



Overview and Summary of Recent Initiatives

In 2005, the Granholm administration unveiled the **21st Century Jobs Fund** (Act 225 of 2005), a \$2 billion umbrella economic-development initiative targeting development of four sectors including the life sciences. The commercialization component of the program is set at \$400 million and will be administered by the **Michigan Economic Development Corporation (MEDC)**, the public/private partnership that manages Michigan's tax-credit economic development programs and ran the original **Life Sciences Corridor** program and the successor **Tri-Corridor Program**. The 21st Century Jobs Fund restores the state's commitment of tobacco revenues to support technology initiatives, effectively recapitalizing these functions from now through 2015.

The 21st Century Jobs Fund makes bioscience initiatives eligible for research and commercialization funding that will be overseen by a separate **Strategic Economic Investment and Commercialization Board**. As in the previous Corridor programs, there is funding for basic research, applied research, commercialization, and commercialization support services. Commercialization funding (grants or loans) may go directly to companies or to nonprofit services such as pre-seed funds, business accelerators, wet-lab facilities, and statewide support networks. The fund expects to operate two funding cycles this year. The 21st Century Fund also sets aside \$100 million this year for capital-formation initiatives, including investment in venture-investment funds at multiple stages and credit-enhancement tools designed to stimulate private-sector lending to the targeted sectors.

Since the last BIO report, MEDC also continued to elaborate its SmartZone program, which has resulted in the creation of new business accelerators or physical incubation space in seven of the 11 SmartZones. Several of the accelerators are bioscience-oriented, and two are located in university research parks. **MichBio**, the state BIO affiliate, expanded membership from 70 to 200 and began offering commercialization-support and targeted assistance to traditional manufacturers (including the automotive supplier Delphi) wishing to diversify into biomedical-device markets.

Building Bioscience R&D Capacity

Recent state investments in facilities

The **Core Technology Initiative**, funded by MEDC through the initial Life Sciences Corridor program, added the following new core facilities that are shared among the state's research institutions:

- **High-Throughput Screening Center**
- **Antibody Technology Core**

- **Biological Imaging Center**
- **Center for Biological Commercialization** (see below).

These facilities joined the existing **Center for Genomic Technology, Proteomic Consortium, Center for Structural Biology, Animal Model Consortium, and Center for Biological Information.**

The University of Michigan completed its 230,000-square-foot, \$200 million **Interdisciplinary Life Sciences Institute**, part of its campus-wide Life Sciences Initiative.

Research programs

In 2005, MEDC's Tri Corridor program awarded \$27.3 million to 24 life sciences projects. The 2006 cycle of the 21st Century Jobs Fund will start this year with \$100 million in the research/commercialization and infrastructure pools.

Moving Technology into the Marketplace

Commercializing university technology

The **Michigan Universities Commercialization Initiative (MUCI)** was extended into its sixth year by MEDC. Through a grant stewarded by the University of Michigan, MUCI provides a commonly managed pool for precommercialization research on technologies emerging from every research university in the state and the Van Andel Institute. Awards of up to \$150,000 are available, managed by the respective technology transfer office and matched by institutional resources. Supported activities include proof-of-concept research, animal trials, prototype testing, scale-up studies, business plan preparation, and market research. Patenting expenses are not eligible, although institutions may credit their expenditure for patents as a partial match to a MUCI award. Institutions must repay three times the grant received by assigning 20 percent of any licensing income consequent to a MUCI project. In the most recent round, five of seven awards were in the biosciences.

There are some similar resources at individual institutions. University of Michigan School of Medicine offers its own **Translational Research Initiative**, which provides up to \$75,000 for 1 year in partnership with Johnson & Johnson. The university's Biomedical Engineering Department has a parallel program funded by the Coulter Foundation. Michigan State University maintains **IPVentures**, a subsidiary with funds available to create start-up ventures and which may recommend follow-on investment to the MSU Foundation.

Supporting bioscience entrepreneurs and emerging companies

The 21st Century Jobs Fund commercialization fund will make subordinated loans directly to companies for the purpose of supporting commercialization and will also support nonprofit pre-seed funds.

The SmartZone program allocates tax increment financing to encourage selected communities to add either physical business incubators (see below) or commercialization assistance programs or both. The following bioscience-oriented commercialization programs were supported through SmartZones:

- **BioTech Connect**, a program of the SmartZone in Grand Rapids, helps entrepreneurs build bioscience businesses.

