014 study and continues in their most recent 2022 study, TEconomy/BIO, The U.S. Bioscience Industry: Fostering Innovation and Driving America’s Economy Forward, 2022.

Clark County is included in this report to more fully quantify the bioscience industry in the larger, greater Portland area where business linkages and commuter flows between states are significant.

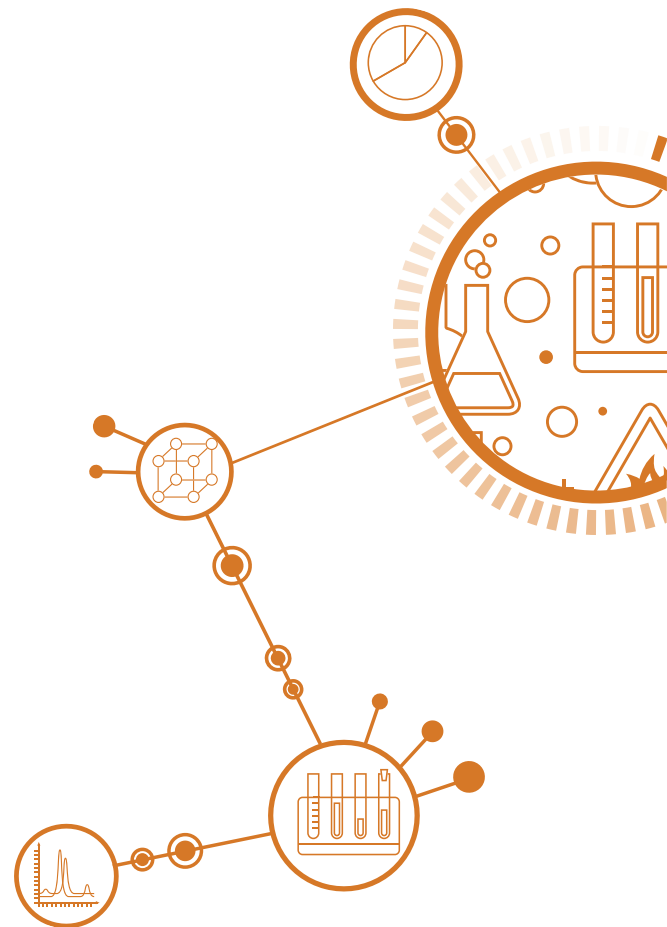
KEY FINDINGS

Private bioscience consisted of 1,995 establishments that directly generated \$10.3 billion in output and employed 20,783 workers who received \$2.6 billion in income including \$2.1 billion in wages and \$437.0 million in benefit. Private bioscience generated \$1.6 billion in other income such as profits, royalties, rents and dividends. With \$5.6 billion in exports (54.2 percent of industry output), private bioscience brings “new” money to the state. In 2023, private bioscience firms and employees directly generated \$401.5 million in tax and fee revenues for state and local governments.

- According to OED data, the average annual wage in private bioscience was \$102,426 or 52.4 percent greater than the statewide average wage (\$67,207) for private sector employment in 2023.
- Private bioscience exists in nearly every Oregon county and is well represented outside of the three-county Portland area. In 2023, 740 private bioscience firms are known to be located outside of Portland, and they employed 8,137 persons and paid \$688.0 million in wages.
- Since the first study for 2002, after removing bioscience-related distribution (which was added by Battelle/BIO in their 2014 study), private bioscience employment increased 127.1 percent (+7,921 jobs), total wages increased 376.3 percent (+\$1.0 billion), and average annual wages increased 109.7 percent (+\$48,501).

Table ES1
Bioscience Direct Impacts by Sector (\$ millions*)

Measure	Private Bioscience	Life Science Research	Total Bioscience
Jobs	20,783	7,246	28,029
Output	\$10,306.7	\$1,230.4	\$11,537.1
Income	\$2,565.7	\$822.0	\$3,387.7
• Wages	\$2,128.7	\$667.5	\$2,796.2
Other Income	\$1,591.7	\$72.5	\$1,664.2
Exports	\$5,583.6	\$38.9	\$5,622.5
Average Annual Wage (\$)	\$102,426	\$92,114	\$99,760
State and Local Tax and Fee Revenues	\$401.5	\$53.5	\$455.0
Federal Tax and Fee Revenues	\$638.8	\$184.4	\$823.2



Benefits include health and welfare, pension, and other benefits.

