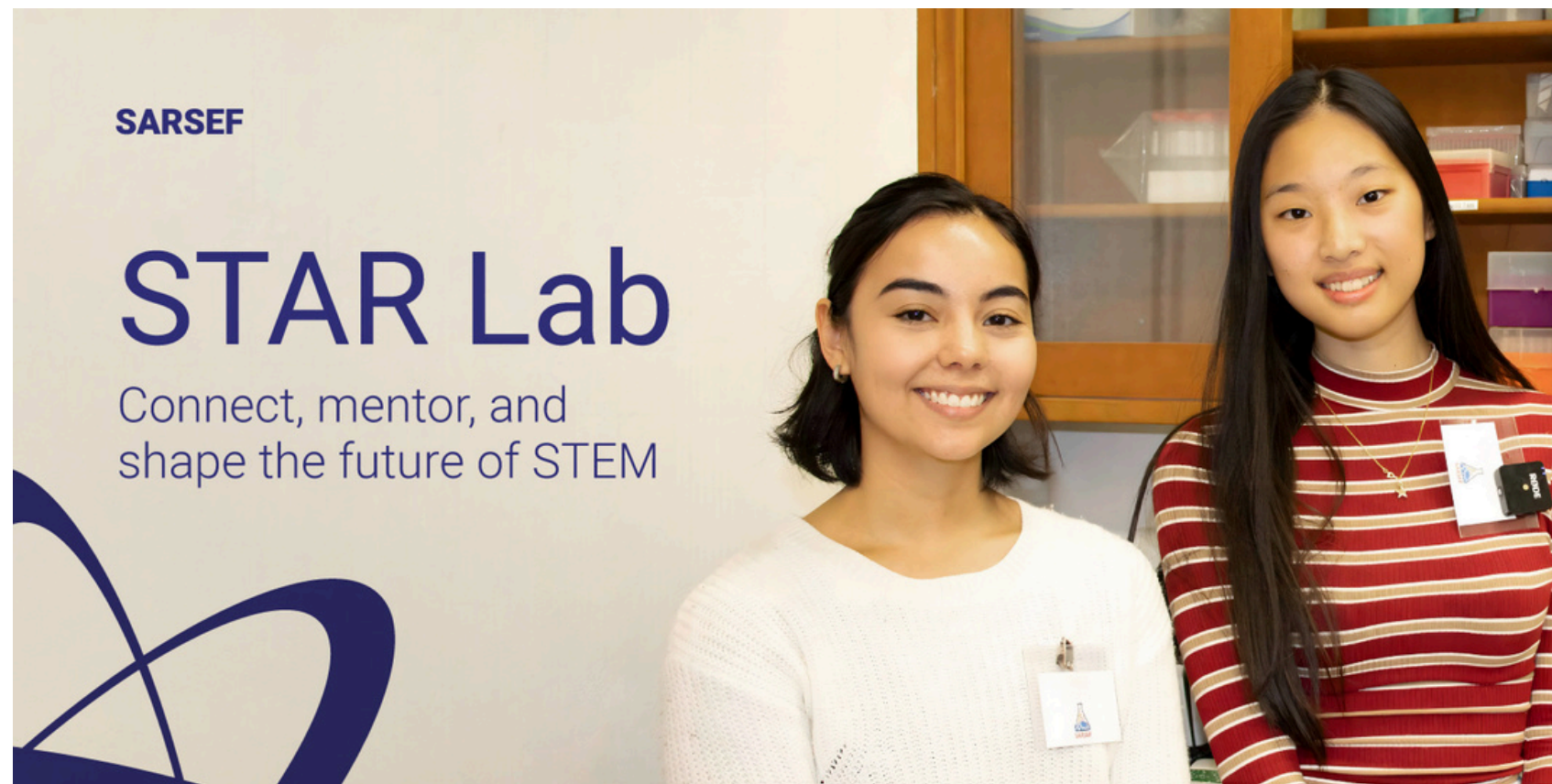


# STAR Lab: Empowering Tomorrow's Scholars with an Authentic Research Experience



**Cindy Bujanda, Director of Student Experience STAR Lab**



COLLEGE OF SCIENCE  
**Molecular  
& Cellular Biology**



**SARSEF**



# What is STAR Lab?

- A program in collaboration with the University of Arizona Molecular & Cellular Biology Department and the non-profit SARSEF
- We provide access to an authentic research experiences to high school students in Arizona, with the guidance of a mentor through a UA class (MCB103-B)
- Runs from late September to early March



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# Our Goal

To provide access to a mentor, resources, and exposure to doing authentic research to minoritized students in STEM fields and careers.

