

Biomedical Sciences Enrichment Program: Mentorship and Workforce Development



**Chan
Zuckerberg
Initiative** 



Program Overview and Objectives



This program is under the umbrella of the CDU Biomedical Sciences degree programs

A 10-month-year-long program.

Students are immersed in a structured, comprehensive curriculum designed for preparation for Biomed/ Biotech careers.



The Program will match students with Industry & Research Mentors



1:1 Mentoring



Expose students to careers in Biomed/BioTech



Professional Development Workshops



Research Symposium Poster Presentation



Workforce / Internship Opportunities



Biotech/Biomed Research Conference(s)

Program Team Members



Dr. Monica Ferrini,
College of Science and
Health, Dean



Brittney Miller,
Program Development,
Manager



**Dr. Silvana
Constantinescu,**
Program Faculty



Thalia Jimenez, M.S.
Laboratory coordinator

Program Timeline and Curriculum

September 2022

- Cohort Recruitment
- Application Submissions

October 2022

- Orientation and Program Kick-Off Event

November 2022

- Basic Research Foundation Seminar and Workshops
- HBCU Pitchfest Abstract Submission

January 2023

- Cohort Research Topic Selection
- American Federation of Medical Research Conference
- Fundamentals in Biotechnology Course (Spring 2023 Semester)

February 2023

- Mentor/ Mentee Match: 1:1 or/ 1:2 Mentor Pairing with Industry Professionals
- CDU + Biocom Collaboration: San Diego Biotech Immersive
- Emotional Intelligence in STEM (5) Week Workshop
- Black History Month Event: Black in Life Sciences Abstract Competition

March 2023

- Clinical Research Trials Seminar
- Resume Review with Avidity Biosciences
- Biomedical Careers Program Conference

Program Timeline and Curriculum

April 2023

- Mock Interviews with Neurocrine Biosciences and Vertex Pharmaceuticals
- Health Policy Seminar with Neurocrine Biosciences
- UIDP Conference/ HBCU Pitchfest
- Data Analysis Workshop Part 1

May 2023

- Professional Development Workshops with Mentors
- Toastmasters Public Speaking (5) Week Workshop
- Data Analysis Workshop Part 2

June 2023

- Professional Development Workshops with Mentors
- Poster Development Seminar
- Data Presentation Seminar

July 2023

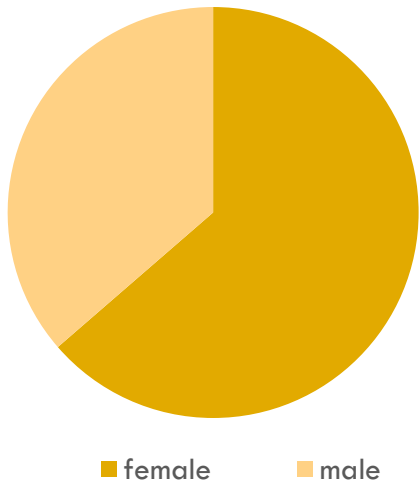
- Research Symposium with Keynote Speakers: Dr. Shanker (Meharry). Dr. Tosini (Morehouse)

