The Massachusetts Data Science Workforce Challenge: 
Expanding the Size and Diversity of the Early Stage Data Science Pipeline/Pathway

RATIONALE

Current Workforce Realities
- “Among all respondents [to the question, ‘Of the following, which has the most detrimental effect on your organizational bottom line?], the length of time to hire qualified candidates (33%) [and] worker turnover (25%) ...accounted for the biggest headaches and detriment to the bottom line.” (2018 Job Trends Forecast, MassBioEd)

Future Workforce Realities
- 11,976 new jobs are forecast to be created between May 2017-May 2023. A 21.5% growth rate for this period is expected at Biotechnology R&D Organizations. (2018 Job Trends Forecast, MassBioEd)
- The number of students entering college is stagnating, and the recent increase of majors in scientific fields is not sufficient to meet growth projections. (Life Sciences Workforce, 2020, MassBioEd)

The Workforce-Equity Nexus
- Respondents to a 2018 survey question “Do you have diversity/inclusion initiatives?” answered as follows: Non-Management Hires – 29% Gender, 28% Race/Ethnicity; Management – 33% Gender, 29% Race/Ethnicity; Board – 17% Gender, 17% Race/Ethnicity; and None – 61% Gender, 59% Race Ethnicity. (2018 Job Trends Forecast, MassBioEd)
- In 2000, the U.S. demographic population of K–12 Public schools was: White 61%, Black 17%, Hispanic 16%. In 2029, the projected demographic populations of K–12 Public Schools are as follows: White 44%, Black 15%, Hispanic 28%. The 2029 projections show White students at 44% will be equal to the total of Black and Hispanic students at 43%. ([https://nces.ed.gov/programs/coe/indicator_cge.asp](https://nces.ed.gov/programs/coe/indicator_cge.asp))
- For the class of 2017-18, women earned more than half of bachelor's degrees (57.3%), master's degrees (60.1%), and doctoral degrees (53.3%). ([https://catalyst.org/research/women-in-the-workforce-united-states](https://catalyst.org/research/women-in-the-workforce-united-states))
- Arguably, companies/academic institutes without both a dynamic in-house gender and race/ethnicity initiative and strong, external engagement in gender and race/ethnicity initiatives will be at a competitive disadvantage.

Working Toward a Systemic, Sustainable, and Scalable Strategic Long-Term Solution
- The Massachusetts Life Sciences Center (MLSC) conducts internship funding programs for high school and college students, including a new track for data science opportunities, as well as STEM Equipment and Professional Development grants.
- The Massachusetts Biotechnology Education Foundation (MassBioEd) operates both their Career Ambassadors Program and BioTeach Program.
- Education Development Center (EDC) is currently working with Community Colleges to develop Data Science certificate and Associate Degree programs, and has active NSF-funded projects that will develop both new high school curricula (in Computational Biology, Chemistry, and Physics) and a two-course Data Science pathway for high school students.
- EDC, MLSC, and MassBioEd, together with additional partners, are committed to building and implementing a multi-year **systemic, sustainable, and scalable strategic long-term solution** that promotes Data Science careers in the life science industry.