

# The Biopharmaceutical Industry's Sustained Commitment to Growing Tomorrow's STEM Workforce in the United States

PhRMA contracted with TEconomyPartners to survey PhRMA member companies and their corporate foundations to document the state of STEM education and the workforce, as well as capture the depth and breadth of the industry's support for STEM programs.

**A population and workforce that is both literate and proficient in the “STEM” field of science, technology, engineering and math, is key to U.S. economic growth and supporting the biopharmaceutical research and development as well as manufacturing and distribution enterprises.**

Research finds a strong link between STEM intensive industries and innovation and economic outcomes.

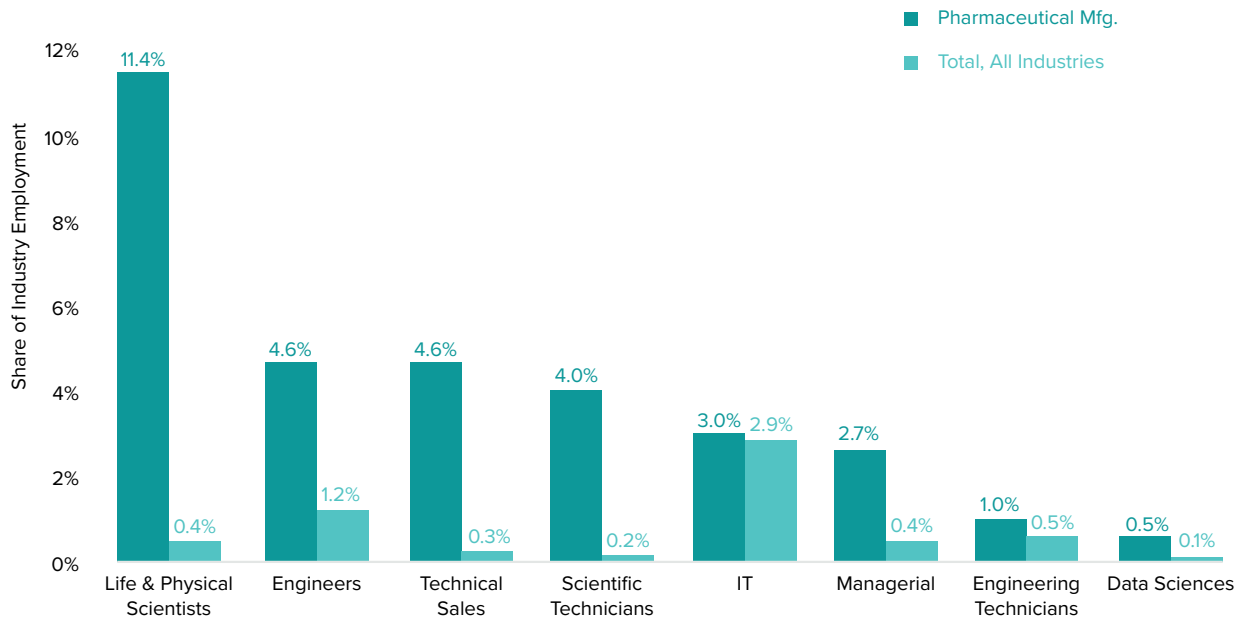
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| Number of STEM Programs Initiated by PhRMA Members in the Last 5 Years | More than 70 programs |
| Number of U.S. Students Industry Sponsored STEM Programs have Reached  | 7.4 million students  |
| Number of U.S. Teachers Industry Sponsored STEM Programs have Reached  | 25,000 teachers       |
| Projected U.S. Open Manufacturing Jobs to go Unfilled by 2028          | More than half*       |

## Strong STEM Intensive Industries lead to:

- High-growth, high-quality jobs with bright career prospects
- New inventions and patent filings
- Development of vibrant technology-driven startups
- Sustained economic growth
- Global competitiveness

**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.

## Deployment of STEM Workforce by Occupational Grouping, 2018



**Source:** TEconomy Partners' analysis of U.S. Bureau of Labor Statistics (BLS). Occupational Employment Statistics (OES) Program data.

### The U.S. continues to lag behind many nations in key STEM Indicators such as:

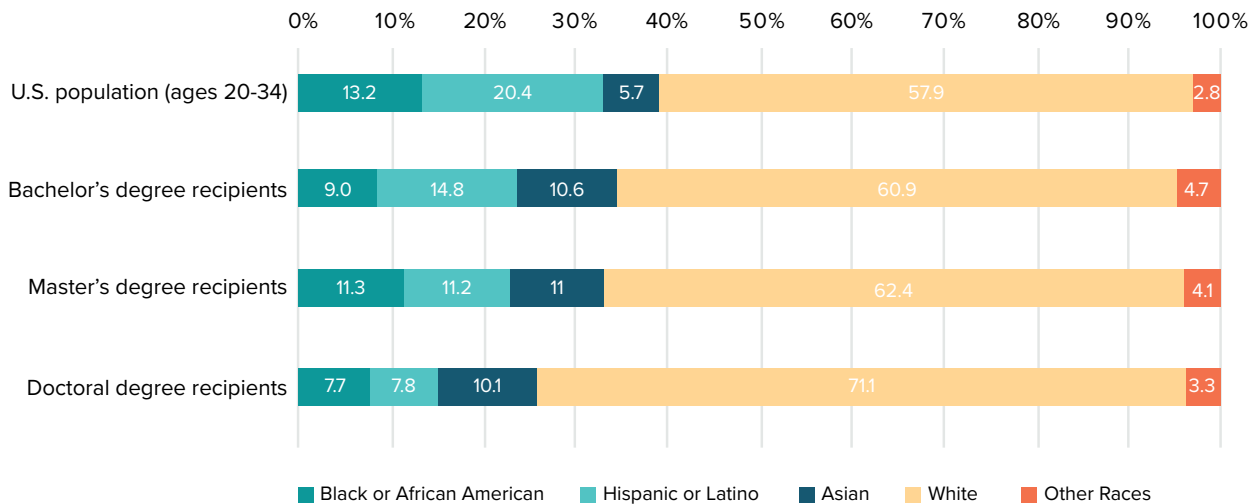
- The performance of 4th, 8th and 9th graders on international math and science assessments is consistently behind several international peers and competitors;
- The share of bachelor's degrees awarded in STEM fields at U.S. colleges and universities lags behind other developed nations;
- The diminishing pipeline of qualified U.S. STEM educators, particularly at the primary and secondary levels.

