

Strategies for recruiting High School Students to Community College Biotechnology Programs

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High School Pathways Hub
InnovateBIO, NSF funded ATE center

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Experience:

Gilead Sciences, Virology Dept.

San Francisco public high schools
bio/biotechnology instructor & administrator



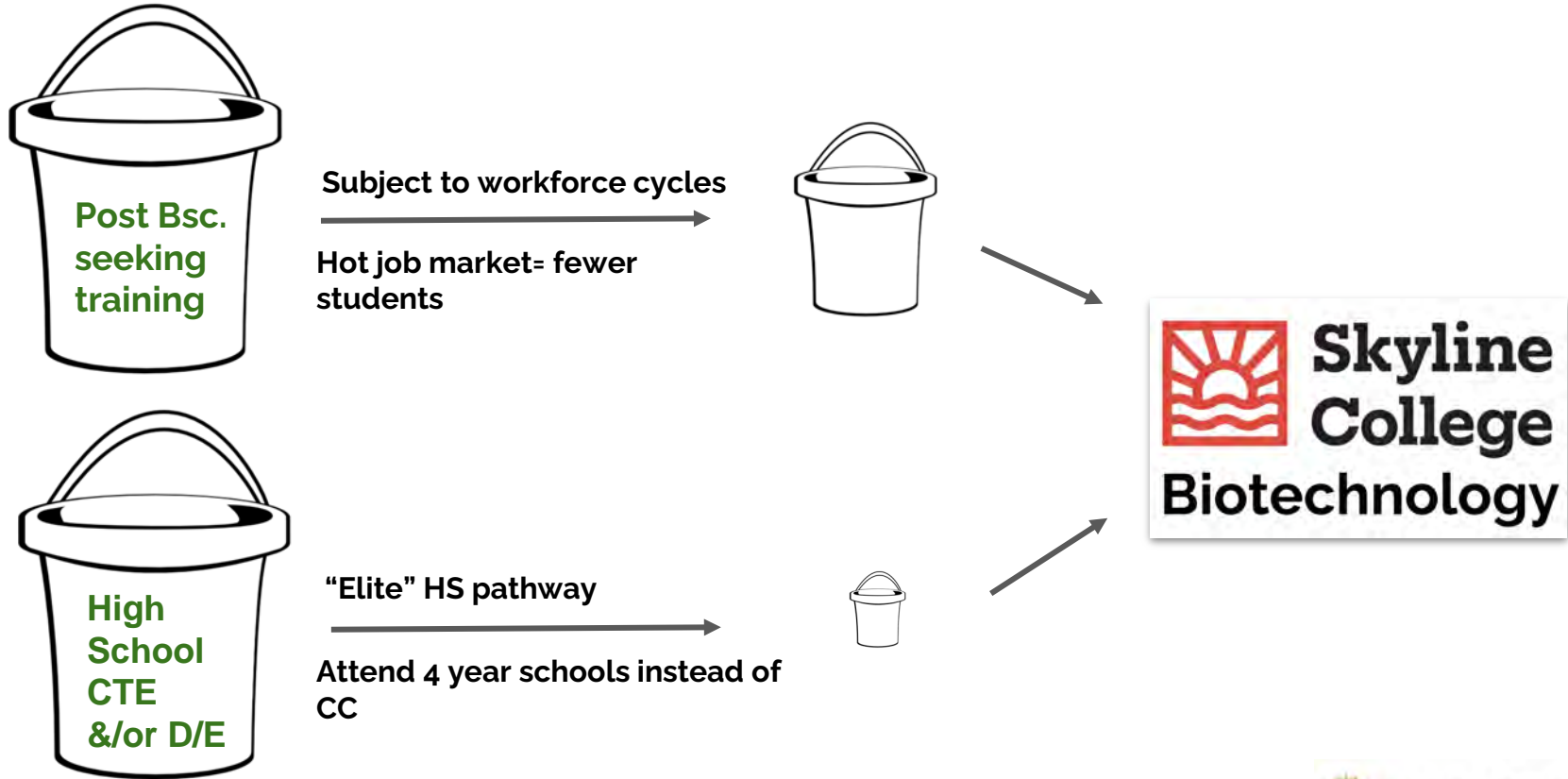
NSF DUE# 2055189





- **Name, what you do, where you from?**
- **Why are you here?**

Recruitment to Biotech ATE Programs remains a top priority



Developing Inclusive Biotechnology High School Pathways

9th Grade Biology Introducing Biotechnology



Increasing student
interest & confidence
doing Biotechnology

10th Grade Chemistry Exploring Careers in Biotechnology