For private bioscience in 2023, the average annual wage is based on QCEW wage and employment data for all five sectors of bioscience. For historical comparisons, the average annual wage is based on the same QCEW wage and employment data but subtracts out the bioscience distribution sector which was added in the 2014 report.

OED location data is not available for some establishments known to be operating in Oregon in 2020.

These changes were estimated after controlling for Battelle/BIO's revised definition of private bioscience in 2014, i.e., bioscience-related distribution and some bioscience subsectors are not included.

Life science research at Oregon universities and hospitals directly generated \$1.2 billion in economic activity, including \$667.5 million in wages and 7,246 jobs. Including payroll taxes and benefits, total income for employees in life science research amounted to \$822.0 million. In addition, life science research institutions and employees directly generated \$53.5 million in state and local tax and fee revenues.

- The average annual wage for life science research institutions was \$92,114 in 2023, or 37.1 percent greater than the statewide average wage for private sector employment.
- Similar to private bioscience, life science research continues to experience growth. Since the first study for 2002, employment in life science research increased 175.5 percent (+4,616 jobs), total wages increased 358.6 percent (+\$521.9 million), and average annual wages increased 66.5 percent (+\$36,779).

Oregon’s combined bioscience industry (private bioscience plus life science research) directly generated \$11.5 billion in economic activity, including \$3.4 billion in income (\$2.8 billion in wages and \$591.5 million in benefits), 28,029 jobs, and \$5.6 billion in exports in 2023. ¹⁰ Bioscience firms and their employees directly generated \$455.0 million in state and local tax and fee revenues.

- Even after excluding bioscience distribution, total bioscience employment increased by 12,537 jobs (+141.5 percent) between 2002 and 2023.

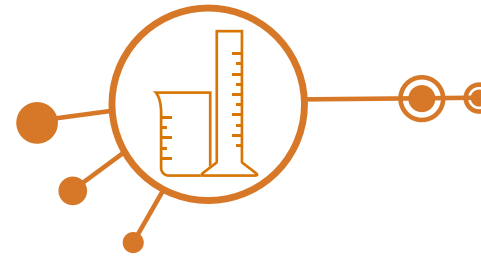
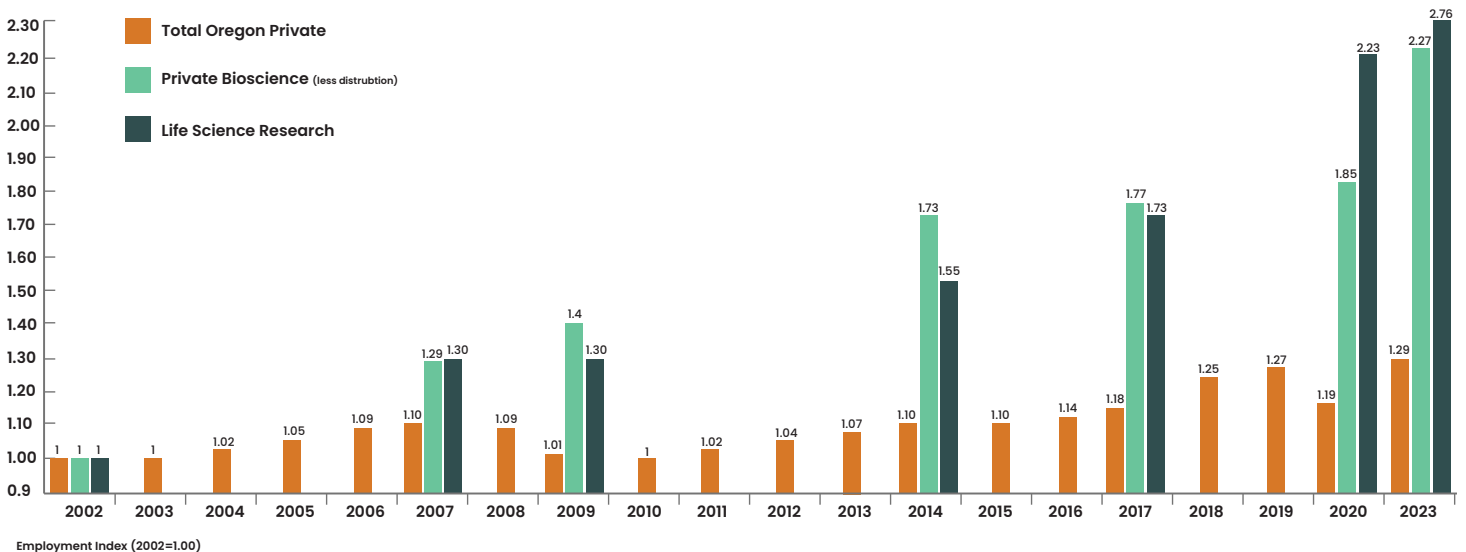