Recruitment

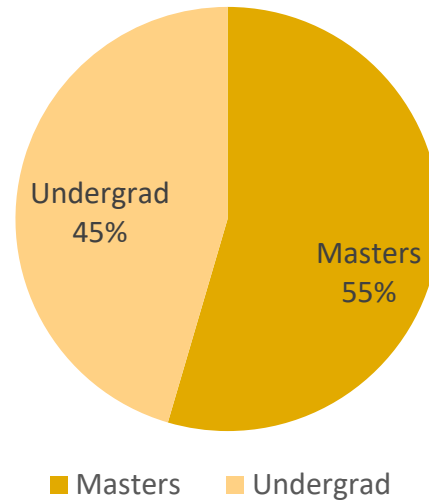
Recruited students: 22

Criteria: GPA, Personal Statement, Socio-economic Disadvantage Background

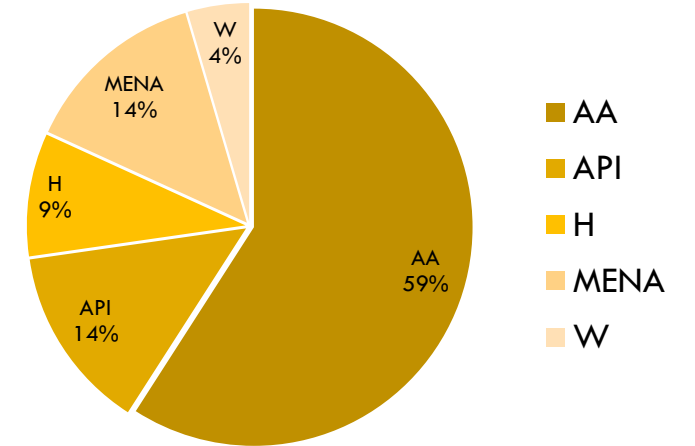
Sex Assigned at Birth



EDUCATION LEVEL



ETHNICITY



Inaugural Cohort



Aidan Tan



Alondra Pena



Bailey Murphy



Broq James



Chinyere Ogugu



Eleanna Harrison



Fady Youssef



Genee Dix



John Pallera



Kimia Sedaghatkaboli

Inaugural Cohort



Kiana Sedaghatkaboli



Lesa Felton



Princelawrenz Hamlin



Rita Cervantes



Sahara Tassin



Senay Beraki



Skyye Dodds-Lewis



Tamauri Foster



Varunya Kattunga



Waleed Janjua

Missing: Louis Maxwell; Hailey Jahromi*

Program Orientation and Kick-Off

October 29, 2022



**INTRODUCTION OF THE
PROGRAM: GOALS AND
OBJECTIVES**



**LEADERSHIP AND
PROFESSIONAL
DEVELOPMENT
WORKSHOPS**



**PANEL DISCUSSION FROM
BIOTECHNOLOGY INDUSTRY
PROFESSIONALS**



**PANEL DISCUSSION WITH
RESEARCH MENTORS**



Curriculum

BMS 368L Fundamentals in Biotechnology

Spring Semester January -May



The course introduces scientific concepts and laboratory techniques used in biotechnology, emphasizing medical applications.



Students develop critical thinking and communication skills.



Explore and understand bioethics and explain how it relates to medical biotechnology.



Curriculum

Basic Research Foundation Workshops*

November 2022- May 2023

Data Analysis

Introduction to The BERD (Biostatistics, Epidemiology, and Research Design) Skill Development Series

Research Method Series

Data Management

Clinical trials

Emotional Intelligence in STEM

February-March 2023
(5) Week Workshop

Emotional Intelligence (EQ) Introduction:

Week 1-3: Understanding the (5) Competencies of EQ

Week 4: Self-Awareness in STEM Education

Week 5: Interpersonal

Professional Development (5-week) workshop

Resume Building

Interview Skills

Public Speaking

Poster and Oral presentation

Health Policy Seminars

*Also Sponsored by AXIS, and UHI

Industry Professionals

1:1 Mentor Pairing

of Industry Mentors

20

Companies Represented by Mentors:



AVIDITY
BIOSCIENCES



Milestones

San Diego Biotech Immersive
February 9-10, 2023

The Biomedical Sciences Enrichment Program partnered with Biocom to create an immersive experience showcasing Biotechnology companies, industry scientists and executives, and workforce/ internship opportunities. The featured companies included:

Neurocrine Biosciences

Illumina

Vertex

Avidity Biosciences

Milestones

HBCU Pitchfest: Full Proposal Invitation and Program Panel Speakers

HBCU Pitchfest by UIDP

UIDP is a solutions-oriented organization where our members identify issues impacting university-industry (U-I) relations and opportunities to develop new approaches to working together.

Program Submission: The Enrichment divided the cohort into (5) teams. Teams submitted their abstract proposal in December 2022.

Team Selection and Invitation: HBCU Pitchfest selected (2) teams from the Enrichment program out of (9) HBCUs to submit full proposals. Research topics include:

- (1) Exposure to lingering particles from 'third-hand smoke' [surfaces contaminated by nicotine and cigarette smoke];
- (2) Study to characterize the metabolic pathway of skeletal muscle cells promoted by Vitamin D through an approach integrating matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) and electrowetting-on-dielectric (EWOD) chip technology

Speaker Invitation: Dr. Ferrini and Brittney Miller will serve as speakers along with Prairie View A&M to discuss: Building Talent through Mentorships

Conference Education



- **American Federation for Medical Research Conference**

AFMR is an organization that aims to improve clinical research to the physician and physician scientists' community

January 18-20, 2023



- **Biomedical Careers Program**

The primary objective is to provide over 1,000 students/fellows with an opportunity to network with advisors/role models from the basic and clinical sciences and the biopharmaceutical industry

March 31-April 1, 2023

Future Directions



START EARLY WITH INDUSTRY MENTORS TO CREATE MORE INTERNSHIP OPPORTUNITIES.



