



Overview and Summary of Recent Initiatives

In 2003, Governor Tim Pawlenty created the **Minnesota Bioscience Council** to advise the Governor on policy development and to recommend specific state strategies designed to advance the state's bioscience sector. Since that time, Minnesota has implemented a Bioscience Zone program, provided funding for bioscience research and research facilities, and opened several bioscience incubators.

The second phase of that effort has been initiated by **BioBusiness Alliance of Minnesota**, an industry-led nonprofit organization composed of representatives of bioscience companies, universities, state government, and healthcare institutions to develop BioMinnesota 2025, a 20-year plan to help shape the state's bioscience policy. The BioBusiness Alliance has commissioned a statewide assessment of Minnesota's bioscience resources, the results of which are expected to be released in the spring of 2006.

Building Bioscience R&D Capacity

Recent state investments in facilities

The **Minnesota Partnership for Biotechnology and Medical Genomics** began construction in 2005 on a new research facility, which is being built on top of the existing Mayo Clinic Vincent A. Stabile Building in Rochester. The 2005 Legislature approved \$21.7 million in state bonding authority to pay for construction of the facility.

Between 2000 and 2005 the Minnesota Legislature approved \$240 million in bond funding for bioscience-related science laboratories throughout the state. Proposals for an additional \$160 million have been introduced in the 2006 legislative session.

Research programs

The **Minnesota Partnership for Biotechnology and Medical Genomics** is a collaboration of the Mayo Clinic and the University of Minnesota focused on enabling Minnesota to advance medical genomics applications. The state is providing support for collaborative research projects, matched by funds from both institutions, with a proposed overall commitment of \$70 million beginning in 2005 to cover the next 5 years of activities. In FY 2006, the state provided \$15 million to fund research projects and to provide infrastructure support in the form of equipment, software, and other infrastructure needs.

The state is providing \$20 million in funding support for the **University of Minnesota's Initiative for Renewable Energy and the Environment**. The state provided an initial investment of \$10 million in FY 2003–2004 and has committed to investing an additional \$2 million per year over the next 5 years.

The research program is focused on biohydrogen and other renewable energy sources. In 2005, the institute awarded \$8.5 million for renewable energy research.

Encouraging Academic/Industrial Interaction

Biodale is a suite of facilities located at the University of Minnesota St. Paul campus that provides university departments and outside companies with access to sophisticated services and equipment, such as laser scanning microscopes. More than \$40 million in university, state, federal, and private funding was spent equipping Biodale member facilities. Member facilities include

- Bioinformatics and Research Computing Facility;
- Biomedical Genomics Center;
- Biotechnology Resource Center—Fermentation Process Development and Scale-up Laboratory;
- High-Throughput Screening and Analysis Facility;
- Imaging Center; and
- Center for Mass Spectrometry and Proteomics.

Moving Technology into the Marketplace

Commercializing university technology

The **Minnesota Research Fund**, an initiative of the Blandin Foundation and the University of Minnesota, fosters economic growth by funding the development and commercialization of technology generated by Minnesota's educational institutions.

The University of Minnesota Office of Business Development has established a **University Innovation Grants** program that will support translational research not supported by federal or industry funding.

Supporting bioscience entrepreneurs and emerging companies

The BioBusiness Alliance is establishing a **BioBusiness Resource Network** that will help investors and companies navigate the state's economic development support system and provide technical and business education support.

Making Capital Available

Pre-seed and seed capital

Investors and business leaders are currently raising money for a Minnesota Life Science Capital Fund, with a goal of raising \$1 million initially. Investors are expected to include utilities, banks, and individuals.

Providing Space for Bioscience Companies

Incubators

University Enterprise Laboratories is a private, nonprofit life sciences incubator in St. Paul that opened in the summer of 2005. It is a key anchor facility in the St. Paul Bioscience Zone. The incubator is housed in a former Target Corporation warehouse purchased by the City of St. Paul and donated to the University Enterprise Laboratories. UEL occupies approximately 50,000 square feet of space in the overall 125,000-square-foot facility, with the remaining space leased to post-incubator and established bioscience companies. UEL offers laboratories ranging from 750 to 1,050 square-feet and currently has nine tenant companies.

Elliot Park Life Science Institute is a private, for-profit, 60,000-square-foot life science incubator located in the Minneapolis Bioscience Zone, which includes three major hospitals. The institute added five new tenants in 2006.