To provide support in their college and career pathways.



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# Who is this program for

- Students 16 years of age by the start of the program
- High school student in Arizona
- Students that are:
  - Curious and willing to do a research project
  - A genuine interest in the program
- Be able to commit 5-10 hours a week
  - 1 hour meeting with mentor
  - 1 hour meeting with facilitator





## Who We Are

**SARSEF's Mission:** We create Arizona's future critical thinkers and problem solvers through science and engineering

**Everything we do is guided by our organizational values:**

- Innovation
- Equity
- Engagement

**SARSEF is a Tucson tradition starting in 1955 that now serves statewide.**





# SARSEF's Science Fair

- PreK-12 projects, showcasing the work of over 5,000 Southern AZ students every year
- In person and virtual component

The screenshot displays the virtual science fair interface with the URL [schoolfairs.sarsef.org/exhibithall.php?](https://schoolfairs.sarsef.org/exhibithall.php?) in the browser address bar. The page features a grid of project cards, each with a thumbnail image, title, description, grade level, and category. The projects listed are:

- HS-AN003**: 2023 Designing A Low-Cost, Effective Acoustic Lure to Improve Bat Capture. Grade: HS. Category: AN - Animal Kingdom.
- HS-AP001**: 2022 Analyzing SARS-Cov-2 Related Genomic Traits Among Chiroptera and Other Mammals. Grade: HS. Category: AP - Animal and Plant Science.
- HS-AP002**: 2022 Cockroaches on Caffeine: Behavioral analysis of the Madagascar Hissing Cockroach (*Gromphadorhina portentosa*) after a long term Caffeine Supplemented Diet. Grade: HS. Category: AP - Animal and Plant Science.
- HS-AP003**: 2022 Horizontal Transmission of the Obligate Symbiont *Burkholderia* in the Leaf-Footed Bug, *Leptoglossus zonatus* (Hemiptera: Coreidae). Grade: HS. Category: AP - Animal and Plant Science.
- HS-AP004**: 2022 Improving the Welfare of a Captive Chuckwalla Through the Use of Comparative Behavioral Studies. Grade: HS. Category: AP - Animal and Plant Science.
- HS-AP005**: 2022 Socially Exposed: Investigating the relationship between the social behaviors of mammals and their viral exposure. Grade: HS. Category: AP - Animal and Plant Science.
- HS-AS001**: 2023 The Effect of a Labellum on the Success of Bumble Bee, (*Bombus impatiens*) Landings. Grade: HS. Category: HS-AS001.
- HS-AS002**: 2023 Copy number variation of digestion genes across hawkmoths. Grade: HS. Category: HS-AS002.
- HS-BE001**: 2022 Bilingualism's Effect on Memory. Grade: HS. Category: HS-BE001.



<https://virtualfair.sarsef.org/>



# SARSEF Science Fair

- Sponsored awards
  - 1st -3rd place cash awards
  - Up to \$5,000 Scholarships
  - 8 ISEF projects: Finalists win all expense trip to International Science and Engineering Fair
  - \$2500 UA Scholarships
- ISEF May 2025
- Columbus, Ohio
  - More than \$250,000 in top awards
  - 1500-2000 students from around the world



