

# Innovations in Examining Pathways of Youth Who Stay in Science

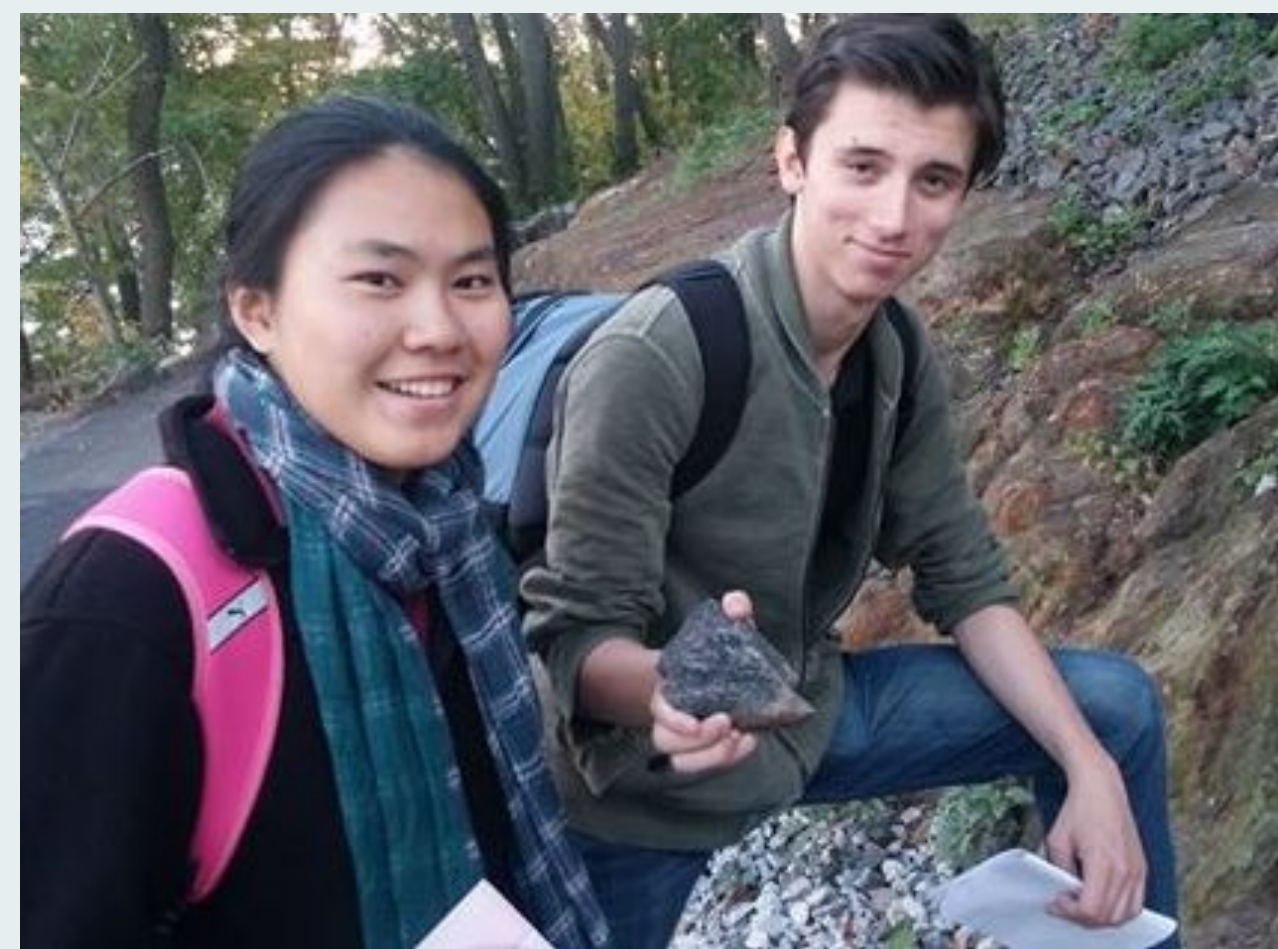
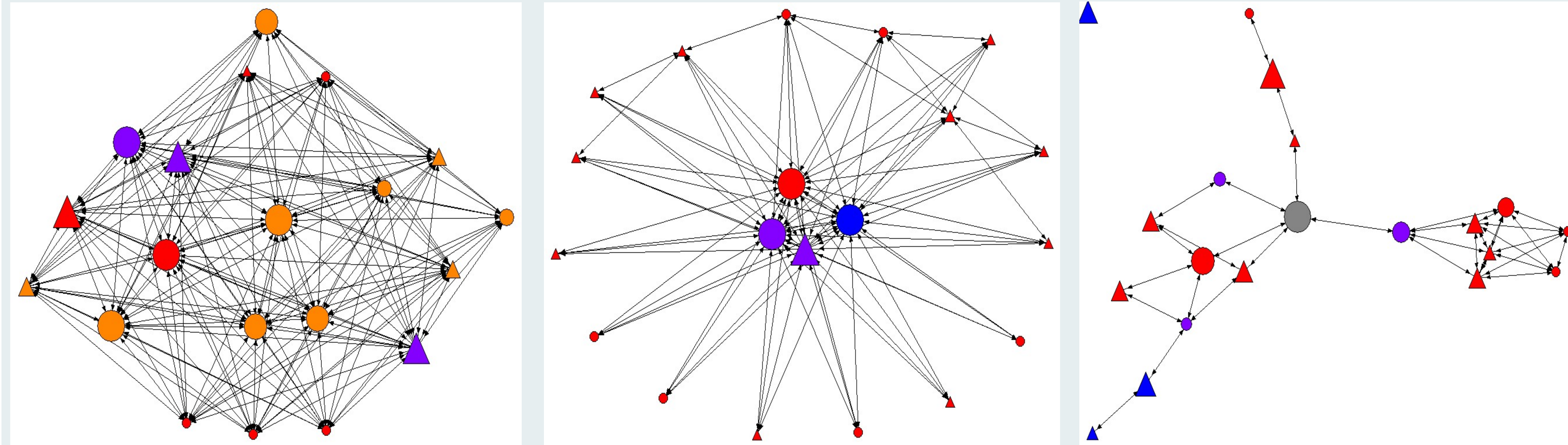
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## Overview

