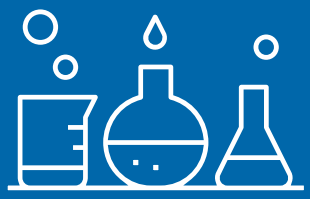
THE INNOVATIVE BIOPHARMACEUTICAL INDUSTRY'S SUPPORT FOR STEM EDUCATION IN:

NORTH CAROLINA



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 North Carolina.***

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 North Carolina, the biopharmaceutical industry directly employs 44,969 and has a total economic impact of more than 251,000 state jobs and $74.5 billion in total economic output.**[1]

North Carolina will need to fill more than 317,000 STEM jobs by 2028. However, an analysis of a series of STEM education indicators finds that North Carolina students generally rank near the middle of 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 8 programs in North Carolina and 10 programs nationwide.

Number of STEM Programs Supported by the Biopharmaceutical Industry in North Carolina[2]	**8**
Number of National STEM Programs Open to NC Students and Teachers	**10**

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

317,130

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

	4th Grade	8th Grade
Math	**18**	**20**
Science	**26**	**34**

Share of Graduating NC High School Students Interested in STEM Major or Career[5] (U.S. = 48%)	**51%**

Biopharmaceutical Industry Economic Footprint in North Carolina[6]

44,969 Direct Jobs	**$74.5 B** Total Output

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Biopharmaceutical Industry-Supported STEM Education Programs in North Carolina

The Biogen Foundation supports STEM education throughout North Carolina using a variety of approaches, including:

- The **Biogen Community Lab**, which encourages high school students to get an inside view of the industry by learning about the drug development process, exploring laboratory techniques, and engaging with Biogen employees from a wide range of departments through week-long sessions. Although all students are eligible to apply, preference is given to those students living in urban neighborhoods, coming from low-income households, or part of groups that are historically underrepresented in STEM careers.
- **Science On-The-Go Toolkits**, all–inclusive kits that employees can borrow when visiting a classroom, special group or event to help engage students in science and the work of Biogen. The materials and activities are designed so that any employee can use these toolkits, including non-scientists.
- The **SPARK Video Contest**, an annual program available to middle and high school students that encourages students to create fun and creative educational videos on the role of biotechnology in their lives. Winning schools each received $10,000 to help support STEM education efforts at their schools and each student from winning teams receives a GoPro.
- The Biogen Foundation **U.S. Grant Program**, which funds activities across North Carolina to support STEM, including teacher professional development, student engagement programs, and others.
- **Bridging the Gap**, is an annual conference organized by the North Carolina Association for Biomedical Research whose goal is to strengthen K-16 STEM education throughout North Carolina by bringing together educators, business leaders, government officials and others who play a role in STEM education to share ideas and resources.

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 North Carolina, the program is offered through the UNC Morehead Planetarium and Science Center in Chapel Hill, which is also a national partner in the program.

UCB supports STEM education in North Carolina through its scholarship programs and support for educator professional development:

- **SummerSTEM**, an eight-day professional development program to improve educator's understanding of the knowledge and skills that are necessary to succeed in STEM careers, engages 100 teachers from Wake County public schools with hands-on experiences designed to bring real-world lessons to the classroom. In addition to providing financial support, UCB also offers office space and employees to help with the immersion experience for teachers.
- UCB provides support for multiple programs that offer undergraduate and graduate **scholarships and fellowship funds** in STEM fields, including at the UNC School of Pharmacy, among others.

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.*