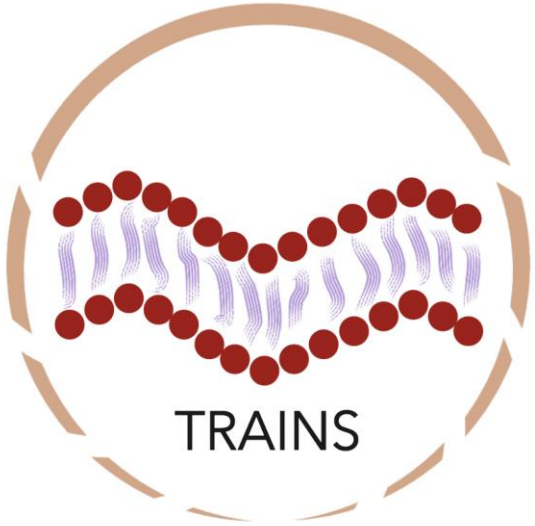


Understanding Hispanic Physics Majors' Expectations of Relationship-Building at Community College

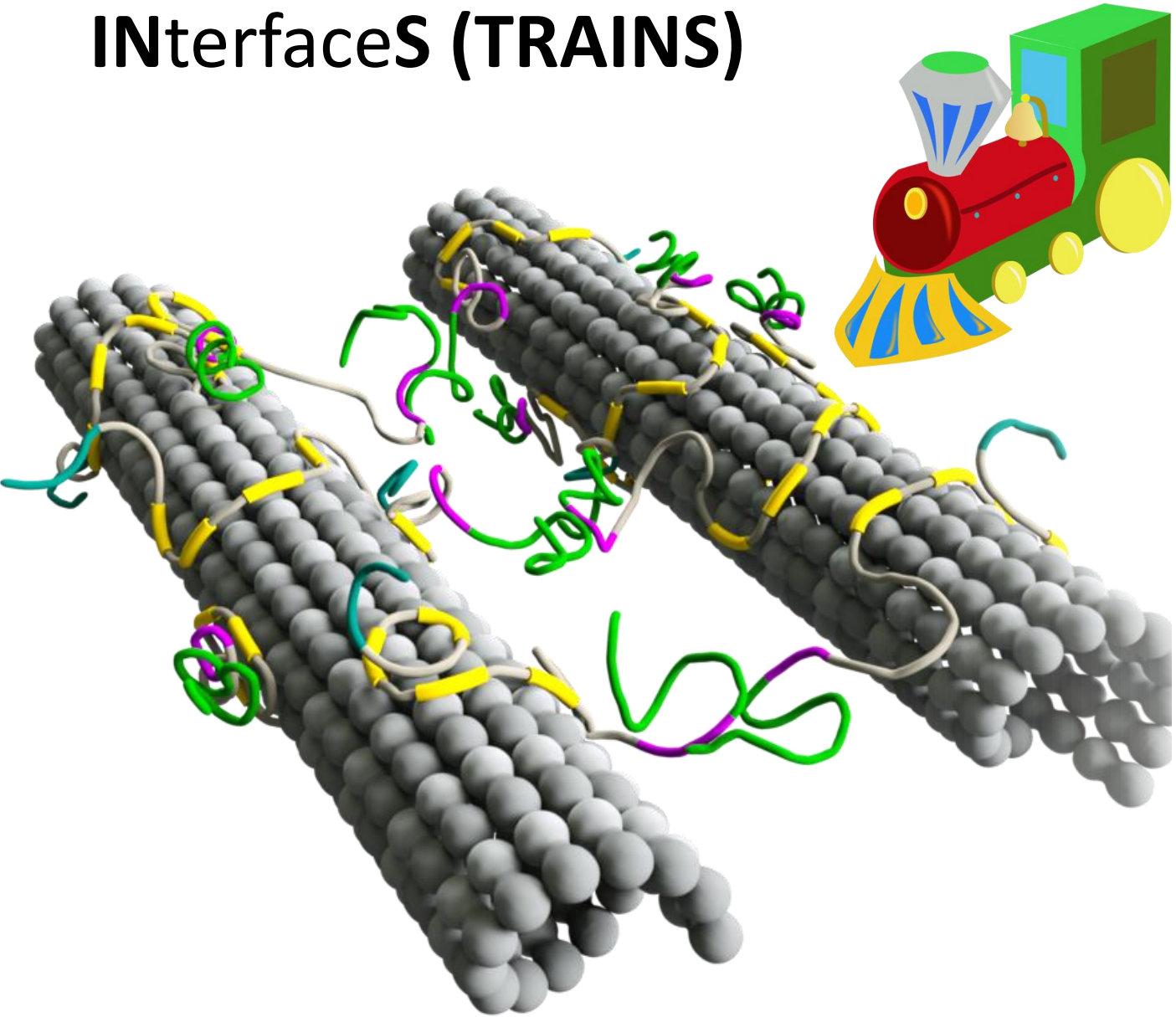
Anne Leak, High Point University

Alex Bowie Laughrey, High Point University

Peter Chung, University of Southern California

Christian Vaca, Rio Hondo College

Transitions and **R**esearch **A**cross **IN**terface**S (TRAINS)**



What is **TRAINS**?

TRAINS is an intense, 15-month research program to transition undergraduates from California community colleges to earning STEM degrees at baccalaureate-granting institutions.

TRAINS students conduct research in the cutting-edge fields of biophysics under faculty mentors.