# SARSEF Science Fair





# The need for STAR Lab

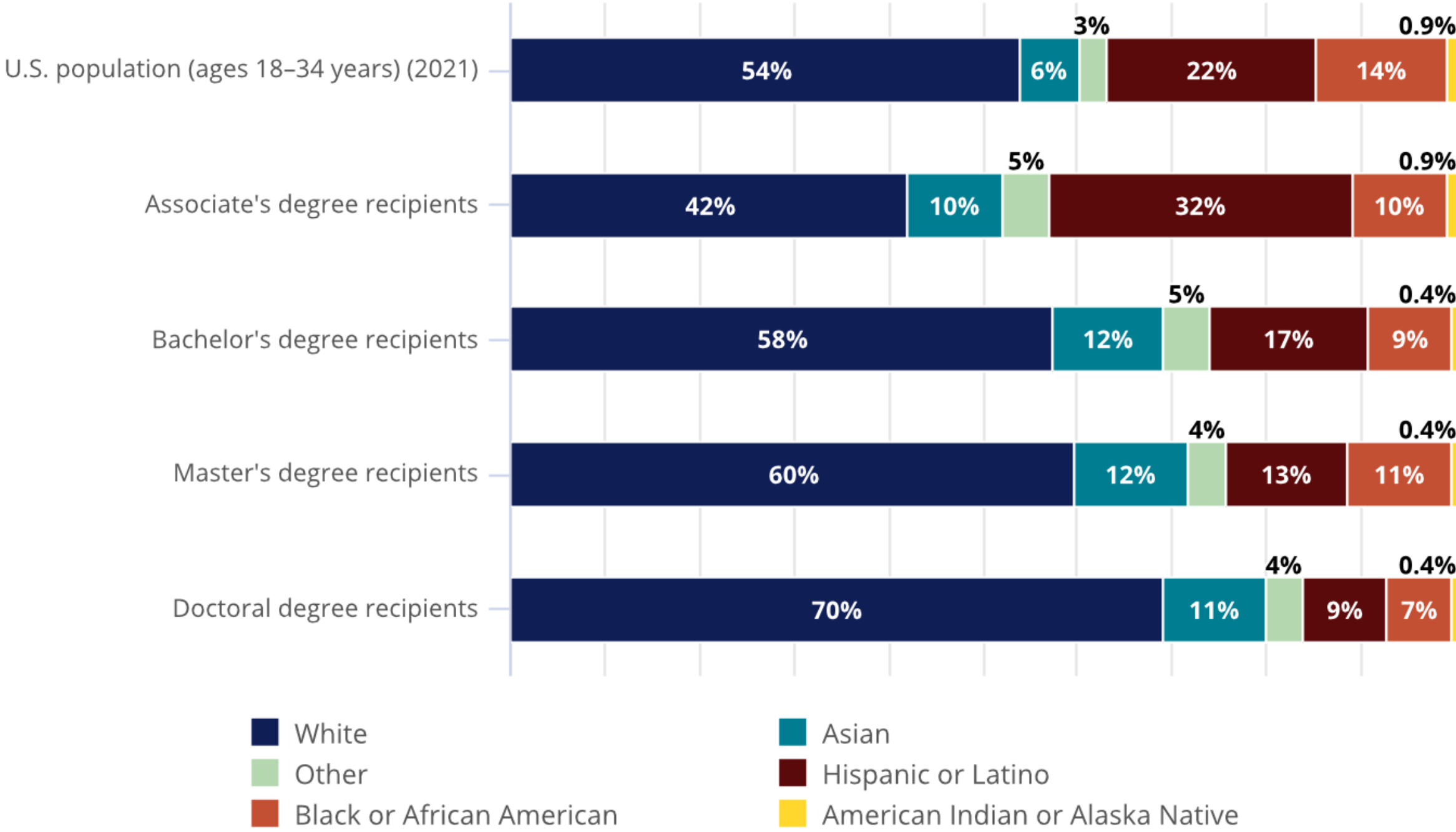
- Navigating the Minor's Policy
  - It has evolved with time
  - Students are enrolled in 3 units of credit MCB103-B
- Broadening participation in STEM
  - Increase access to mentorship & research

# Broadening participation in STEM

National Center for Science and Engineering Statistics | NSF 23-315

Figure 7-4

U.S. population ages 18–34 and S&E degree recipients, by degree level and race and ethnicity: 2020