- **Biosciences Research and Commercialization Center**, part of the SmartZone in Kalamazoo at Western Michigan University (WMU), provides contract development services, gap funding, and start-up assistance.
- **Frontline Accelerator** is the accelerator component of the Woodward Technology Corridor SmartZone at the TechTown research park in Detroit.
- **Spark** is a business accelerator associated with the Ann Arbor/Ypsilanti SmartZone.

Making Capital Available

Pre-seed and seed capital

Pre-seed investments including in the biosciences may be available from **Ann Arbor Angels** and also from some of the SmartZone business accelerators.

MEDC offers to match 15 percent of SBIR grants up to \$15,000.

Venture capital

Venture Fund Michigan is a contingent-tax-credit-backed fund of funds created by the Early Stage Investment Act of 2003. Technical changes were made in 2005 including increasing the ultimate amount of contingent tax credits to \$450 million, and the governing corporation chose Credit Suisse First Boston as its investment manager. Requirements for investee funds include a substantial presence in Michigan. To date there are no investee funds.

Bioscience venture funds in which MEDC had earlier bought small limited-partnership interests include the following:

- **ApJohn Group**
- **Arboretum Ventures**
- **Seneca Ventures**
- **Sloan Ventures**
- **TGap Ventures.**

Providing Space for Bioscience Companies

Incubators

The SmartZone program was set up to encourage the creation of incubators in communities where they did not yet exist. Bioscience incubators include the following:

- **Product Development Center**, a 10,000-square-foot section of the Cook-DeVos Center for Health Sciences at Grand Valley State University in the Muskegon SmartZone.

- **TechOne**, a 100,000-square-foot, multitenant building in TechTown, the research park at Wayne State University in the Woodward Technology Corridor SmartZone in Detroit.
- **Southwest Michigan Innovation Center**, a 58,000-square-foot, wet-lab incubator in the Business Technology and Research Park in the Kalamazoo SmartZone.
- **BioBusiness Incubator of Michigan**, managed by a subsidiary of MBI International, a nonprofit bioscience research institute in the Lansing SmartZone.
- **Center for Applied Research and Technology**, a 12,000-square-foot incubator at the Mt. Pleasant/Central Michigan University SmartZone, which is adding 17,000 square feet of wet-lab space.

Bioscience research parks

The research park with the most significant bioscience presence is **Kalamazoo Business Technology and Research Park**, set on 137 acres owned by WMU. It has 16 bioscience tenants including the incubator (above).

Addressing Talent Needs

Recruiting management talent

MEDC provides funding for the **Michigan Entrepreneurship Education Network**, an alliance of university business schools that includes a grant program to allow start-up of new curricula. Each school has chosen a focus, with the biosciences most strongly represented at Michigan's Zell-Lurie Institute of Entrepreneurial Studies, which also houses the student-run **Wolverine Venture Fund**.

Specialized postsecondary programs

MichBio connects companies to student interns through its **BioConnections** program funded by MEDC. More than 80 percent of the summer interns were offered full-time positions.

MichBio now has eight university-based student chapters.

K-12 outreach programs

MichBio is collaborating with the schools of Oakland and Lenawee counties to develop a pilot program under which university and high-school educators would team-teach science courses.

