



Michigan

Programs & Initiatives Advancing the Biopharmaceutical Industry



Key Programs & Initiatives

The opportunities generated by the biopharmaceutical sector as a leader in innovation and high quality job creation are not limited to just a few states, but have a substantial national footprint across states. States proactively pursue the development of the biopharmaceutical sector because it represents: a large-scale, geographically dispersed supply chain spanning R&D through to production and distribution; a key driver of the economy including the recent economic recovery; and a sector paying high wage rates in quality jobs. States are deploying a range of programs and initiatives to support and grow the biopharmaceutical industry, including: comprehensive state development strategies; investments in R&D and related infrastructure; programs to boost venture capital, entrepreneurship, and innovation development; advanced manufacturing; economic incentive initiatives; and programs working to advance STEM education and training. Michigan has developed a strategic roadmap for its bioscience industry and has in place a wide array of commercialization and venture financing programs that focus on and invest in the life sciences.

Quick Guide: Michigan's Programs & Initiatives Advancing the Biopharmaceutical Industry



Comprehensive State Strategies to Support Biopharmaceutical Development:

- Michigan Bio-Industry Roadmap for Success led by MichBio, Business Leaders for Michigan and University Research Corridor



Biosciences Infrastructure Development:

- Western Michigan University's Business Technology and Research Park (BTR)
- University Corporate Research Park at Michigan State University



Venture Capital, Entrepreneurship, and Other Innovation Related Programs and Initiatives:



- Emerging Technologies Fund
- Michigan Translational Research and Commercialization Program (MTRAC)
- Michigan Corporate Relations Network (MCRN) Small Company Innovation Program/Technology and Commercialization Assistance (SCIP/TCA)
- MTRAC for Life Sciences Innovation Hub at the Univ. of Michigan
- SBDC Tech Team
- SmartZones
- Business Accelerator Fund
- Michigan Life Science Innovation Center
- Michigan Pre-Seed Fund 2.0
- Accelerator Fund Program
- Pure Michigan Venture Match Fund
- Venture Michigan Fund (VMF)
- 21st Century Investment Fund
- Pure Michigan Venture Development Fund
- Michigan Venture Fellows Program



Economic Incentives:

- R&D Tax Credit

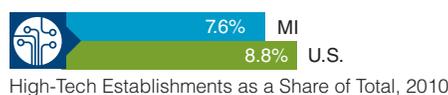
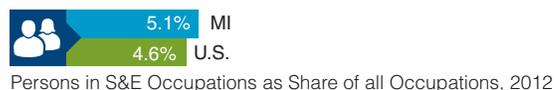
STEM Workforce & Education:

- Michigan STEM Partnership
- Michigan STEM Advisory Council

Impacts

- **21st Century Jobs Trust Fund** – A 2016 study of Michigan's innovation and entrepreneurial initiatives under the Jobs Trust Fund found significant levels of assistance and total impacts to life science companies assisted as of 2014, including:
 - A portfolio of 222 life science companies assisted with an employment level of 2,412 as of 2014;
 - \$86M in cumulative investment through state programs to these life sciences companies;
 - 2014 total economic impact of 6,778 jobs and \$1.5B in annual economic activity.
- **Western Michigan University's Business Technology and Research Park (BTR)** – In just over ten years, more than 50 private-sector businesses have been attracted to the BTR Park. More than 1,400 direct and indirect jobs have been retained and or created.
- **Venture Michigan Fund (VMF)** – Through two fund-of-funds, 46 Michigan companies have been funded that as of 2016 employed nearly 1,500. The total invested through the VMF and other investors was \$1.2B, a leverage of 6.3 times the direct investments by Michigan. Life sciences accounted for 56 percent of the investments out of the first VMF fund-of-funds and 18 percent of the investments of the second VMF fund-of-funds with 38 percent going to healthcare IT companies.
- **Michigan STEM Partnership** – The Partnership reports that a total of 76 STEM grants were made that engaged an estimated 50,000 students from pre-K through high school.

Michigan by the Numbers



Source: National Science Foundation, Science & Engineering Indicators 2014.

Comprehensive State Strategies to Support Biopharmaceutical Development

Michigan was one of the earliest states to commit to developing a life sciences industry cluster through strategic investments. Michigan committed to spend \$1 billion over 20 years from its tobacco settlement funds to create a “Life Sciences Corridor” in 1999. Since that time, the state’s investment program has been recast multiple times, lessening emphasis on the life sciences cluster.

In 2005, Michigan passed Act 225, which created the 21st Century Jobs Fund, which expanded Michigan’s investments to include four priority focus areas, one of which is life sciences. Likewise, the three public universities with medical schools that were allied under the name Life Sciences Corridor to administer a “Core Technology Alliance” paid for in the first round of state funding have now recast themselves as the University Research Corridor, with a multidisciplinary mission.

Today, the State of Michigan’s efforts to support biopharmaceutical development have been largely through its innovation and entrepreneurial development efforts. These efforts are carried out through the Michigan Economic Development Corporation

and the Michigan Strategic Fund as a legacy of the state’s efforts in its 21st Century Jobs Trust Fund program enacted in 2005, which was supported through allocations from the state’s tobacco settlement revenue.