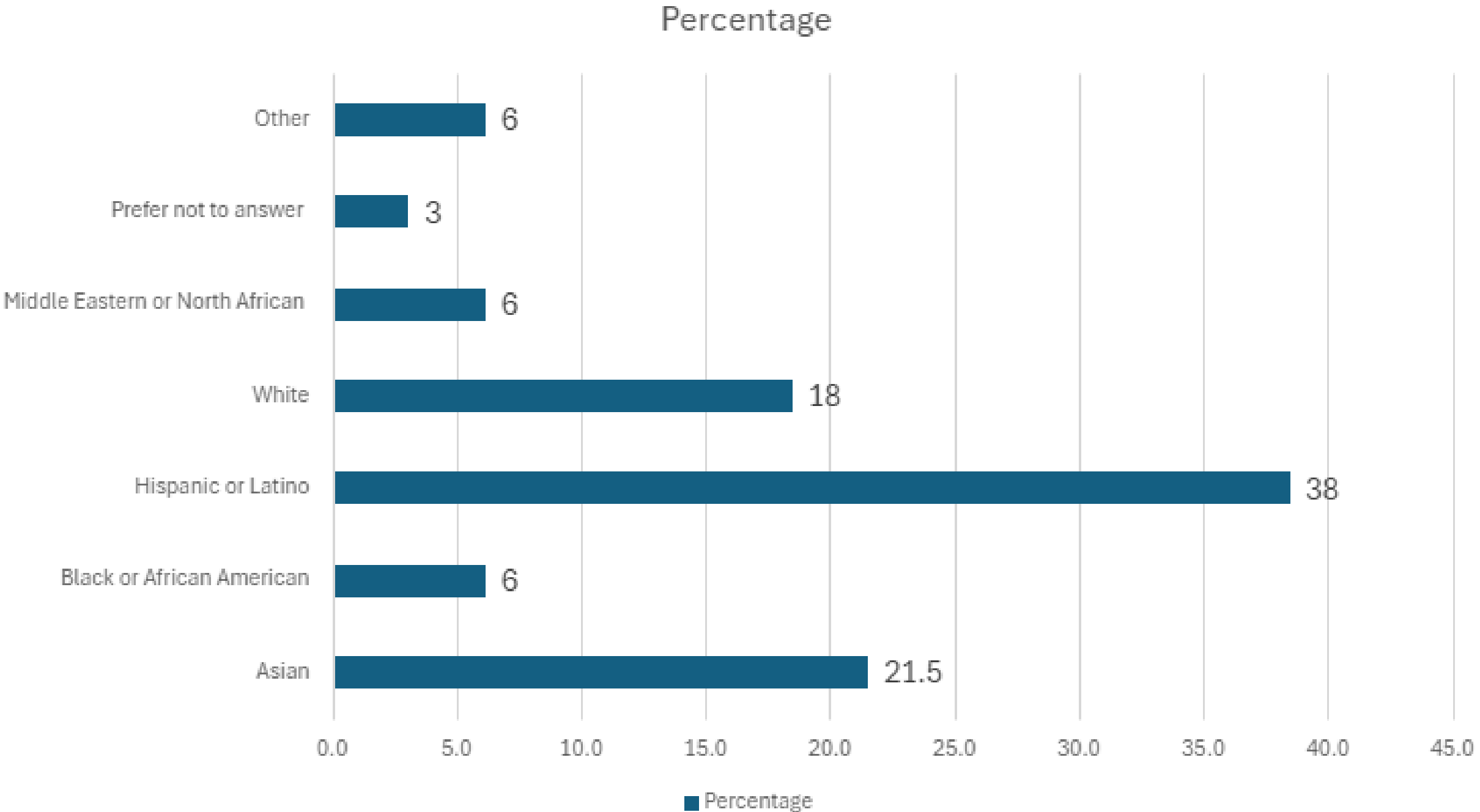


S&E = science and engineering.



# Broadening participation in STEM

## Demographics of 2024-2025 cohort



# STAR Lab Impact

- 275 students have participated since 2019
- The first cohort was 17 students and the last cohort was 65 students
- Since prioritizing the participation of Title I school students in 2023 we went from an average of 34% of students from Title I schools to 53%
- 75% of students are female



# STAR Lab Impact

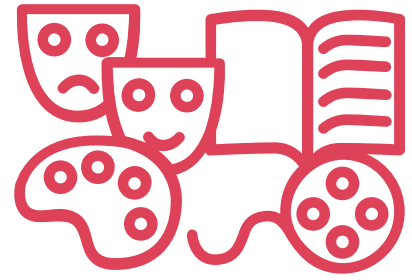
Title I Information	2024-2025	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020
Number of Participating Students	65	52	54	52	36	17
Number of Participating Schools	35	18	21	20	13	8
Number of Title I Schools	13	8	7	8	4	2
Number of Accepted Students from Title I Schools	36	27	18	17	13	5
Percentage of Accepted Students from Title I Schools	55%	52%	33%	33%	36%	29%