This research study investigates the pathways of approximately 1270 high-potential urban youth participants in intensive mentored science research programs to uncover factors that support persistence in STEM. We combine longitudinal social network and survey data with analysis of matched student data from New York City Public Schools records, to examine:

- how youths' social networks develop through their participation in communities of practice (CoPs)
- the relationship between CoP features and youths' social networks, academic achievement, and pursuit of a STEM major
- variations in pathways as related to learner characteristics, social network composition, and CoP features

## Social Network Pilot Data



## Different Questions

- In what ways do teachers and mentors interact with one another to collaboratively support student persistence and growth?
- How much new or unique support is provided through non-science research mentoring connections? Does this complement or reinforce what youth are provided through the mentorship program?
- Have youth's relationships with scientists or adults more generally changed since their mentorship experience? If so, in what ways?

## Ecosystem Approach Looks Across Formal & Informal Contexts

By collecting data from in-school and out-of-school contexts for over 300 youth per year, across three years, we hope to **advance methodology** in how to more easily collect and match these two traditionally separate spheres of influence and experience, and to **advance theory** on the impact on youth STEM-career pathways of participation across multiple settings and broader exposure to STEM social capital. The study involves:

### Social Network Analysis:

- Uncover relational features of persistence that may be particularly critical for underrepresented youth
- Understand how STEM role models and cultural brokers foster a sense of belonging and identity in STEM