Expanding understanding of
different fields and careers in
Biomanufacturing

11th Grade Counseling Introducing Pathways with partner High Schools



12th Grade Dual/Credit Enroll & continue CC classes in Biotech Pathway



Summer COOP & transition to Biotech at CC

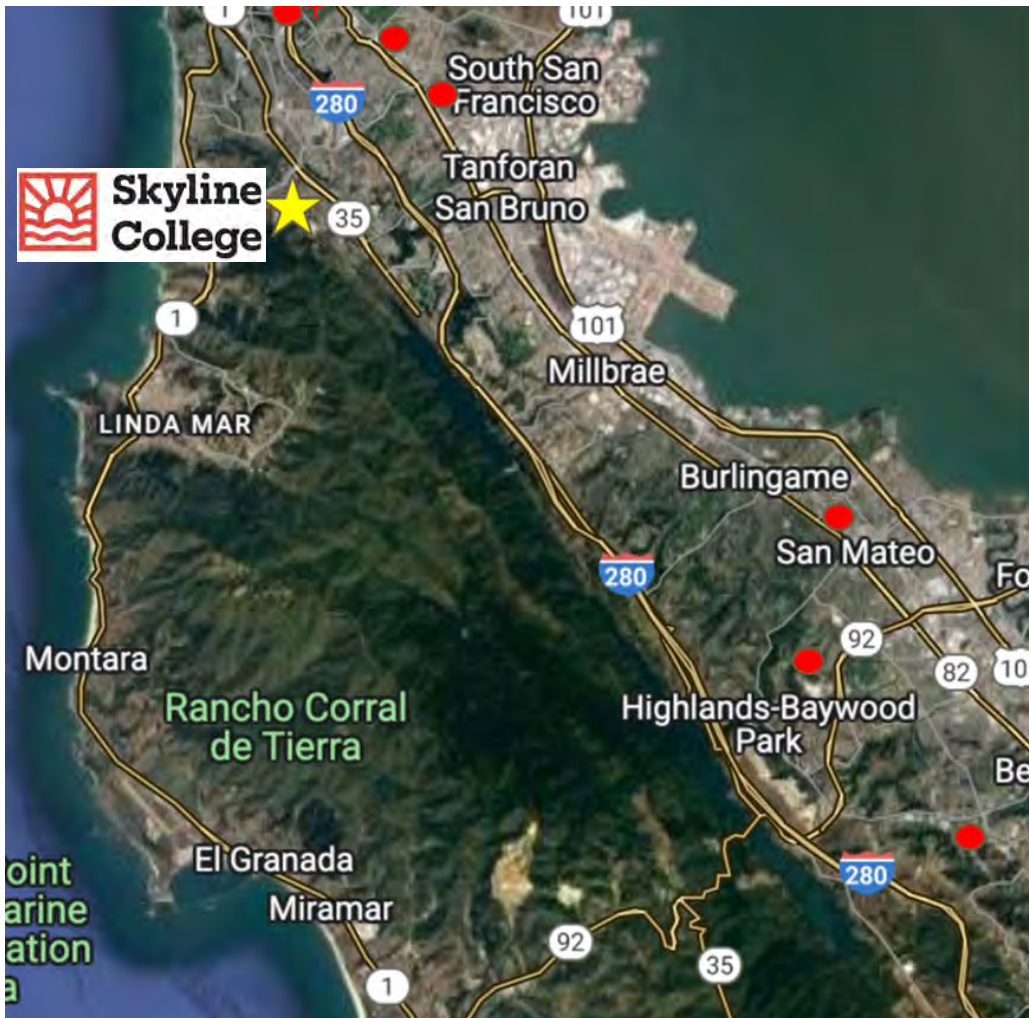
HS Recruitment Goals:

- **Increase the # of Dual Enrollment Biotech students matriculating from partner high schools by 50%**
- **Increase the # of Underrepresented Minority (URM)* students enrolled in Biotechnology courses at Skyline by 25%**

* UCSF Office of Diversity and Outreach "someone whose racial or ethnic makeup is one of the following: African American/Black. Asian: Filipino, Hmong, or Vietnamese only. Hispanic / Latinx."