Menlo Park St. Paul is a biotechnology office and laboratory facility located less than 2 miles from the University of Minnesota. This is a private business incubator facility housed in the former State of Minnesota Bureau of Criminal Apprehension laboratory facility. Menlo Park St. Paul offers up to 50,000 square feet of office and wet-lab space and currently houses eight firms.

Facilities financing

The **Minnesota Investment Fund** awards grant to local units of government that provide loans to assist expanding businesses. The fund focuses on industrial, manufacturing, and technology-related industries. Loans can be used for land, building, and infrastructure improvements. The maximum amount is \$500,000 per grant. Fifty percent of project costs must be privately financed. Funding for the program is approximately \$4.5 million annually. The fund made awards totaling \$5.8 million in FY 2005.

Bioscience research parks

A **Bioscience Zone Program** was enacted in 2003 to facilitate research and development activities and promote bioscience business development near the University of Minnesota Minneapolis and St. Paul campuses, within a life science corridor in southern Minneapolis, and near the Mayo Clinic in Rochester. The goal of the program is to cluster existing and start-up bioscience companies and help them gain access to University of Minnesota and Mayo researchers and to provide tax incentives to help them lower their overall costs and facilitate their growth. The Minnesota Bioscience Zone includes 515 acres in St. Paul, 497 acres in Minneapolis, and 496 acres in Rochester.

Addressing Talent Needs

Specialized postsecondary programs

The **Biotechnology Education and Training Initiative** at the University of Minnesota offers university-based short courses and workshops to industry professionals, scientists, teachers, and others interested in knowledge and research in biotechnology. It links continuing education courses and workshops, degree programs, teacher education, and community outreach to serve the Minnesota biotechnology community.

Anoka-Ramsey Community College in Minnesota has one of the only existing programs for biomedical device workforce development, initiated about 2 years ago to support Medtronic and its

suppliers in the region. It focuses on regulatory requirements, quality standards, and production aspects for medical devices. The college offers certificates or degrees in Biomedical Technology as well as continuing education courses.

Minnesota West Community and Technical College, beginning in the fall of 2006, will offer a 2-year degree laboratory technician program. This program will be housed in the City of Worthington in donated space within the corporate headquarters of Newport Laboratories. The program will provide training for students seeking careers in agricultural biosciences.

Minneapolis Community and Technical College, beginning in the fall of 2006, will offer a 2-year associate of science degree in biotechnology.

K-12 outreach programs

The **Dunwoody Institute and the Minneapolis Public Schools** developed a joint program in Food Science and Nutrition, aimed at teaching high school students about the science of making food and helping them become interested in careers in food development. The program was funded by a federal grant and partnership with General Mills.

Minnesota West Community and Technical College and the **City of Worthington Public Schools** have created a science curriculum to excite students about bioscience-related careers.

Pending Proposals

Governor Pawlenty recommended a \$10 million bioscience business development program, which includes funding for a bioscience incubator in Rochester and additional bioscience research funding for the University of Minnesota and the Minnesota State Colleges and Universities System in his FY 2007 budget.

A bill is expected to be introduced in the 2006 Legislature that would authorize the state to create a \$330 million bond fund for a newly created Minnesota Biomedical Sciences Research Facilities Authority. The proposal is part of a plan of the University of Minnesota to hire 500 new researchers and build one new laboratory building every 2 years over the next decade.

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Medical Alley® was founded in 1984 as a 501(c)(6) nonprofit trade association to support Minnesota's health care industry. The association's goals were to focus on legislative issues, provide members with educational opportunities, and promote interest and investment in Minnesota as a major center of health care achievement, research and innovation. MNBIO was founded in 1991 as a 501(c)(6) nonprofit trade association to serve as the eyes, ears, and voice of biotechnology in Minnesota. In March 2005, Medical Alley and MNBIO merged to provide a more focused effort in supporting the human health, agricultural, and industrial biosciences in Minnesota.