A comprehensive strategy for the life sciences, including biopharmaceuticals, has been advanced by a consortium of organizations representing the state’s life sciences industry (**MichBio**), business leaders and the public research universities in Michigan. Entitled **Michigan Bio-Industry Roadmap for Success**, it recognizes that Michigan, with its significant assets and strong legacy in biosciences research, discovery and development has an opportunity to be a global leader, but is not competitive on the global stage today. It calls for a range of economic development actions that address talent, risk capital, improving industry-research interface and industry-specific business policies and resources.

Programs and Initiatives to Build Bioscience Infrastructure

Western Michigan University’s Business Technology and Research Park (BTR). The BTR Park, which is located on WMU’s 265-acre Parkview Campus, is focused on developing key relationships involving the University, resident businesses, and the Greater Kalamazoo community. Private sector firms are targeted and recruited from three key sectors—life sciences, advanced engineering, and information technology. The Park is home to two important resources specific to the life sciences:

- Southwest Michigan Innovation Center (SMIC), a state-of-the-art high-tech/wet lab business incubator focused on life science start-ups.
- Biosciences Research and Commercialization Center at WMU, which provides commercialization expertise, research support and funding to emerging life sciences ventures.

Outcomes. In just over ten years, more than 50 private-sector businesses have been attracted to the BTR Park. More than 1,400 direct and indirect jobs have been retained and or created.

University Corporate Research Park at Michigan State University. The research park, owned and operated by the MSU Foundation, is adjoining the MSU campus in Lansing and facilitates collaboration between the University and corporate

tenants. The park is home to the Biotechnology Development Center which features a three-story multi-bay pilot plant, flexible wet lab facilities, environmental growth chambers, and customized process equipment design and fabrication, in addition to Class A office space.

Venture Capital, Entrepreneurship, and Other Innovation Related Programs and Initiatives

Innovation Development

Emerging Technologies Fund provides matching funds of up to 25 percent to Michigan companies that are awarded federal Small Business Innovation Research grants or Small Business Technology Transfer grants. These matching grants are provided for both Phase I and Phase II award winners, who raise additional third-party funds to match the Emerging Technologies Fund grant. An individual company is limited to no more than six Emerging Technologies Fund matching grant awards over its lifetime.

Michigan Translational Research and Commercialization Program (MTRAC) uses the nationally recognized Coulter model to translate university research into products through start-ups and licenses with existing companies. It targets specific research areas for commercialization assistance where Michigan's universities have in-depth expertise. The University of Michigan and Wayne State University have received MTRAC funding for life sciences commercialization.

Michigan Corporate Relations Network (MCRN) Small Company Innovation Program/Technology and Commercialization Assistance (SCIP/TCA) is intended to help companies overcome a common challenge faced by small companies and entrepreneurs – getting research and development needs met so they can get to commercialization faster. The SCIP/TCA program provides matching funds up to \$40,000 to Michigan small businesses to help cover the cost of conducting a research project at any State of Michigan public university.

Michigan Translational Research and Commercialization (MTRAC) for Life Sciences Innovation Hub at the University of Michigan. The MTRAC for Life Sciences Innovation Hub, co-managed by the University of Michigan Medical School's Fast Forward Innovation Program and UM Tech Transfer, is a statewide program supporting translational research projects

in life sciences with high commercial potential, with a goal of positively impacting human health. Innovators from the University of Michigan, other institutions of higher education, non-profit research centers, and hospital systems across Michigan are eligible to submit projects for funding consideration.

The Innovation Hub program offers early- and mid-stage funding opportunities. Half of the program's operating budget come from the State of Michigan's Michigan Strategic Fund (MSF) and the remainder coming from participating institutions.

Entrepreneurial Development

SBDC Tech Team is a statewide group of eight business consultants that assist Michigan's emerging technology based companies in their commercialization, financing, and growth strategies. It helps administer many of the innovation and entrepreneurial programs in Michigan, including the Emerging Technology Fund and the Business Acceleration Fund.

SmartZones are distinct geographic locations that seek to bring together technology-based firms, entrepreneurs and researchers. There is a network of 17 SmartZones in Michigan that each include a technology business accelerator offering incubation and entrepreneurial services.

Business Accelerator Fund (BAF) is available through the state's SmartZone network of business accelerators to provide specialized commercialization services such as business modeling, marketing, strategic planning or intellectual property advice. No company may receive more than \$50,000 in BAF services. BAF engagements are awarded through a competitive process. Some company matching dollars are required.

Michigan Life Science Innovation Center (MLSIC). The MLSIC is a 57,000 plus square foot life science incubator that includes state-of-the-art labs, facilities, and business amenities. The facility, a former R&D establishment vacated by Pfizer in 2008, was purchased by the Ann Arbor SPARK Foundation with contributions from the 21st Century Jobs Fund. Tenants include start-ups, business accelerator organizations, and life science leaders that provide on-site mentoring and ready access to business-related expertise all in one location. Partners in the venture include the Michigan Economic Development Corporation, Wayne County, and Plymouth Township.

