

THE INNOVATIVE BIOPHARMACEUTICAL INDUSTRY'S SUPPORT FOR STEM EDUCATION IN: VERMONT



The Biopharmaceutical Industry's Sustained Commitment to Inspiring and Advancing Tomorrow's STEM Workforce

*A high-skilled technical workforce that is proficient in science, technology, engineering, and mathematics (STEM) is increasingly important to sustained economic growth and U.S. global competitiveness. However, as the U.S. continues to lag behind other countries in terms of STEM literacy and expertise, there are legitimate concerns in the nation's ability to produce enough qualified workers to meet the demands of the global knowledge-driven, STEM-intensive economy and to develop workers with the relevant skills needed for the jobs of the future. **Inspiring and developing the next generation of STEM talent is critical to the economic success of Vermont.***

STEM talent is especially important to the success of the nation's biopharmaceutical industry, one of the economy's most innovative sectors employing more than five times the level of STEM workers compared with the overall U.S. economy. **In Vermont, the biopharmaceutical industry directly employs 1,157 and has a total economic impact of roughly 4,700 state jobs and \$1.1 billion in total economic output.**¹

Vermont will need to fill more than 18,000 STEM jobs by 2026. Although an analysis of a series of STEM education indicators finds that Vermont students generally rank highly in terms of their proficiency in STEM, opportunities for improvement remain.

To help inspire and develop the next generation of STEM workers, the innovative biopharmaceutical industry supports 10 programs in Vermont and nationwide.

Number of National STEM Programs Open to VT Students and Teachers

10

Projected STEM jobs to Fill in VT by 2026³

18,070

National Assessment of Educational Progress State Ranking for VT Students⁴

	4th Grade	8th Grade
Math	27	5
Science	3	3

Share of Graduating VT High School Students Interested in STEM Major or Career⁵ (U.S. = 48%)

45%

Biopharmaceutical Industry Economic Footprint in Vermont⁶

1,157
Direct Jobs

\$1.1 B
Total Output

Biopharmaceutical Industry-Supported STEM Education Programs in Vermont and Nationwide

The **Amgen Foundation** offers programs that encourage STEM education for students of all ages:

- **LabXchange**, a free online science education platform that provides users with access to personalized instruction, virtual lab experiences and networking opportunities across the global scientific community.
- **Khan Academy**, where the Amgen Foundation's support as Science Partner helps create comprehensive new biology lessons for students and teachers worldwide, featuring videos, articles, and practice exercises.
- The **Amgen Scholars Program**, which identifies promising science undergraduates from across the country and matches them with research scientists and laboratories at top-tier universities for a hands-on summer internship designed to fuel their passion for STEM.

AstraZeneca is a founding partner of **Generation Health: How Science Powers Us**, an initiative offering experiential learning resources for middle school students to educate on preventative measures and innovative solutions to key health concerns, helping to make the connection between student well-being and the science behind the prevention and treatment of disease.

Bayer supports multiple nationwide efforts to improve STEM education, with an emphasis on rural areas, underserved school districts, and improving science literacy:

- The Bayer Fund supports the America's Farmers' **Grow Rural Education** program, where farmers nominate their local school districts for grants to improve STEM education facilities and programming.
- The **STEM+ Families Initiative**, a partnership with the National Parent and Teacher Association (PTA) provides grants to local PTAs to plan STEM + Families Science Festivals, events that are especially helpful in bringing STEM education opportunities to low-income and underserved communities.
- **Making Science Make Sense**, a company-wide STEM education initiative dedicated to advancing science literacy across the United States through hands-on, inquiry-based learning, purpose-driven volunteerism, community-focused partnerships, and a public education campaign.

The **Genentech Foundation** offers financial support to students from across the country interested in STEM research:

- The **Summer Research Scholars** program selects promising students of color from universities around the country to participate in summer research programs at top-tier institutions nationwide.
- The Foundation's **Fellowship Program** supports undergraduate, graduate, and postdoctoral students that are pursuing research in basic science at top-tier universities nationally.

Johnson & Johnson's WiSTEM2D initiative (Women in Science, Technology, Engineering, Math, Manufacturing and Design) provides support for girls and women of all ages, helping them pursue STEM2D studies and careers no matter where they are located through, fun, hands-on activities.

- 1 *The Economic Impact of the U.S. Biopharmaceutical Industry: 2017 National and State Estimates, PhRMA and TEconomy Partners, December 2019.*
- 2 *PhRMA-TEconomy "The Biopharmaceutical Industry's Sustained Commitment to Inspiring and Advancing Tomorrow's STEM Workforce" 2020.*
- 3 *TEconomy's Analysis of Projections Managing Partnership Occupational Employment Projections for 2018-2028. Projections data reflect the 2016-26 period for the following states: AL, AZ, CT, KS, KY, MA, NM, OK, TX, VT, WA, WV.*
- 4 *U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2019 Mathematics Assessment and 2015 Science Assessment.*
- 5 *Percentage of ACT-Tested High School Graduates Scoring Expressing Interest in STEM Majors, Occupations, and/or Activities; ACT: The Condition of STEM 2017 State Profiles.*
- 6 *The Economic Impact of the U.S. Biopharmaceutical Industry: 2017 National and State Estimates, PhRMA and TEconomy Partners, December 2019.*