# Intentional Recruitment Practices

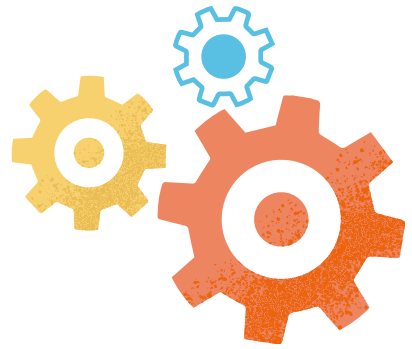
- We recruit in person from Title I schools and Rural Schools
- Emphasis in relationship building with educators in these communities
- Identify feeder programs:
  - KEYS
  - Steps 2 STEM
  - ACES Camp
  - MESA



# Everyone Has a STEM Identity



**How is STEM a part of your culture?**



**How is STEM a part of your family?**



**Where and when do you interact with STEM?**

STEM\* = Science Technology Engineering Math



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**Identify Topic  
and Testable  
Question**

**Collect and  
consider data**

**Analyze Data**

**Interpret and  
Communicate**



# Identify biggest hurdles





# What value does STAR Lab bring to students?

- Guidance from a mentor
- Structure of support from STAR Lab staff - coordinators, facilitators and directors
- Enrollment at the University of Arizona
  - 3 units of credit -> Potential GPA boost!
- Explore what being a researcher is like
- Exposure to a career path
- Develop your research skills, writing skills and science communication skills



# We are interdisciplinary!

- We want to know what you are interested in and we will do our best to match you with a mentor in the field that you want exposure in.

**Animal Science**

**Applied  
Technology**

**Behavioral and  
Social Sciences**

**Celular and  
Molecular  
Biology**

**Chemistry**

**Data Science &  
Math**

**Environmental  
Studies**

**Medicine  
Health &  
Disease**

**Microbiology**

**Physics &  
Astronomy**

**Plant Science**

**Sustainability &  
Renewable  
Energy**

# Expertise in Student Research

**Mentors:** You know your journey and specific STEM field best! You are an essential person in your mentees success.

**Students:** You are the expert of your interests and curiosities!

**Educators:** You are the expert of the student's learning journey.

**SARSEF:** You are the experts of Science Fair and mentor training.





# STAR Lab Structures of Support

**PhD. Daryn Stover**  
**Director of Research**

Main point of contact for mentors and facilitators. Leads University of Arizona processes.

**MS. Cindy Bujanda**  
**Director of Student Experiences**

Main point of contact for students, parents, and teachers. Leads recruitment efforts.

# STAR Lab Structures of Support

**Mentors:**  
Grad students, faculty,  
post-docs, industry  
professionals

Meet with students a minimum of one hour a week. Leads research design, development and implementation of a project.

Mentoring format: virtual, in person or a combination of both

# STAR Lab Structures of Support

**Facilitators**  
**Undergraduate students**

Lead the class portion once a week to discuss science communication.

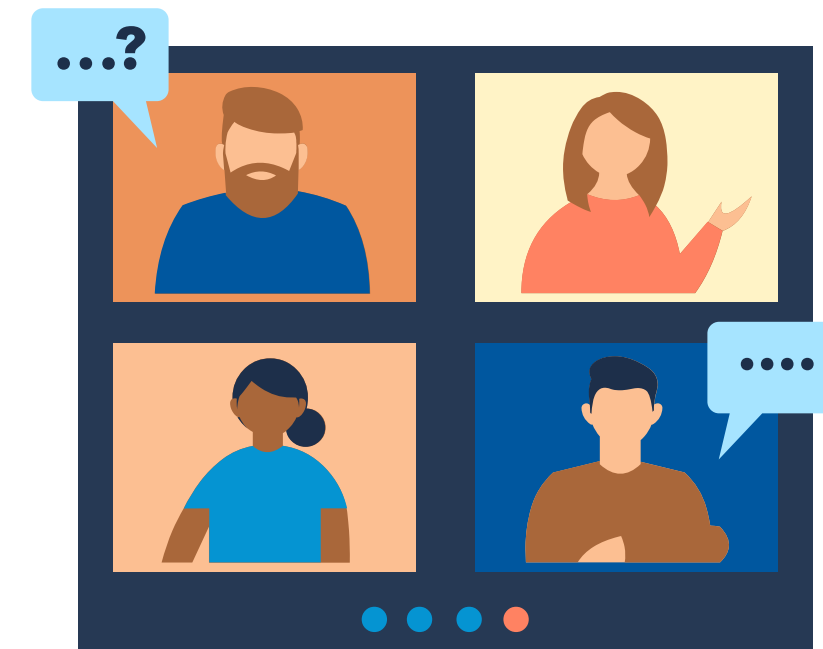
**Coordinators**  
**Graduate student staff**

Manage the physical lab space, in charge of grading, coding help and student research design support.