Venture Financing

Michigan Pre-Seed Fund (MPSF) 2.0 is a \$6.8 million fund aimed at supporting early-stage, high-tech companies by making investments in opportunities originating from technology innovation in Michigan Universities and in pre-seed and seed-stage investments. The MPSF 2.0 supports high-tech start-up

companies as they near commercial viability by providing access to early-stage capital, accelerating company development. As a central fund to the Michigan SmartZone Network, these funds are designed to support this critical stage in the development lifecycle to prepare companies for follow-on private investment. The three types of investments include Micro-Investments of up to \$25,000; Pre-seed Convertible or Equity Investments of up to \$150,000; and, Follow-on Investments of up to \$150,000.

Accelerator Fund Program has seeded two new early-stage venture capital funds by the Michigan Strategic Fund. One of the two funds created, the Michigan Accelerator Fund I invests in life sciences seed- and early-stage ventures. Companies must be based in Michigan. The fund focuses primarily on seed- and early-stage venture capital investments in life science technology companies.

Pure Michigan Venture Match Fund is a Michigan Strategic Fund program intended to attract venture capital, within and outside of Michigan, to early-stage and pre-revenue Michigan-based technology companies. Matches of \$350,000 to \$500,000 will be considered for qualified venture capital investments in early-stage Michigan-based companies of at least \$700,000, but not more than \$3 million. Companies must first secure their venture capital lead investment before applying.

Venture Michigan Fund (VMF) was authorized under the Michigan Early Stage Venture Investment Act of 2003 to serve as a fund-of-funds to invest in venture capital firms focused on Michigan-based early-stage companies.

- **Outcomes.** Through two fund-of-funds, 46 Michigan companies have been funded that as of 2016 employed nearly 1,500. The total amount invested in these 46 companies through the Venture Michigan Fund and other investors involved in the deals were \$1.2 billion, or a leverage of 6.3 times the direct investments by Michigan. Life sciences

accounted for 56 percent of the investments out of the first VMF fund-of-funds and 18 percent of the investments of the second VMF fund-of-funds with 38 percent going to healthcare IT companies. In total, \$28.4 million has been invested through the two VMF fund-of-funds.

21st Century Investment Fund is a fund of funds created in 2006, managed by Credit Suisse. It has committed \$109 million from Michigan's 21st Century Jobs Fund as a limited partner in 12 venture capital, mezzanine and private equity funds. These funds must invest in Michigan companies, at minimum, an amount equal to the MSF investment in each fund. Life sciences is one of four main sectors of focus.

Pure Michigan Venture Development Fund (PMVDF) is focused on growing the venture industry in Michigan by increasing the number of viable venture funds in the state. The program is designed to invest in first and second generation funds in Michigan for the primary purpose of increasing their ability to raise additional funds and become viable funds that will invest more money into Michigan's venture stage companies. One of the program's investments was made in Michigan eLab (Ann Arbor), a seed- to early-stage technology venture fund focused primarily on IT and life science/health care companies from the University of Michigan ecosystem (faculty, students, alumni, university research and research partner institutions).

Michigan Venture Fellows Program aims to increase the number of venture professionals in Michigan and accelerate fundraising and deployment of capital into early-stage companies. Selected Venture Fellows are professionals who are early in their venture careers and are hired for two years by a Michigan-based venture firm, with the expectation that they will continue at the firm following the fellowship period. The candidates, who demonstrate a tie to Michigan and an interest in building a venture career here, are directly involved with the venture fund's portfolio companies. The program is structured for up to 10 fellows in a three-year period to be hired at the venture capital firms in Michigan. This program is managed by The Michigan Venture Capital Association (MVCA), a non-profit trade organization designed to bring together venture capital industry participants in the State of Michigan.

Economic Incentives

R&D Tax Credit. A research and development tax credit of 1.9 percent is offered on incremental increases in research activities as defined by the federal tax code. No carry forward or transferability/refundability is permitted. The credit cannot reduce more than 65 percent of a company's tax liability.

STEM Workforce & Education Programs and Initiatives

Michigan has an emerging approach to supporting STEM education efforts. At an operational program level, the **Michigan STEM Partnership** was formed in 2011 as a public-private partnership effort to develop connections between all levels of education, community organizations and industry to promote and implement STEM education programs. As a non-profit organization, the Partnership is governed by a Board of Directors comprised of representatives from education, after-school and community organizations, professional organizations and business.

The Partnership is advancing Regional STEM Networks that support STEM programs at the regional level and seeks to demonstrate their value and influence the growth of STEM programs.

- **Outcomes.** The 2016 annual report of the Partnership reports that a total of 76 STEM grants were made that engaged an estimated 50,000 students from pre-K through high school.

More recently, at a state policy level, the Michigan legislature created in 2015 a **Michigan STEM Advisory Council** charged with developing an annual plan with recommendations to promote STEM education and careers in the state. The Michigan STEM Partnership is refining its efforts to be in alignment with the recommendations of the Council in the years ahead.