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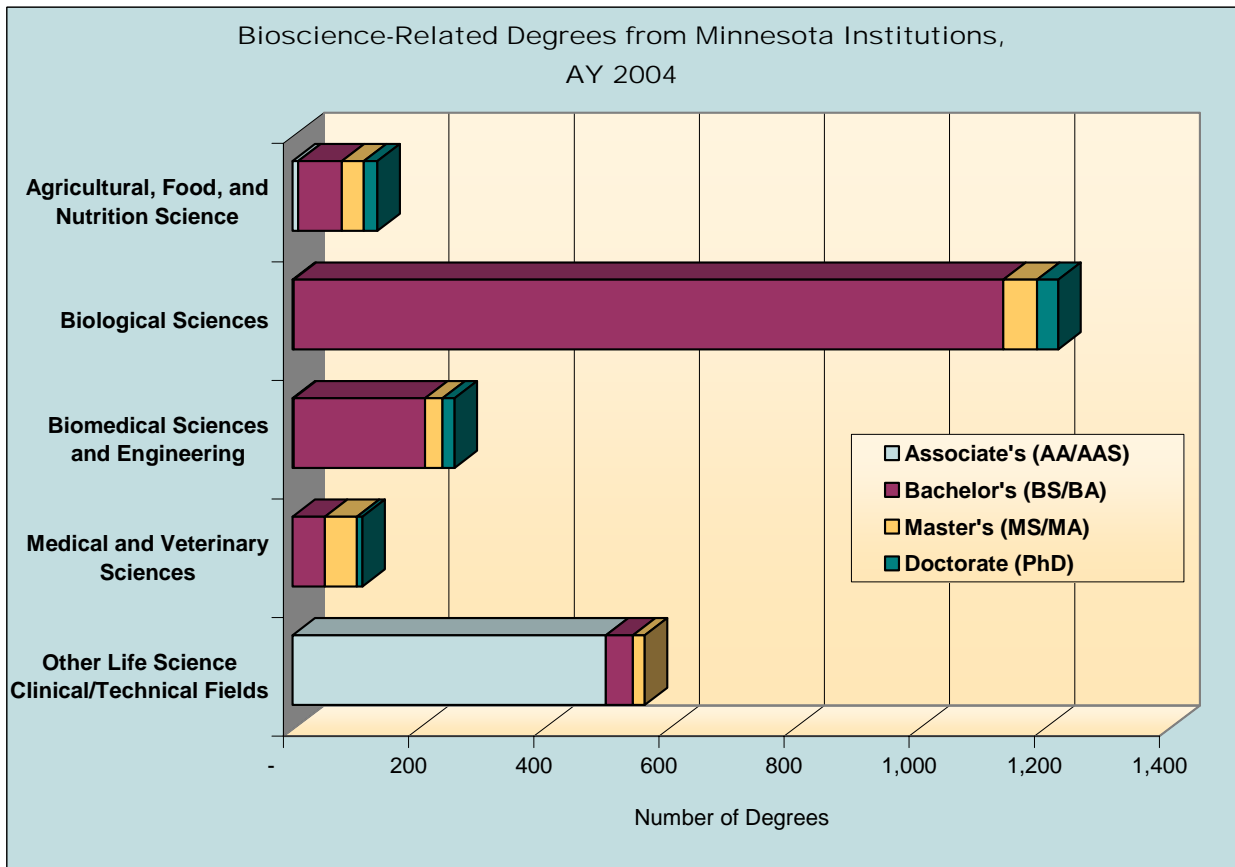
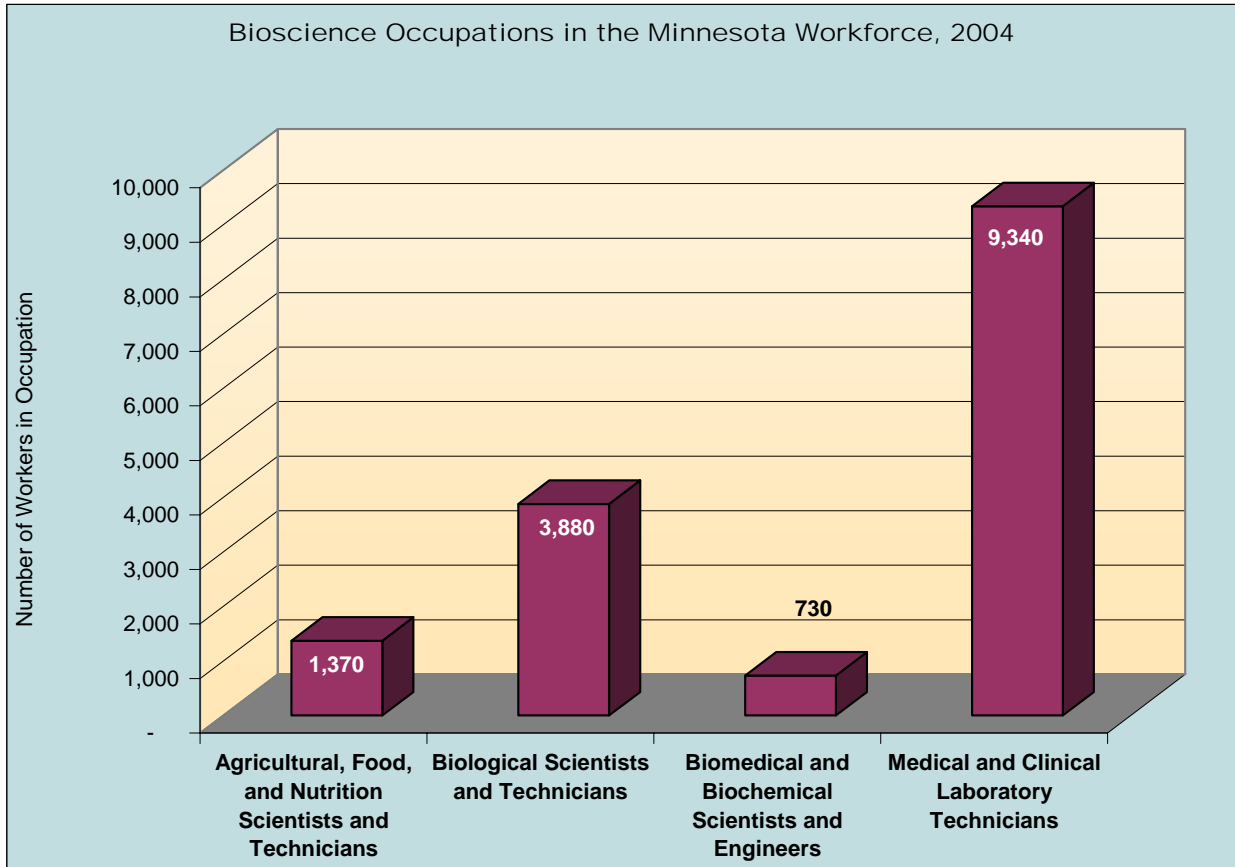
The BioBusiness Alliance of Minnesota™ is devoted to positioning Minnesota as a global leader in biobusiness. Its charter is to prioritize and lead the efforts to ensure the long-term prosperity of biobusiness in the state. The BioBusiness Alliance consists of leaders representing Minnesota companies, colleges and universities, state government, and healthcare institutions.