CREATE ADDITIONAL EMOTIONAL INTELLIGENCE WORKSHOPS.



INCREASE COLLABORATION WITH OTHER HBCUS.



MORE DISSEMINATION OF THE PROGRAM.

Workforce Development & Student Engagement:

Building Talent through Mentorship

April 19, 2023



MENTOR
COLLECTIVE

Agenda

- Introductions
- Introduction to the topic of mentorship
- Dow-SURE and Prairie View A&M case study
- Charles Drew University case study
- Panel discussion with questions
- Audience Q&A



Speakers

- Dow Chemical Company
 - Xiangyi Zhang
 - Rosalyn Kent
- Charles R. Drew University of Medicine and Science
 - Monica Ferrini
 - Brittney Miller
- Mentor Collective
 - James Lu Morrissey



Higher Education is not consistent for everyone



U.S. 6-year
graduation rate is
58.3%*



Only 14% of low
SES high school
graduates complete
college after 8
years*



Average student
graduates with
\$29,200 of debt*

*Source: Brookings, Social Mobility Memo, Three Reasons College Matters for Social Mobility, 2015



The Great Divide



85%

Percent of freshman students say their main priority for attending college is to get a good job

Source: University Innovation Alliance

10%

Percent of business leaders believe schools effectively prepare students for the workforce





Pictured:
Students from
Mentor Collective Programs

Social capital makes college and career work for everyone.

Unfortunately, mentorship is not available for every student

57%

of undergrads did not have mentors encourage pursuit of goals and dreams*

How Social Capital Affects College Choice

Too Few Undergraduates Have A College Mentor: Three Steps That Can Change That

Mentors Play Critical Role in Quality of College Experience, New Poll Suggests

Employees value mentorship programs, but most programs suffer from low adoption and engagement

Press Releases

HEIDRICK &
STRUGGLES

Study: Women and Minorities Value Mentoring Programs, But Findings Reveal Opportunities for Improved Effectiveness