### Analysis of Large Public School Data Set:

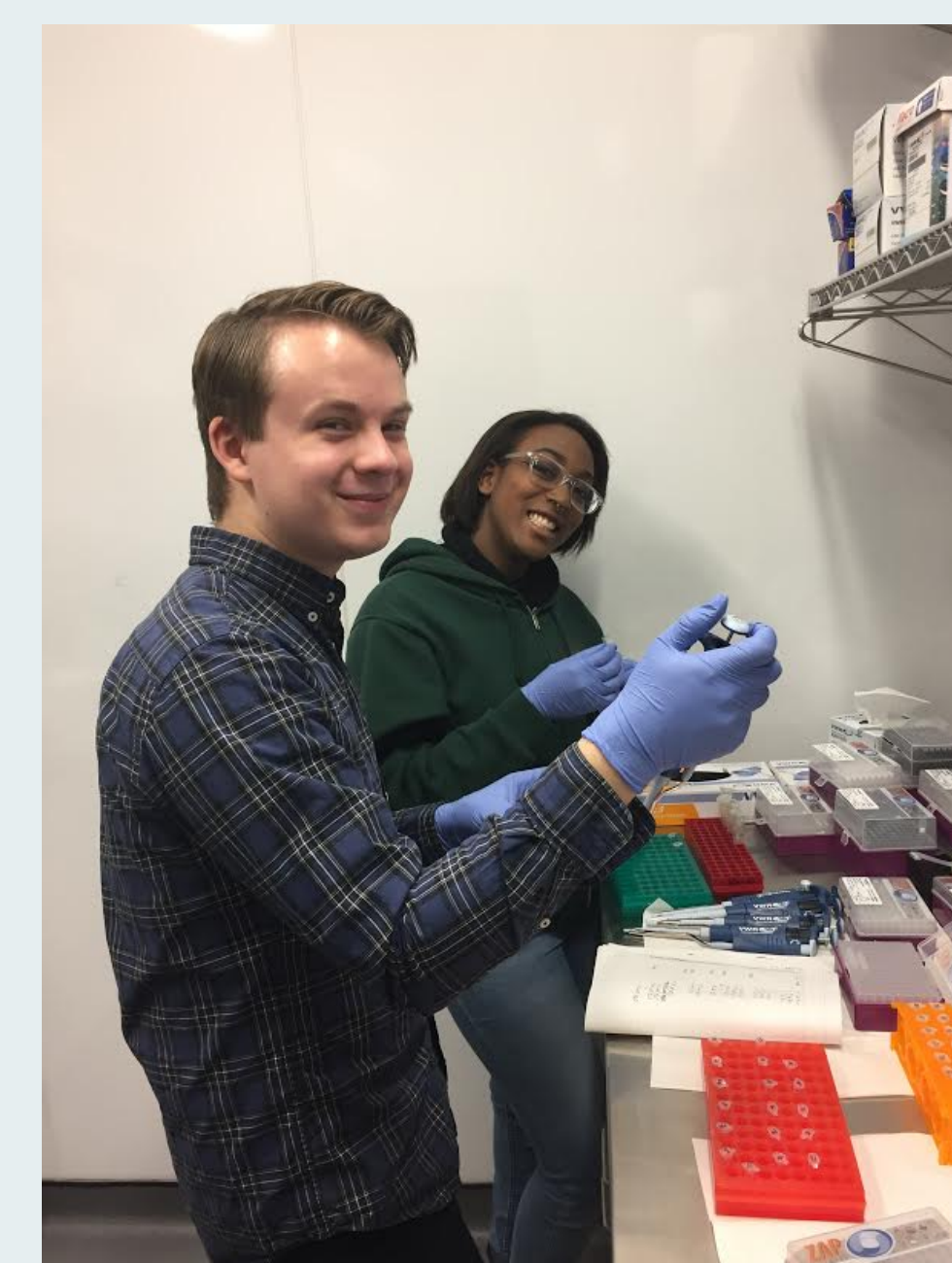
- Data set contains biographical and demographic variables, secondary and postsecondary course enrollment and grades, and persistence/graduation indicators
- Matched comparison of program participants and non-participant peers

### Incorporates Youth as Co-Researchers:

- Select program alumni will work alongside education researchers on data analysis and dissemination

## Engaging Youth as Co-Researchers

To empower youth voices in data analysis and to lead engagement around the findings among audiences important to them.



AMNH Education Research Internship  
Program Dates: June 2017 - March 2018  
Application Deadline: May 5

**Project Description:**  
Graduates of the NYC Science Research Mentoring Consortium you are eligible to apply to the AMNH Education Research Internship. Education researchers at the American Museum of Natural History (AMNH) are conducting a research study called *Staying in Science (SIS)* to investigate the ways in which providing high school students with authentic science experiences may or may not support student interests and choices in pursuing science careers. One component of this study involves engaging alumni of science research mentoring programs as co-researchers. As a co-researcher, you will have opportunities to build on your science research experiences by engaging in education research that explores the factors that contribute to youth's experiences in and pursuit of science in college and in science-related careers.

**Benefits of the program**

- Opportunity to learn social science techniques alongside AMNH researchers
- Develop research skills and expertise by conducting analysis of quantitative (e.g. surveys) and qualitative (e.g. interview) data and learn how to present findings to multiple audiences
- Obtain official certification in Human Subjects Research
- A stipend upon completion of all research and program requirements.
- An AMNH ID that provides access to Museum events, discounts at the Museum store, and free access to countless NYC museums

**As a co-researcher, you will:**

- Meet monthly with a small research team of alumni and AMNH education researchers to develop mini-inquiries of components of the *Staying in Science* study that are the most interesting to you and your peers
- Learn about the ethics of social science research and obtain your Institutional Review Board (IRB) Certificate which allows you to participate in human subjects research
- Expand your research skills by learning about survey research, conducting analysis of SIS current student, alumni, and mentor survey and case study data, and learning to write short narrative interpretations of your findings to share at team research meetings
- Share your preliminary findings with a variety of audiences through blog posts, social media, conferences, and/or co-authored reports
- Contribute to the field of science education research by deepening our understanding of the reasons why students do or do not pursue science careers and add insight into how we might foster more diversity in science
- Reflect on your own learning and experiences in science and think about your own trajectory and career
- Support the recruitment of new participants in the *Staying in Science* study by visiting program sites and explaining the benefits and risks of students' participation in educational research

## Involving Youth in Dissemination & Leveraging Social Media



- Seek input from youth on how best to share findings; empower youth to contribute
- Engage youth-facing organizations to help share what we have learned
- Utilize youth social networks (program alumni, current participants, co-researchers)
- Capitalize on existing communications assets, focusing on social media (YouTube; Facebook; Twitter; LinkedIn)

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