

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



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 Pennsylvania.

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 Pennsylvania, the biopharmaceutical industry directly employs 46,830 and has a total economic impact of nearly 254,000 state jobs and \$67.3 billion in total economic output.**¹

Pennsylvania will need to fill nearly 397,000 STEM jobs by 2028. Although an analysis of a series of STEM education indicators finds that Pennsylvania 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 9 programs in Pennsylvania and 10 programs nationwide.

Number of STEM Programs Supported by the Biopharmaceutical Industry in Pennsylvania²

9

Number of National STEM Programs Open to PA Students and Teachers

10

Projected STEM jobs to Fill in PA by 2028³

396,520

National Assessment of Educational Progress State Ranking for PA Students⁴

	4th Grade	8th Grade
Math	9	16
Science	N/A	N/A

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

55%

Biopharmaceutical Industry Economic Footprint in Pennsylvania⁶

46,830
Direct Jobs

\$67.3 B
Total Output

Biopharmaceutical Industry-Supported STEM Education Programs in Pennsylvania

In addition to its national programs, **the Amgen Foundation** supports the **Amgen Biotech Experience**, which helps high school teachers bring biotechnology into their classrooms by providing them with professional development, teaching materials, and research-grade lab equipment. The program is conducted in partnership with the Richard King Mellon Foundation and is offered through the Citizen Science Lab.

GlaxoSmithKline (GSK) supports two programs to encourage STEM education throughout Pennsylvania:

- The **GSK Science in the Summer** program provides high-quality STEM experiences to students who would otherwise lack access, especially during summer breaks when school is out of session. In Pennsylvania, the program is offered through the Carnegie Science Center in Pittsburgh, the North Museum of Nature and Science in Lancaster, and the Franklin Institute in Greater Philadelphia, which is also a national partner in the program.
- The **Philadelphia STEM Equity Collective**, a 10-year collective impact strategy led by GSK and the Philadelphia STEM Ecosystem, which has a goal to increase access to STEM career pathways for Philadelphia students who are traditionally underrepresented in these fields.

Sanofi provides support for community-based STEM education initiatives in Pennsylvania. These activities strive to ignite a passion for STEM subjects with students who may have limited resources or access to STEM opportunities.

Teva supports a variety of programs related to STEM education in Pennsylvania, with an emphasis on encouraging diversity and inclusion in the Philadelphia STEM ecosystem:

- **Out4STEM**, an internship program that engages LGBTQ students who have been directly affected by violence, helping to increase students' knowledge of STEM, increasing understanding of STEM careers, and offering a safe and inclusive space.
- **STEM Scholars**, an initiative to increase the matriculation of promising students from underserved urban matriculation into STEM majors and careers by enhancing subject knowledge and problem-solving skills. Students work intensively with instructors and with each other to supplement their high school educations with relevant STEM programming and activities.
- The **Supporting and Enriching Natural Science Education in Schools (SENSES) program**, which provides free or reduced-cost museum visits, and lessons and outreach programs on STEM for Title I schools from throughout the Philadelphia region.
- **City Year Philadelphia**, an organization that places full-time, trained young adults in schools to provide individual attention to targeted students. Teva supports City Year's school-based model, where highly trained teams of corps members serve as an additional resource for teachers in classrooms and lead after-school programs and school-wide initiatives.
- **STEM internship programs**, where high school and university students intern with Teva Global R&D at their West Chester facilities. In partnership with the College of Physicians of Philadelphia, Teva also offers internships for high school students where they interact with and learn from professionals through hands-on events and exposure to STEM occupations.

Industry-Supported STEM Education Programs Nationwide

With an emphasis on student engagement, teacher development, and dynamic learning opportunities, PhRMA members **Amgen, AstraZeneca, Bayer, Genentech, and Johnson & Johnson** also support 10 STEM education programs nationwide. Read more about these programs [here](#).

- 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.*