Contacts

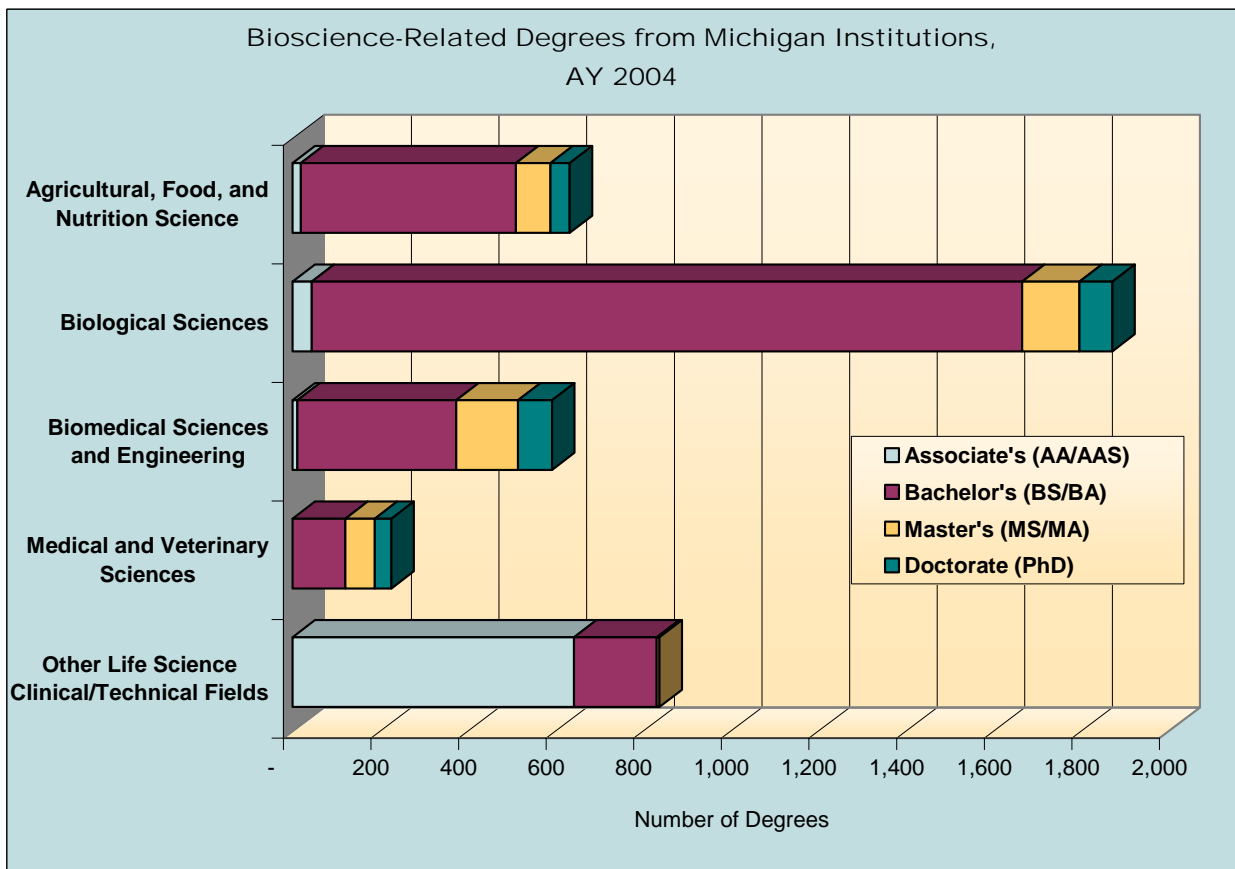
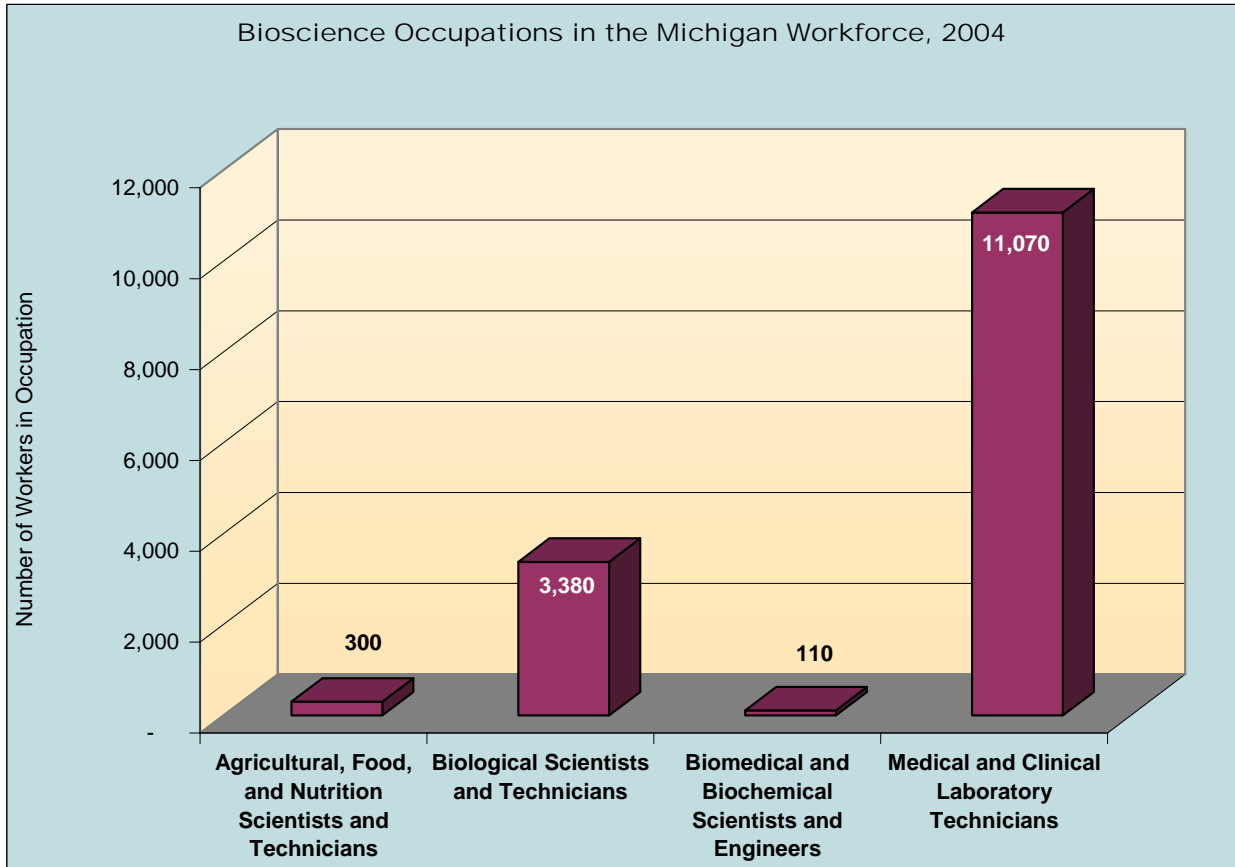
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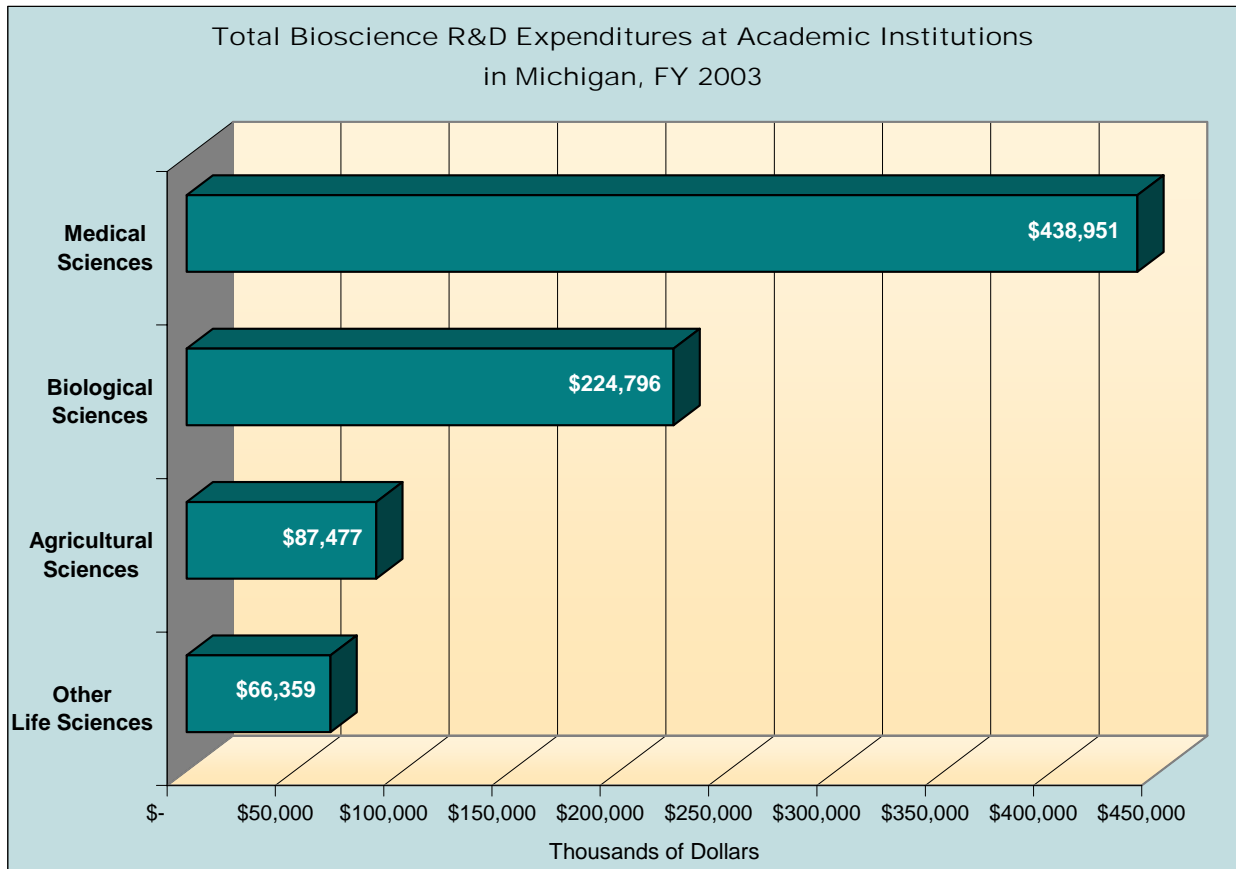
MichBio is a nonprofit organization dedicated to driving the growth of the life sciences industry in Michigan. The association serves a diverse membership, including new and established life sciences companies, academic and research institutions, as well as service providers and related organizations throughout the state.