Figure ES1
Bioscience Employment Changes, 2002–2023, (Indexed to 2002)



⁹ Average annual wages are down slightly since the previous study due to increased life science research activities at universities, which pay slightly less on average, and decreased life science research activities at hospitals, which pay slightly more on average.

¹⁰ Bioscience export activity is largely attributed to private bioscience. However, much of life science research is funded by local and non-local private sources, and the federal government. In 2020, the National Institutes of Health funded \$424.0 million in medical research in Oregon. Similar to exports, non-local funding represents new dollars for the Oregon economy.

The direct economic activity associated with Oregon’s bioscience industry will have secondary or “multiplier” spending effects for other sectors of Oregon’s economy. Pinnacle estimates that the **total economic activity attributed to Oregon’s bioscience industry amounts to \$21.2 billion in output (or sales), including \$6.8 billion in income and 74,925 jobs in 2023.** In addition, Oregon’s bioscience industry is linked to economic activity that supports \$923.4 million in tax and fee revenues for state and local governments, as well as \$1.6 billion in federal government tax revenues.

Table ES2
Bioscience Total Impacts (\$ millions*)

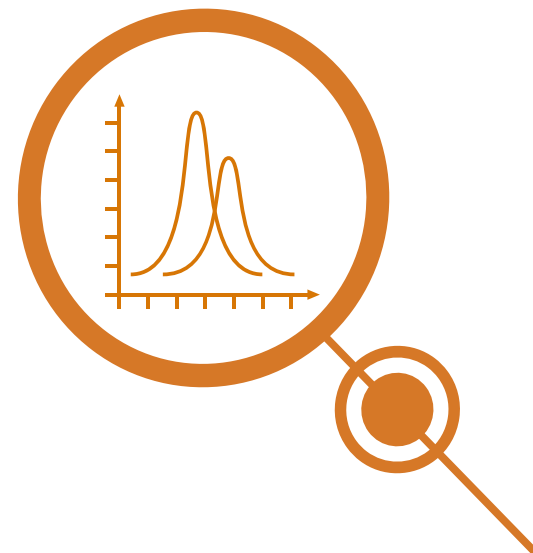
Impact Measure	Direct	Indirect	Induced	Total
Jobs	28,029	23,694	23,202	74,925
Output	\$11,537.1	\$5,365.0	\$4,298.9	\$21,200.9
Income	\$3,387.7	\$1,937.6	\$1,438.4	\$6,763.7
Other Income	\$1,664.2	\$841.1	\$966.2	\$3,471.5
State and Local Taxes/Fees	\$455.0	\$229.2	\$239.3	\$923.4
Federal Taxes/Fees	\$823.2	\$453.5	\$353.1	\$1,629.9

As shown in Table ES3, the bioscience industry generates economic activity in every sector of the Oregon economy. Secondary impacts attributed to bioscience include:

- Indirect or supply-chain impacts of \$5.4 billion in economic activity, including \$1.9 billion in income and 23,694 jobs. Approximately 22 percent of indirect job impacts accrue to the professional and technical services sector, benefiting employees and firms in marketing, management, computer programming and design, accounting, legal, advertising, and architectural and engineering.
- Induced or consumption-driven impacts of \$4.3 billion in economic activity, including \$1.4 billion in income and 23,202 jobs. These relatively large, induced impacts are attributed to the high-paying jobs in bioscience, as well as indirect impacts in Oregon that occur in high-wage sectors.