### Underrepresentation in K-12 and post-secondary STEM education, exacerbates workforce challenges.

- Despite advances in recent years, today's STEM workforce does not reflect the nation's population with respect to gender, race and ethnicity. Women and many racial and ethnic groups continue to be underrepresented in the STEM workforce.
- Broadening participation in STEM fields to groups historically underrepresented is critical to strengthening America's innovation economy and cultivating economy prosperity.

**Research shows that if women and minorities from low-income families became inventors at the same rate as men from high-income families, innovations in the U.S. could increase as much as 4 times.\*\***

## Representation of Racial and Ethnic Groups in the U.S. Population and Among Science and Engineering Degree Recipients, 2017



**Source:** NSF analysis of Integrated Postsecondary Education Data System (IPEDS) data; TEconomy Partners analysis.

**The biopharmaceutical industry sustains substantial, enduring commitments to supporting STEM education across the U.S.** In order for the U.S. to continue its global leadership in biopharmaceutical R&D and grow its advanced manufacturing capabilities and infrastructures, policymakers must place on focus on strengthening the STEM pipeline.

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| <p>STEM programming is supported at <b>all</b> levels across the U.S. through <b>10 national</b> programs as well as local and state-specific programming spanning <b>29 states</b>.</p> | <p><b>Over half</b> of the reported STEM education programs are intentionally designed to engage population groups that continue to be underrepresented in the nation's STEM education and workforce.</p> | <p>Industry financial support for STEM education programs totaled <b>\$204 million</b> in the last 5 years and companies and their foundations awarded nearly <b>2,500</b> STEM education grants.</p> | <p><b>Nearly 21,000</b> biopharmaceutical industry employees volunteered <b>more than 123,000</b> hours to support U.S. STEM education programs.</p> |
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**“Science is not partisan; nor are the wonderful STEM students who will keep fueling American Innovation – they deserve to be celebrated.”**

– Kumar Garg, former member of Office of Science and Technology Policy, 2019.

## Biopharmaceutical Industry-Supported STEM Programs Nationwide

- **Afterschool and summer education and research activities** – These activities represent the largest single share of programs supported by industry and include a breadth of efforts to connect students with STEM learning and/or training opportunities. For example, one company offers an undergraduate summer research program hosted at 24 institutions across the U.S., Europe, Asia, Australia and Canada where students work on a biotech-related research project with top faculty, and engage in seminars and networking.
- **Scholarships for students or teachers** – Several biopharmaceutical companies provide scholarships for postsecondary studies and early-career physicians and scientists, and other companies award annual college scholarships to high-achieving students from a specific tuition-free STEM focused charter school in Chicago.
- **Support for STEM-focused schools** – Numerous companies support and maintain partnerships with specific STEM schools and academies to encourage students interested in health and science careers and help them understand life sciences career paths.
- **Classroom (or on site) visits for learning opportunities and career awareness** – Many companies host students from local high schools to raise awareness about the types of STEM careers in the pharmaceutical industry with day-long events featuring hands-on, interactive educational sessions.
- **Sponsoring science fairs of STEM-related competitions** – Multiple PhRMA member companies support science fairs or festivals for k-12 students. One company will have their employees frequently serve as volunteer judges and mentors during events.
- **Supporting teacher workshops and other professional development** – To ensure the nation's teachers are up to date on dynamic and ever-changing technology fields, companies are supporting numerous engagements with teachers. For example, one company sponsors an annual event in partnership with a network of public and private higher education institutions, K-12 schools, government and businesses. This two-day program brings together company employees and teachers to discover new ways to provide students with the best opportunities to realize potential in careers in STEM.

<sup>\*</sup>Deloitte and The Manufacturing Institute. 2018 Deloitte and The Manufacturing Institute Skills Gap and Future of Work Study."

<sup>†</sup>Data for the fourth and eight grades from National Center for Education Statistics, Trends in International Math and Science Study (TIMSS), 2015; 9th grade from Organization for Economic Cooperation and Development (OECD), Programme for International Student Assessment (PISA).

<sup>‡</sup>National Science Foundation (NSF), National Science Board, Science & Engineering Indicators, 2020.

<sup>§</sup>National Center for Education Statistics, Digest of Education Statistics, Table 322.1. Bachelor's Degrees conferred by postsecondary institutions by field of study.

<sup>\*\*</sup>Rebecca Linke, MIT, "Lost Einsteins: The US may have missed out on millions of inventors," Feb 2018.