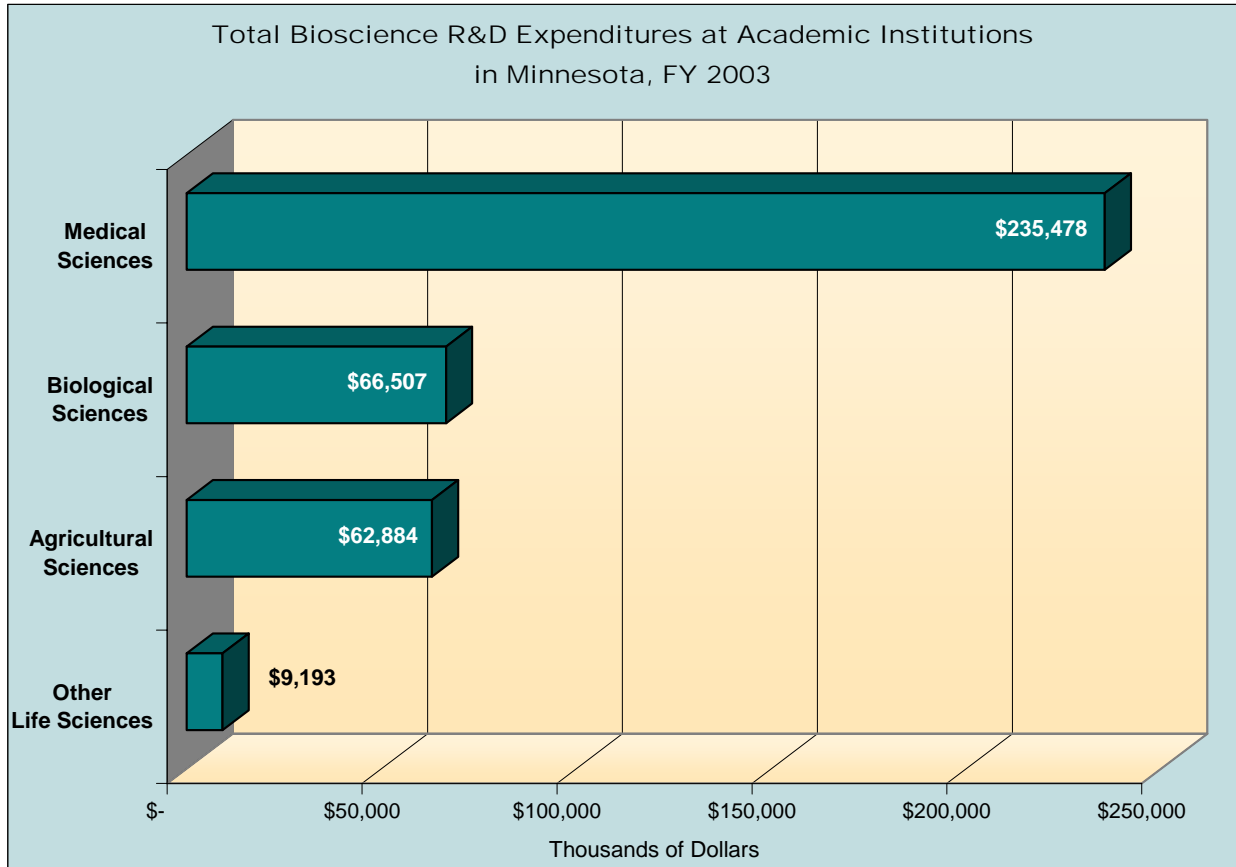
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Industry Subsector	Minnesota	United States
Agricultural Feedstock & Chemicals		
Establishments 2004	57	2,111
2001-2004 Establishment % Change	9.6%	0.4%
Employment 2004	1,592	104,893
2001-2004 Employment % Change	-5.3%	-6.9%
Share of U.S. Employment	1.5%	100.0%
Location Quotient	0.74	n.a.
Average Annual Wage 2004	\$51,381	\$63,383
Direct-Effect Employment Multiplier	6.85	10.91
Total Employment Impact	10,903	1,212,094
Drugs & Pharmaceuticals		
Establishments 2004	44	2,589
2001-2004 Establishment % Change	-13.7%	-0.6%
Employment 2004	2,477	313,207
2001-2004 Employment % Change	10.1%	2.7%
Share of U.S. Employment	0.8%	100.0%
Location Quotient	0.39	n.a.
Average Annual Wage 2004	\$65,266	\$79,303
Direct-Effect Employment Multiplier	5.06	9.51
Total Employment Impact	12,535	2,731,321
Medical Devices & Equipment		
Establishments 2004	392	15,190
2001-2004 Establishment % Change	4.3%	0.2%
Employment 2004	25,583	411,460
2001-2004 Employment % Change	9.2%	-3.6%
Share of U.S. Employment	6.2%	100.0%
Location Quotient	3.05	n.a.
Average Annual Wage 2004	\$75,048	\$56,449
Direct-Effect Employment Multiplier	3.58	4.56
Total Employment Impact	91,489	1,817,705
Research, Testing, & Medical Laboratories		
Establishments 2004	200	20,565
2001-2004 Establishment % Change	5.6%	19.4%
Employment 2004	3,478	413,550
2001-2004 Employment % Change	5.5%	8.2%
Share of U.S. Employment	0.8%	100.0%
Location Quotient	0.41	n.a.
Average Annual Wage 2004	\$58,387	\$65,414
Direct-Effect Employment Multiplier	2.30	3.15
Total Employment Impact	7,992	1,272,936
TOTAL PRIVATE SECTOR		
Establishments 2004	149,625	8,156,137
2001-2004 Establishment % Change	1.0%	4.8%
Employment 2004	2,229,697	109,249,195
2001-2004 Employment % Change	-0.5%	-0.7%
Share of U.S. Employment	2.0%	100.0%
Location Quotient	n.a.	n.a.
Average Annual Wage 2004	\$40,580	\$39,003

Source: Battelle calculations -- based on Bureau of Labor Statistics QCEW data from the Minnesota Implan Group, RIMS II Employment Multipliers from the Bureau of Economic Analysis, and the Census Bureau's Economic Census.

Note: n.a. = metric is not applicable.





	Minnesota	United States	Rank
University R&D Expenditures, FY 2003			
Total (\$ thousands)	\$517,346	\$40,104,621	25
Life Science R&D (\$ thousands)	\$375,217	\$24,062,088	21
Percent of Total R&D	72.5%	60.0%	
Life Sciences Per Capita	\$74.16	\$82.74	
Change in Life Sciences FY 1999–2003	38.4%	52.7%	
NIH Support to Institutions, FY 2004			
Total (\$ thousands)	\$447,048	\$22,556,459	14
Per Capita Expenditures	\$88.36	\$77.56	
Change in Expenditures FY 2000–2004	58.8%	53.2%	
Higher Education Degrees in Bioscience Fields, AY 2004			
	2,294	111,329	17
Bioscience Occupations in the Workforce, 2004			
	15,320	616,140	14