Leadership Development
**Harvard
Business
Review**

Why Mentoring Matters in a Hypercompetitive World

by Thomas J. DeLong, John J. Gabarro, and Robert J. Lees

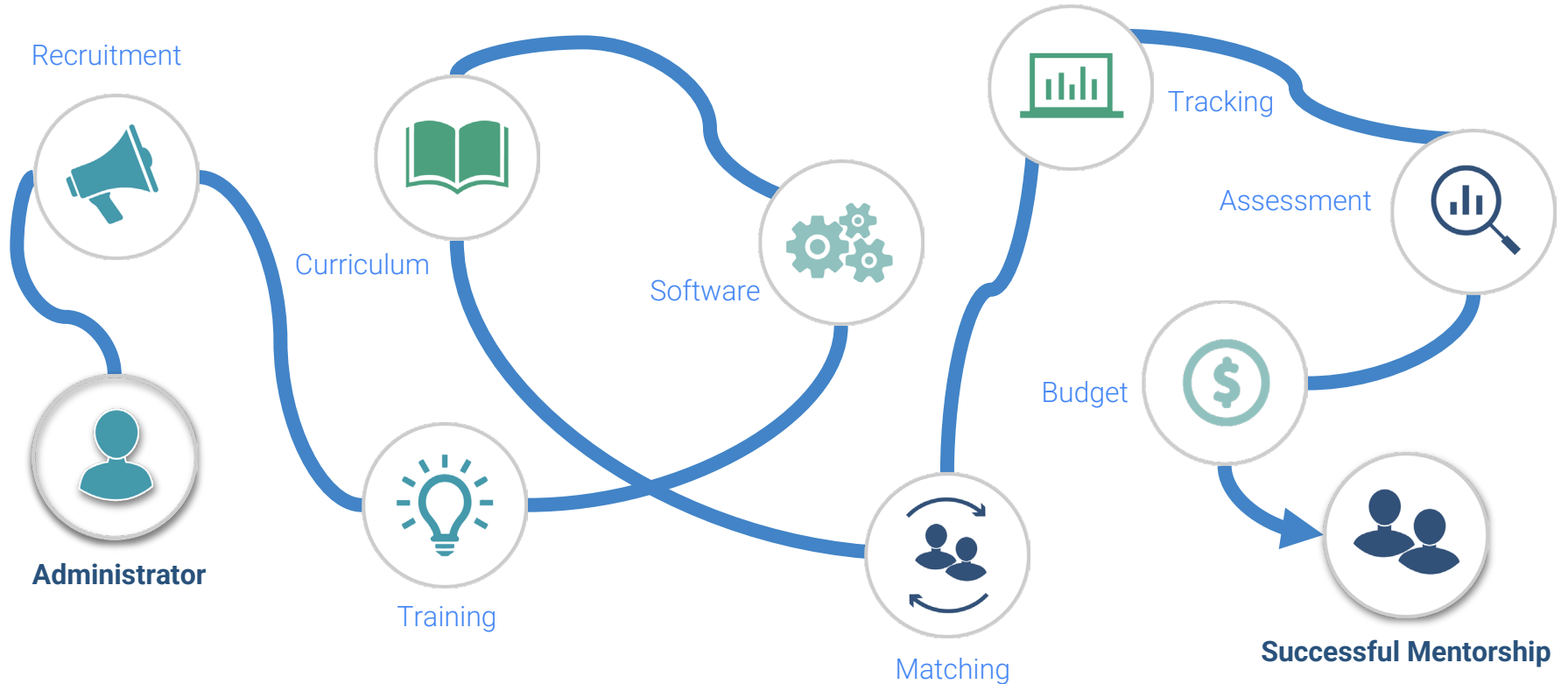
BUSINESS

Why Can't Companies Get Mentorship Programs Right?

And when they get them wrong, it can be worse than having not tried at all.

By Mel Jones

Running a Mentorship Program is Complicated



Macrotrends: Workforce Development in Houston

Opportunity:

- Students lack the professional network to guide job search / skill development
- Employers struggle to meet their talent needs and reach diverse student populations

Approach:

- Every student has a trained mentor in the industry of interest prior to graduation
- Mentors provide coaching, accountability, and feedback for improved career outcomes

Outcomes/metrics include:

- Increasing employment rate
- Retention of local graduates (minimize “brain drain”)
- Depth and diversity of talent pipeline

Long-term vision:

- 20+ universities w/ ~230,000 students all having access to mentorship
- 900+ companies have access to flexible volunteer opportunities

For employers:

- Builds employer brand and talent pipeline
- Aligned with their ESG/CSR priorities and impact reporting/data provided

Partner
Up Houston



BCG BOSTON
CONSULTING
GROUP



Q&A PANEL DISCUSSION

- How did you get the program off the ground?
- How do you measure success?
- What was most challenging?
- What was your most surprising learning?
- How do you think about scale?
- What's your long-term vision for the program and what's next?



Audience Q&A



Thank You

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Rosalyn Kent | RVKent@dow.com