Table ES3
Bioscience Total Impacts by Major Industry Sector (\$ millions)

Major Industry Sector	Output	Income	Jobs	Jobs % of Total
Natural Resources	\$43.1	\$9.9	355	0.5%
Utilities	\$216.6	\$28.7	114	0.2%
Construction	\$80.8	\$24.9	307	0.4%
Manufacturing	\$4,545.0	\$810.3	7,525	10.0%
Trade	\$5,509.0	\$1,419.4	12,459	16.6%
Transportation	\$558.6	\$228.2	5,658	7.6%
Services	\$9,985.9	\$4,120.4	47,494	63.4%
Government	\$261.9	\$121.8	1,013	1.4%
Total All Industries	\$21,200.9	\$6,763.7	74,925	100.0%



From an economic impact perspective, the bioscience industry generates multiplier spending effects that benefit workers and business owners in other sectors of the Oregon economy. All else considered, the larger the multiplier, the greater the interdependence between an industry and the rest of the economy. According to the economic impact model of Oregon, the bioscience industry, in aggregate, has the following multipliers:

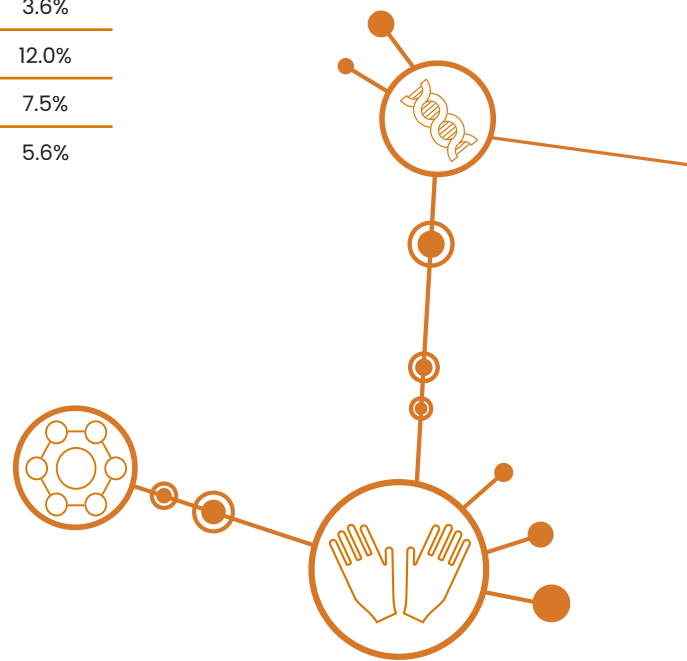
- An **employment multiplier of 2.7**, which suggests that every 10 jobs in the bioscience industry is linked to an additional 17 jobs in other sectors of the Oregon economy.¹¹
- An **income multiplier of 2.0**, which shows that every \$1 million in income directly generated in the bioscience industry is linked to another \$1.0 million in income for workers and business owners in other industries in Oregon.

In 2023, of the 74,925 total jobs that are linked to Oregon’s bioscience industry, an estimated 35,290 jobs (47.1 percent of total jobs) were held by women and 21,500 jobs were held by Racially and Ethnically Diverse Groups (28.7 percent), including 2,680 jobs for Black employees, 8,990 jobs for Hispanic employees, 5,610 jobs for Asian employees, and 4,220 jobs for employees of all other races.

- In 2023, the bioscience industry directly employed and estimated 13,010 women (46.9 percent of bioscience employment) and 7,950 racially and ethnically diverse workers (28.7 percent of bioscience employment).

Table ES4
Bioscience Job Impacts for Women and Racially and Ethnically Diverse Groups

Demographic Group	Direct	Indirect	Induced	Total	% of Total
Women	13,010	9,930	12,350	35,290	47.1%
All Racially and Ethnically Diverse Groups	7,950	6,670	6,880	21,500	28.7%
• Black	910	850	920	2,680	3.6%
• Hispanic	2,890	2,960	3,140	8,990	12.0%
• Asian	2,660	1,510	1,440	5,610	7.5%
• All Other Races	1,490	1,350	1,380	4,220	5.6%



¹¹This is 65 percent greater than the weighted average IMPLAN job multiplier (1.87) across all industry sectors in Oregon. Weighted average job multipliers use industry employment to reflect the size or importance of each industry sector.

