Growing evidence shows that students learn best when they are actively participating and engaging in activities with their peers in a context that is interactive and fun[1]. Hands-on STEM activities that allow students to explore, make their own choices, and set goals have been shown to keep students engaged in the classroom and catalyze the development of creative thinking and problem-solving skills. Although STEM education is an important part of school curricula[2], the quality of STEM programming is variable[2,3], and more than 50% of Canadian students drop math and science in senior high school[4]. This is exacerbated for schools in low-income communities which lack the resources to provide students with meaningful STEM activities[5], due to chronic underfunding[6,7]. Inequities in resourcing may be one reason why students from high schools in low-income communities have lower rates of graduation and college admittance[8,9]. **This project will help break the systemic barriers to accessing science education by co-developing a curriculum-linked, in-class science enrichment program with teachers from a low socio-economic status school, and by connecting high school students with scientist-mentors (Fig. 1)**. The current science curriculum in Ontario for students in grade 9 includes the development of scientific investigation skills (planning, analyzing, interpreting, and communicating)[10]. Through a partnership between Scientist-mentors (researchers and undergraduate/graduate students from the **Andrade laboratory**, Department of Biological Sciences at UTSC) and STEM teachers from **West Hill Collegiate** (WHC [11], low-income public high school in Scarborough, Ontario, Canada) we **co-developed** a program that is integrated into and supports the current grade 9 curriculum for two of WHC's STEM classes. Scientist-mentors will visit WHC to facilitate case-based discussions about why science is important, provide demonstrations of behavioural experiments, and guide students to devise and test their own hypotheses using behavioural experiments on live insects and spiders.

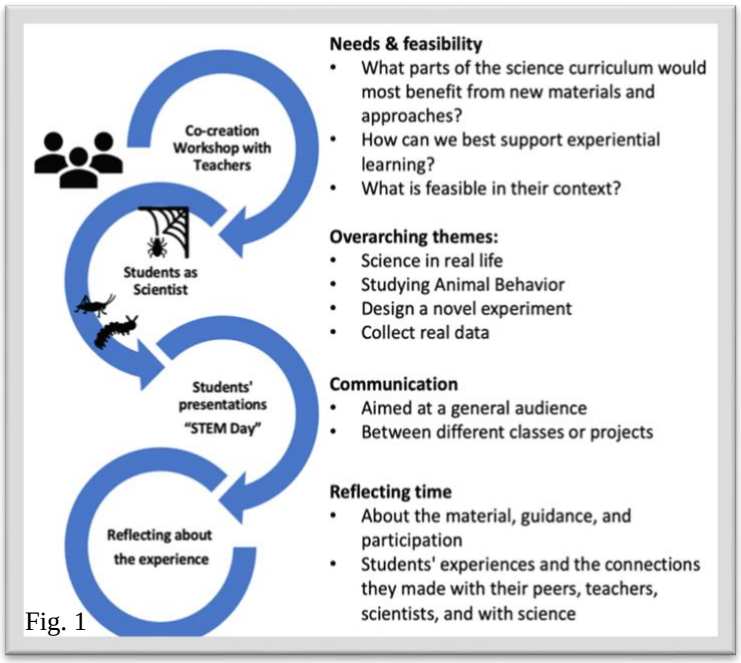

Fig. 1

The Andrade laboratory at the University of Toronto Scarborough[12] has a 20 year history of organizing outreach activities across Toronto, and includes a diverse group of researchers invested in the study of animal behaviour. With this project, high school students will be engaged bi-weekly, from February to June 2024, with experiential learning opportunities through interactive and reflective workshops, in addition to conducting novel behaviour experiments with live invertebrates at the UTSC Department of Biological Sciences' teaching labs. High school students will be guided to conceptualize an idea, create and conduct a classroom experiment, present their findings to their peers, and reflect upon their experiences. We will focus on 4 overarching themes (Fig.1): (1) the importance of diverse perspectives from different cultures and backgrounds in science, (2) the importance of studying animals (what their behaviour can tell us about e.g., evolution, climate change, conservation), (3) the process of designing experiments, collecting, and interpreting real data, and (4) the different careers paths in STEM. Students will present their research findings to their peers and their community at **WHC's annual May 'STEM Day'**. Finally, we will guide the students to reflect on their experiences and the connections they made with their peers, teachers, scientists, and with science.

We had our first visit last week (pictures across the document) to introduce the project to the grade 9 STEM classes, and we started our first hands on activity by learning about spider anatomy and development as well as their prey capture through short behavioural observations. If this program is successful, it could be adapted to reach other schools in the area. The long term goal of this project is to increase the enrollment and retention of marginalized youth in STEM, and encourage their application to STEM related college and university programs.

By providing students from under-represented and under-served communities with an opportunity to participate in science, we hope to increase persistence in STEM [13]. This will benefit the students, their families, and the scientific community.