Monica Ferrini | monicaferrini@cdrewu.edu

Brittney Miller | brittneymiller@cdrewu.edu

James Lu Morrissey | james@mentorcollective.org





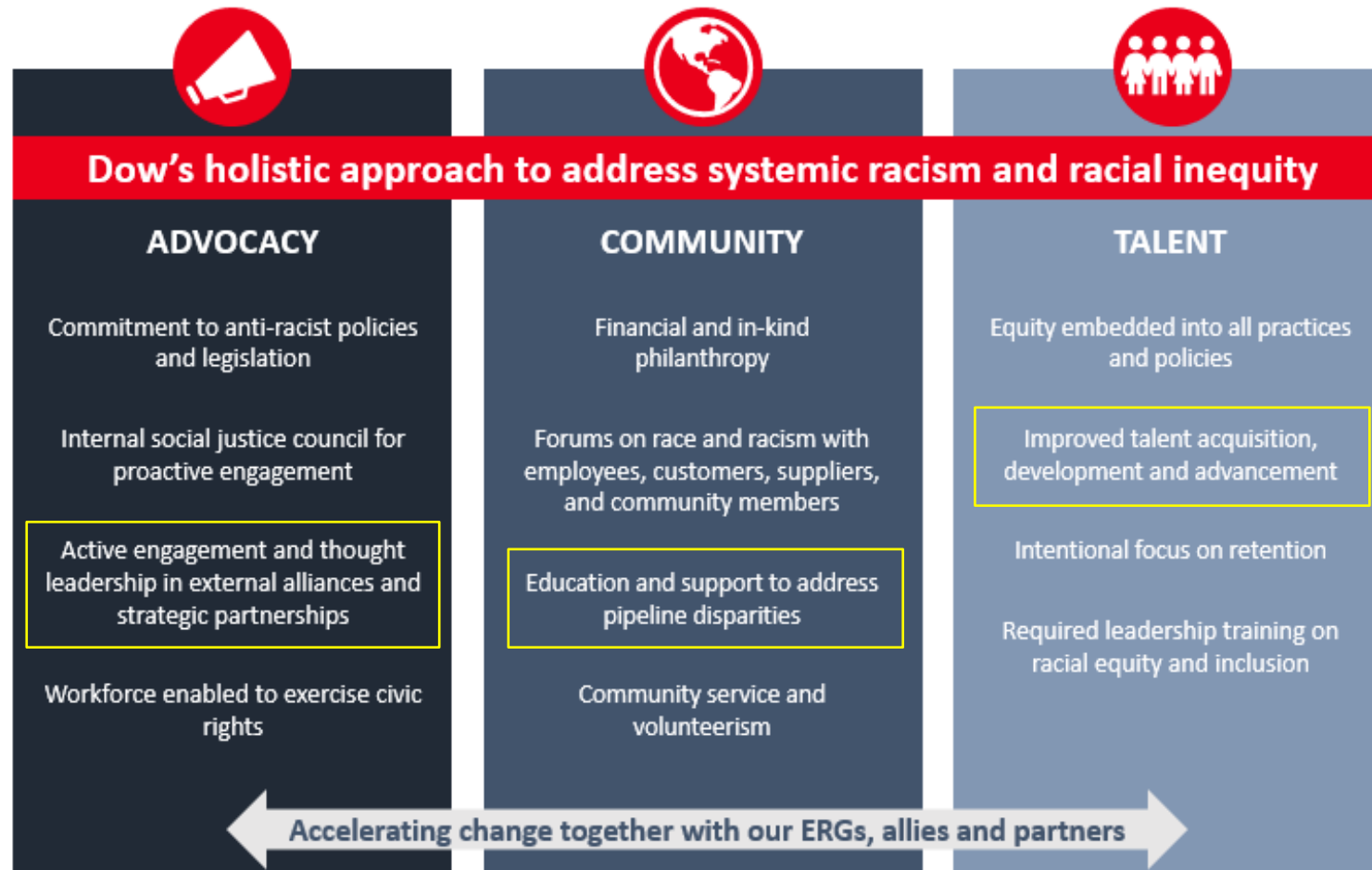
THE DOW SURE PROGRAM

Xiangyi Zhang, Rosalyn Kent, Karla Spears

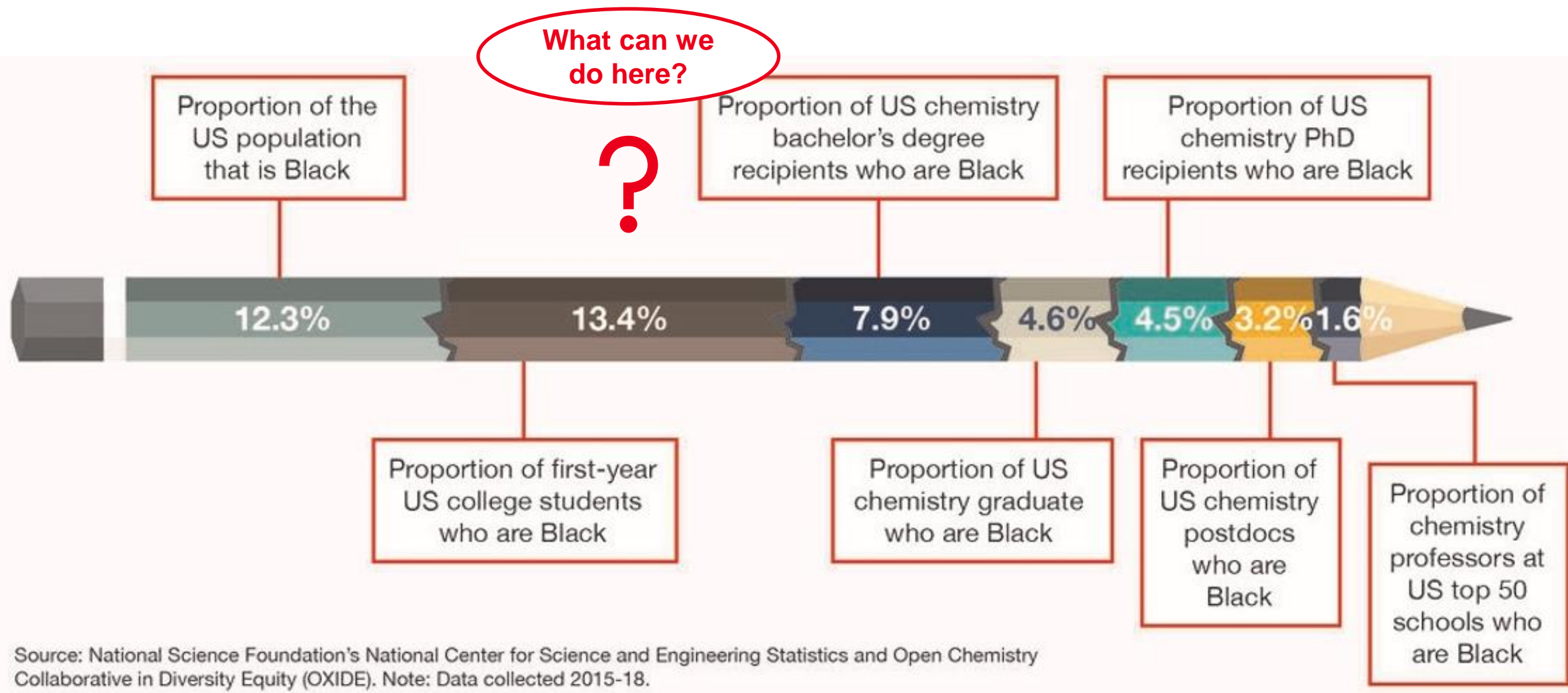
HBCU Engage 2023
April 19, 2023 | Nashville, TN

THE INCEPTION OF SURE – A PART OF THE DOW ACTs COMMITMENT

- Dow announced ACTs in 2020, which is a strategic framework designed to address systemic racism and inequality within our Company and in the communities.



THE BROKEN PENCIL



DOW SCHOLARS UNDERGRADUATE RESEARCH EXPERIENCE (SURE)

As one of the initiatives under Dow ACTs, SURE is a strategic partnership with Historically Black Colleges and Universities (HBCUs) to develop Black students in STEM and address pipeline disparities.

- **Mission:** Create opportunities for underrepresented students to access research experiences and engage with Dow R&D mentors and resources, encouraging and enabling them to pursue research careers and graduate education.



Southern University
A&M College



Howard University



Florida A&M
University



Prairie View A&M
University



North Carolina
A&T State University



Universidade de São Paulo

Universidade de São
Paulo



UNICAMP

University of Campinas



TARGETED UNDERGRADUATE RESEARCH EXPERIENCE AT HBCUs



Funding for an undergraduate on-campus research experience



One Dow **mentor** for each student (+ additional connections as needed)



Training sessions on technical & professional development skills

- Expose students to research and showcase industrial careers available post-PhD (via Dow mentors)
- Strengthen graduate school applications with research experience and publications.
- Leverage Dow network to support students for entry into and during the Ph.D. process.
- Build relationships early with future Ph.D. researchers and future faculty.