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Industry Subsector	Michigan	United States
Agricultural Feedstock & Chemicals		
Establishments 2004	31	2,111
2001-2004 Establishment % Change	-13.5%	0.4%
Employment 2004	587	104,893
2001-2004 Employment % Change	-25.1%	-6.9%
Share of U.S. Employment	0.6%	100.0%
Location Quotient	0.17	n.a.
Average Annual Wage 2004	\$50,259	\$63,383
Direct-Effect Employment Multiplier	4.33	10.91
Total Employment Impact	2,542	1,212,094
Drugs & Pharmaceuticals		
Establishments 2004	55	2,589
2001-2004 Establishment % Change	-3.5%	-0.6%
Employment 2004	10,057	313,207
2001-2004 Employment % Change	-10.3%	2.7%
Share of U.S. Employment	3.2%	100.0%
Location Quotient	0.96	n.a.
Average Annual Wage 2004	\$80,660	\$79,303
Direct-Effect Employment Multiplier	6.58	9.51
Total Employment Impact	66,180	2,731,321
Medical Devices & Equipment		
Establishments 2004	507	15,190
2001-2004 Establishment % Change	-12.7%	0.2%
Employment 2004	9,989	411,460
2001-2004 Employment % Change	-22.5%	-3.6%
Share of U.S. Employment	2.4%	100.0%
Location Quotient	0.72	n.a.
Average Annual Wage 2004	\$50,097	\$56,449
Direct-Effect Employment Multiplier	2.98	4.56
Total Employment Impact	29,733	1,817,705
Research, Testing, & Medical Laboratories		
Establishments 2004	425	20,565
2001-2004 Establishment % Change	35.6%	19.4%
Employment 2004	12,922	413,550
2001-2004 Employment % Change	25.4%	8.2%
Share of U.S. Employment	3.1%	100.0%
Location Quotient	0.93	n.a.
Average Annual Wage 2004	\$80,275	\$65,414
Direct-Effect Employment Multiplier	2.48	3.15
Total Employment Impact	32,042	1,272,936
TOTAL PRIVATE SECTOR		
Establishments 2004	247,749	8,156,137
2001-2004 Establishment % Change	-1.8%	4.8%
Employment 2004	3,665,758	109,249,195
2001-2004 Employment % Change	-4.5%	-0.7%
Share of U.S. Employment	3.4%	100.0%
Location Quotient	n.a.	n.a.
Average Annual Wage 2004	\$40,404	\$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.





	Michigan	United States	Rank
University R&D Expenditures, FY 2003			
Total (\$ thousands)	\$1,388,284	\$40,104,621	9
Life Science R&D (\$ thousands)	\$830,792	\$24,062,088	9
Percent of Total R&D	59.8%	60.0%	
Life Sciences Per Capita	\$82.42	\$82.74	
Change in Life Sciences FY 1999-2003	55.7%	52.7%	
NIH Support to Institutions, FY 2004			
Total (\$ thousands)	\$552,442	\$22,556,459	11
Per Capita Expenditures	\$54.81	\$77.56	
Change in Expenditures FY 2000-2004	49.3%	53.2%	
Higher Education Degrees in Bioscience Fields, AY 2004	4,162	111,329	8
Bioscience Occupations in the Workforce, 2004	14,860	616,140	15