# Facilitator Meetings

- Discussion based class focused on science communication skills
- 100% virtual setting
- We offer 9 virtual sessions a week
- One of the stated goals of our program and facilitator training is the creation of a welcoming and supportive scientific community where all voices and experiences are valued
- Ecological Belonging Activity



# Student Quotes - Ecological Belonging

“Going into STAR Lab, I really didn't know what to expect. Initially I felt overwhelmed and unsure having never done research before. Everyone seemed so smart and put together, and that I was falling behind. It honestly wasn't a great feeling, but I realized that being outside of my comfort zone is so important and what a wonderful experience STAR Lab is. My mentor was a HUGE help in making me feel more confident in my abilities and now that I'm making progress in the lab, I can say with confidence that the awkward growing period was definitely worth it.”

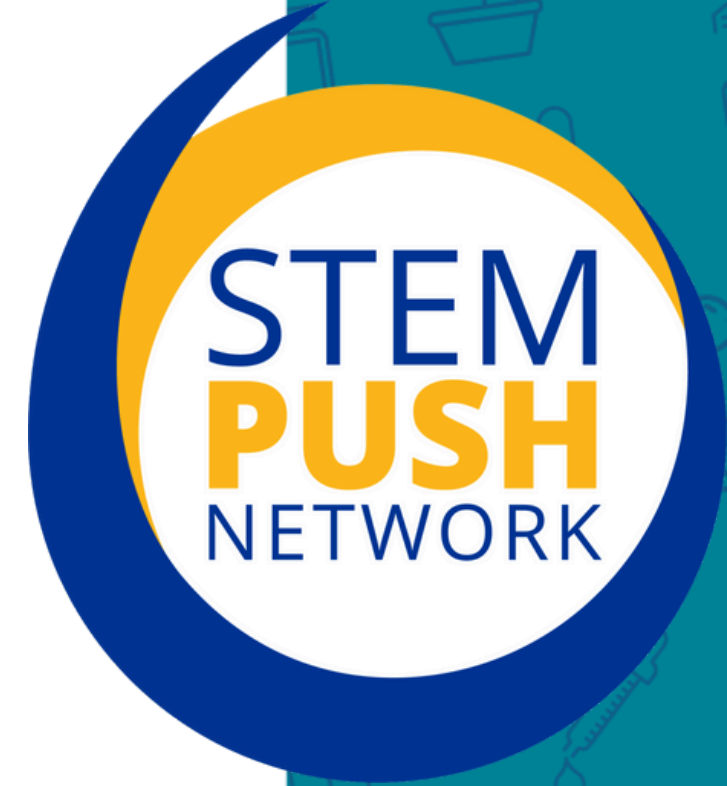
# Student Quotes - Ecological Belonging

“So far my experience has been good and fun with full of new experiences. But sometimes I can't get to some meetings but I still manage since I have to baby sit my sister right after school and it's a bit difficult to do the meetings but it's getting better.”

“In the beginning of this Science Research journey, I had doubts about whether I should have even signed up for something like this because it is a different environment than school. In school there is someone that already has the answers that you need, but in research, the whole point is that no one knows any answers to your questions. But right now, after getting in the lab and doing something that I find enjoyable, a lot of those doubts were dispelled.”



# Learning and Growing - STEM Push Network



- Pre-college STEM programs committed to engaging youth historically underrepresented in STEM in hands-on, in-depth and authentic science, in order to achieve more equitable outcomes in STEM admission and persistence in undergraduate study and beyond.
- Improvement cycles based on evidence-based quality standards for broadening participation in STEM across six areas
  - Program Goals
  - Student Recruitment
  - Program Design & Implementation
  - Student Services
  - Assessment & Evidence of Performance
  - College Going Pathways



# What questions do you have?

Contact me with any questions: [cindy@sarsef.org](mailto:cindy@sarsef.org)



THANK YOU