WHAT WE HAVE ACCOMPLISHED

74

Students conducted
undergrad research

36

Faculty advisors to
support research

54

Dow mentors
engaged with
students

5

Student-mentor
networking sessions

12

Seminars and
Workshops by Dow

16

Conference
presentations by
SURE students

11

Students completed
internship

18

Have applied for
grad school, more
are considering



MENTORS ARE A CRITICAL COMPONENT OF THIS EFFORT

- Provide a **supportive** relationship that will give students the information they need to make an informed decision about their post-college career.
- Act as a sounding board/technical mentor for the research program.
- Leverage their own Dow (and academic) networks as needed.
- Support students as they prepare for post-college careers, including helping with fellowship applications, resumes, etc.
- Maintain an ongoing relationship for as long as the student feels it is useful, even after graduation.

Key Learnings

Students (and some professors) don't always realize the value of the Dow mentorship — but when they do, it really enhances the program.

- Set up clear expectation and deliverables upfront.
- A key need from mentors is patience and persistence.
- A dedicated focal point and champion from HBCUs is essential.

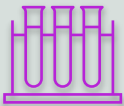




Graduate school preparation and professional development training



Engagement in applied research

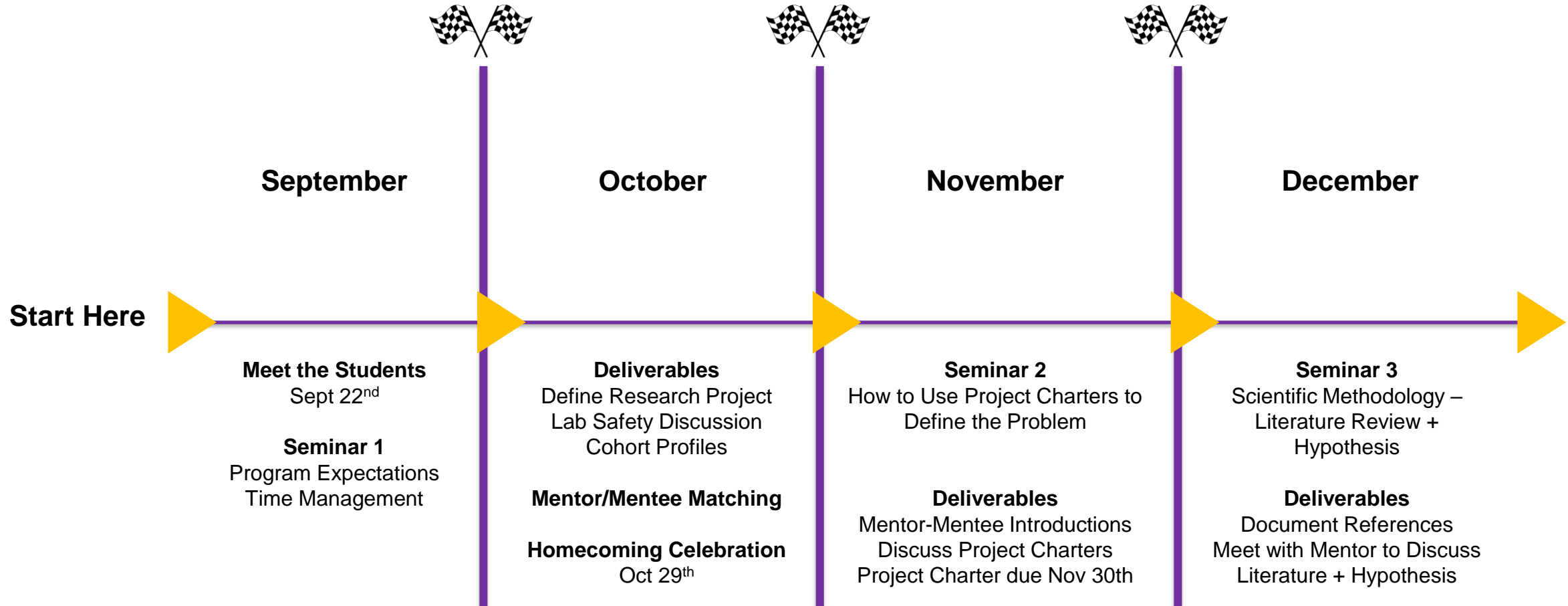


Summer internship



Mentorship

PVAMU Dow SURE PROGRAM STRUCTURE



PVAMU Dow SURE - FEEDBACK FROM FACULTY & DOW MENTORS



Challenges



Solutions



Learnings

How we can improve and make a stronger partnership





Seek

Together™