CLARK COUNTY

This study continues with the expanded geographic coverage to include the bioscience industry in Clark County, Washington. The key findings of the bioscience industry in Clark County in 2023 include:

Private bioscience in Clark County consisted of 312 establishments that produced \$1.9 billion in output and employed 3,725 workers with wages of \$343.4 million. Adding in benefits, the total income for employees in private bioscience was \$411.1 million. With \$1.5 billion in exports (81.9 percent of output), private bioscience brings new money to Clark County.

Life science research at Washington State University’s Vancouver campus received \$8.5 million in NIH and other grant funding in 2023. WSU Vancouver is completing construction of a \$63.8 million, 60,000 square feet Life Sciences Building at their Vancouver campus. This project was financed, in part, by an initial \$57.1 million grant from the Washington State Legislature.

Table ES5
Private Bioscience Direct Impacts in Clark County, 2023 (\$ millions*)

Economic Measure	Total Private Bioscience
Jobs	3,725
Output	\$1,869.1
Income	\$411.1
• Wages	\$343.4
Other Income	\$288.6
Exports	\$1,530.9
State and Local Taxes/Fees	\$37.3
Federal Taxes/Fees	\$101.3
Federal Taxes/Fees*	\$63.8

The total economic impacts attributed to the combined bioscience industry (including both private bioscience and life science research) in Clark County in 2023 consist of \$2.6 billion in output, including \$625.1 million in income and 7,439 jobs. In addition, the economic activity linked to Clark County’s bioscience industry generated \$72.6 million in tax and fee revenues for state and local taxing jurisdictions.

Table ES6
The Combined Bioscience Industry Impacts, by Type of Impact, in Clark County, 2023 (\$ millions*)

Economic Measure	Direct	Indirect	Induced	Total
Jobs	3,777	2,293	1,368	7,439
Output	\$1,877.6	\$424.1	\$253.1	\$2,554.7
Income	\$417.0	\$130.5	\$77.6	\$625.1
Other Income	\$288.9	\$68.9	\$64.0	\$421.8
State and Local Taxes/Fees	\$37.6	\$16.6	\$18.4	\$72.6
Federal Taxes/Fees	\$140.3	\$43.3	\$37.5	\$221.1

Note: The direct impacts reported in Table ES6 will be slightly larger than those reported in Table ES5 due to life science research activities at WSU Vancouver.

Clark County’s private bioscience industry has a multiplier spending effect as bioscience firms create additional local economic activity through supply-chain spending and the direct and indirect income creates additional consumption-driven spending.¹¹ For example, every \$1 million in bioscience output is linked to \$1.4 million in total economic activity, including \$330,700 in income, 3.9 jobs, and \$38,600 in state and local tax and fee revenues.

¹¹Given the different sizes of the Oregon and Clark County economies, multipliers should not be compared across study areas. All else the same, economic and fiscal impact multipliers will be smaller for economic study areas that are defined more narrowly. This is due to the fact that multipliers are inversely related to leakages or imports, i.e., the greater the propensity to import, the lower the multiplier.

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Oregon Bio, a member trade association, was formally established as a 501(c)(6) non-profit in 1989 by a consortium of universities, public officials, educators and bioscience executives to cultivate a regionally synergistic climate in which to build a bioscience community. Today, Oregon Bio supports the regional bioscience community through advocacy, workforce development, educational programs, enterprise support, networking and the promotion of research collaborations. As the collective voice for our bioscience community, Oregon Bio is responsible for communicating the industry's economic impact, issues and challenges to the public sector, educators and the general public. Oregon Bio continually seeks ways to promote and support sustainability and growth in the life science, biotechnology, digital health and device manufacturing sectors. Oregon Bio offers a host of member services to lower operational costs and promote partnering, so members can achieve their scientific, economic and social potential.

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