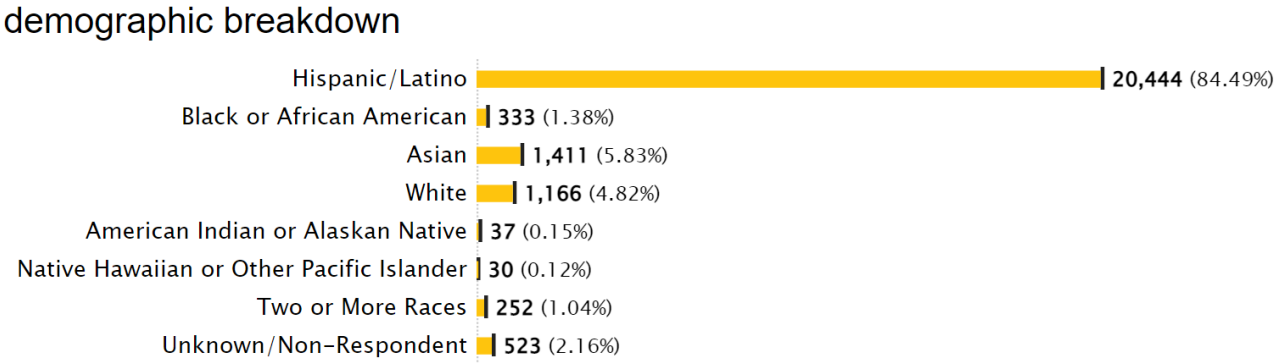
TRAINS direct mentors receive training to support students before, during, and after their transition.

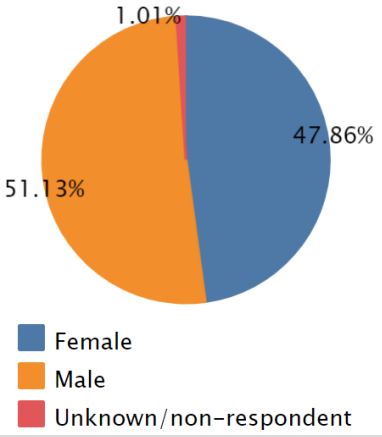
Purpose

TRAINS is designed to increase the success of **students** at minority-serving community colleges that educates students traditionally marginalized in STEM fields.

TRAINS focuses on preparing direct **mentors** - graduate students, post-docs, and early career faculty in STEM - who will continue working with traditionally marginalized students and systematically improve inclusive practices in the community itself, rather than solely changing the students to fit STEM communities.

Community College





Research Questions

- In what ways can mentors help students navigate the interfaces between their culture and science cultural systems?

…and navigate transitions from community college cultural systems to 4-year university cultural systems?

Background: Mentoring

- **Mentoring Impact:** Mentoring leads to noticeable increases in retention for STEM undergraduates (McCavit & Zellner, 2016).

- **Varied mentor roles:** While mentors act as a guide to undergraduate programs, they also advise students on what courses to take, whom to do research with, how to balance academic and non-academic responsibilities, and how to apply for financial support, scholarships, and jobs (Thomas, 2021).

- **Mentoring and STEM identity:** How students are perceived by others is a part of their identity (e.g., Hazari, Sadler, & Sonnert, 2013). Student perceived as more adept in STEM feel obligated to tone their performance down to lower expectations. Students perceived as inept in STEM overcompensate to establish their worth and presence in the scientific community. Mentors help students balance the two extremes.

- **Mentors as cultural brokers:** Cultural brokers are necessary as resources to cross borders between competing worlds (Cooper, Chavira, & Mena, 2011). The teacher, by acting as a cultural broker, has the potential to help their students negotiate border crossings and succeed in science (Jegede & Aikenhead, 1999).

Methods

- **Data collection** - a qualitative approach including digital journaling, interview methods, surveys, and institutional data from undergraduate TRAINS participants, their early career mentors, and other URM physics undergraduates recruited from HSI campuses.

- Because of **under representation** in physics and in PER for students from HSI campuses, qualitative research approaches offer systematic ways of understanding student experiences.

- This presentation focuses on preliminary surveys with **5 mentors** and a focus group interview with **5 TRAINS community college students.**

- **Interview questions** focused on mentoring and research expectations, peer relationships, community engagement, and initial perceptions of physical science fields and communities.

Preliminary Findings: Mentor Perceptions

- Mentors worry about how to establish and foster open, continued effective **communication**
- Mentors feel that **feedback** should be personal in order to ensure the mentee does not feel overwhelmed or discouraged. If feedback is delivered incorrectly, mentees may feel rushed to be independent.
- Mentors want to use methods that admit their own **vulnerability**, so mentees feel comfortable and already part of the physics community
- Mentors are most concerned with how to help students feel like they are an **equal** in the research process, treat them like they are important because they are, and not contribute to the **effects of bias** they may have faced from others in the past.

Preliminary Findings: Student Perceptions

- Students see that their mentors are trying to foster open, continued effective **communication** and appreciate these efforts. They are comfortable asking questions and getting help, but worry about asking questions they feel are too simple and will make them seem unprepared.

- Students struggle with how **independent** they should be during their early months of research. Some feel they had the right amount of support and are now prepared to be more independent. Others feel they were asked to be independent too soon.

- Students feel that even though their families see them as scientists and are very supportive, they are not actually scientists until they contribute and **produce something** (their own idea for the direction of the research, a publication or presentation).

- Students are intimidated by the **[perceived] distance** between themselves and professors, especially the PI of their research.

Next Steps

- We need to understand underserved students' expectations of mentoring in order to better support them through transitions
- We need to prepare mentors to improve the community (Pipe) not just the students (water)
- Direct mentors are being prepared to support students from underserved backgrounds in transitions, but part of their role may need to be narrowing the distance between the student and PI.
- Questions and Suggestions!

E-mail Anne Leak:
aleak@highpoint.edu

TRAINS