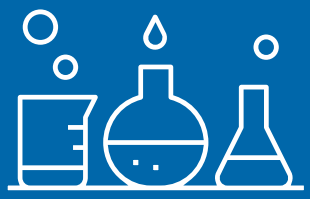
THE INNOVATIVE BIOPHARMACEUTICAL INDUSTRY'S SUPPORT FOR STEM EDUCATION IN:

CALIFORNIA



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 California.***

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 California, the biopharmaceutical industry directly employs 139,650 and has a total economic impact of nearly 760,000 state jobs and $230.4 billion in total economic output.**[1]

California will need to fill nearly 1.4 million STEM jobs by 2028. However, an analysis of a series of STEM education indicators finds that California students rank relatively low among all states in terms of their proficiency in STEM.

To help inspire and develop the next generation of STEM workers, the innovative biopharmaceutical industry supports 9 programs in California and 10 programs nationwide.

Number of STEM Programs Supported by the Biopharmaceutical Industry in California[2]	**9**
Number of National STEM Programs Open to CA Students and Teachers	**10**

Projected STEM jobs to Fill in CA by 2028[3]

1,356,700

National Assessment of Educational Progress State Ranking for CA Students[4]

	4th Grade	8th Grade
Math	**44**	**38**
Science	**45**	**43**

Share of Graduating CA High School Students Interested in STEM Major or Career[5] (U.S. = 48%)	**52%**

Biopharmaceutical Industry Economic Footprint in California[6]

139,650 Direct Jobs	**$230.4B** Total Output

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Biopharmaceutical Industry-Supported STEM Education Programs in California

The **Amgen Foundation** supports programs throughout California that encourage STEM education for students from pre-K through post-graduate studies:

- The **Amgen Biotech Experience**, serving schools in the Greater Los Angeles, Greater San Diego, and San Francisco Bay Area regions, helps high school teachers bring biotechnology into their classrooms by providing them with professional development, teaching materials, and research-grade lab equipment.
- The **LA Promise Fund**, an initiative that combines effective academic programs with essential wraparound services, many of which address the impediments facing students from low-income backgrounds.
- The **Stanford Institutes of Medicine Summer Research Program (SIMR)**, an eight-week program that encourages high school students from diverse backgrounds to develop interest in biological sciences and medicine by working on projects alongside researchers at Stanford.
- **The Ventura County STEM Network (VC STEM)**, a collaborative and interdisciplinary community working to ensure that all Ventura County students, from pre-K through post-graduate studies (P-20), will benefit from high-quality STEM learning opportunities.
- **US 2020**, an initiative that seeks to change the trajectory of STEM education in America by dramatically scaling the number of STEM professionals engaged in high-quality STEM mentoring with youth, with a focus on experiential and hands-on learning.

The **Genentech Foundation** supports a range of programs in California related to strengthening the STEM talent pipeline, especially in the Bay Area:

- **FutureLab**, a partnership between Genentech and the South San Francisco Unified School District (SSFUSD), features activities such as a mentorship program hosted at Genentech's campus, an annual hands-on science competition, and a four-year program designed to give all area high school students an opportunity to explore biotechnology.
- **Community College Biotech Internships** at two Bay Area community colleges, which aim to promote the advancement of students who may lack four-year college degrees.
- **Genentech Dissertation Scholarships**, which provide high-performing graduate students at San Francisco State University with financial support that encourages entrance into a quality PhD degree program.

The **GlaxoSmithKline 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 California, the program is offered through partnerships with the Children's Creativity Museum in San Francisco, and the Lawrence Hall of Science in Berkeley.

Industry-Supported STEM Education Programs Nationwide

With an emphasis on student engagement, teacher development, and dynamic learning opportunities, PhRMA members **Amgen, AstraZeneca, Bayer, Genentech, GSK, 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.*