- **Given your current role/workplace, how might you relate to what has been shared?**
- **What questions come up for you?**



Participating High Schools with Dual/Enrollment Biotechnology

- Gateway HS*
- El Camino HS*
- South San Francisco HS*
- San Mateo HS
- Carmont HS
- Aragon HS

***Recruitment focus on
3 schools closest in proximity,
Title I and/or URM population**



Biotech HS Pathways Team Creation at Skyline



Initial Who:

- Biotechnology Faculty at Skyline
- Acting Dean of STEM division

Monthly Planning Meeting:

- First Mondays (in person)
- Shared agenda & timeline
- Food & Tea

Later arrivals:

- D/E Program Services Coordinators
- Puente/STEM Academic Counselor
- Participating D/E teachers at local HS

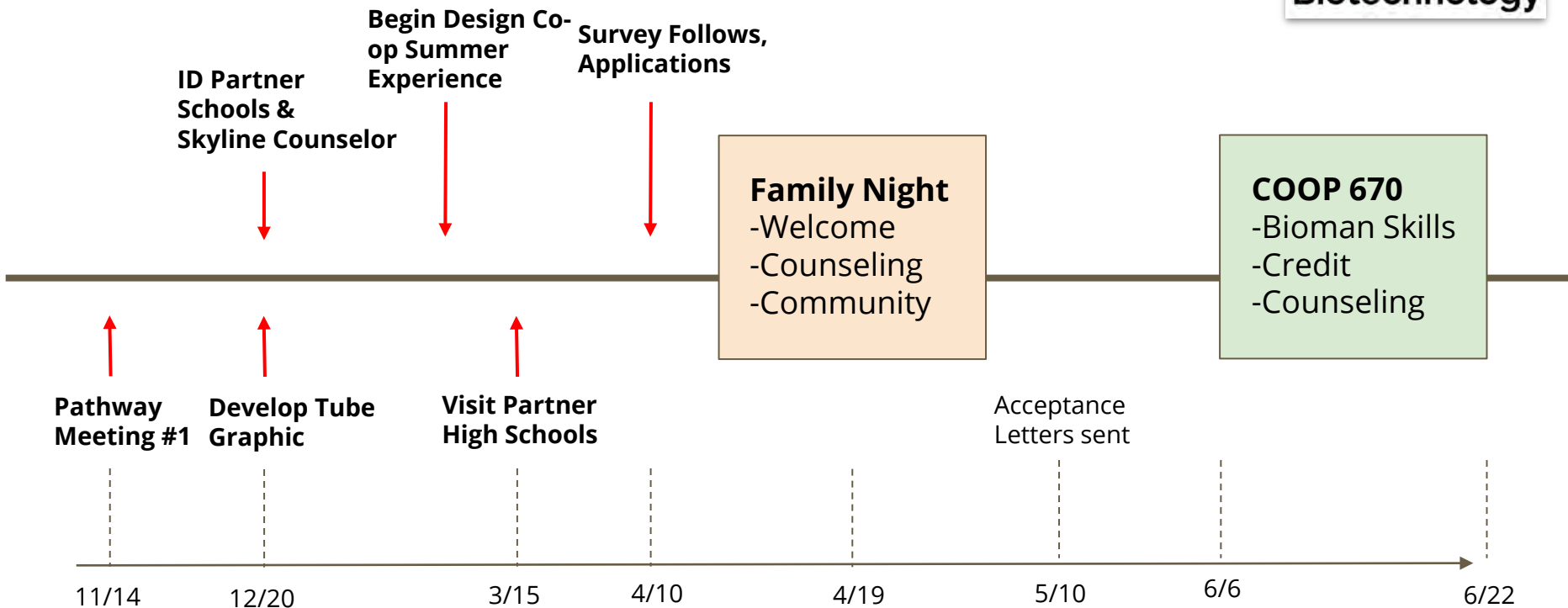
Not included (this year):

- High School District CTE Coordinators

| 1.23.2023 Facilitator: MF Present: GA, YT, NK, YTL | | |
|-----------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Length | Topic | |
| 5 min | Arriving, Connect | Happy New Year! |
| 15 min | Update Grant Transfer Possibility? | Last check was going to be with the Business Office? |
| 10 min | Updates on Tube tool, class visits | Latest Draft Tube Graphic Tool Updates: -MF to connect with either: Jessica Hurless Jacqueline Escobar Lorraine Demello Need to draft what "transfer examples" look like. |

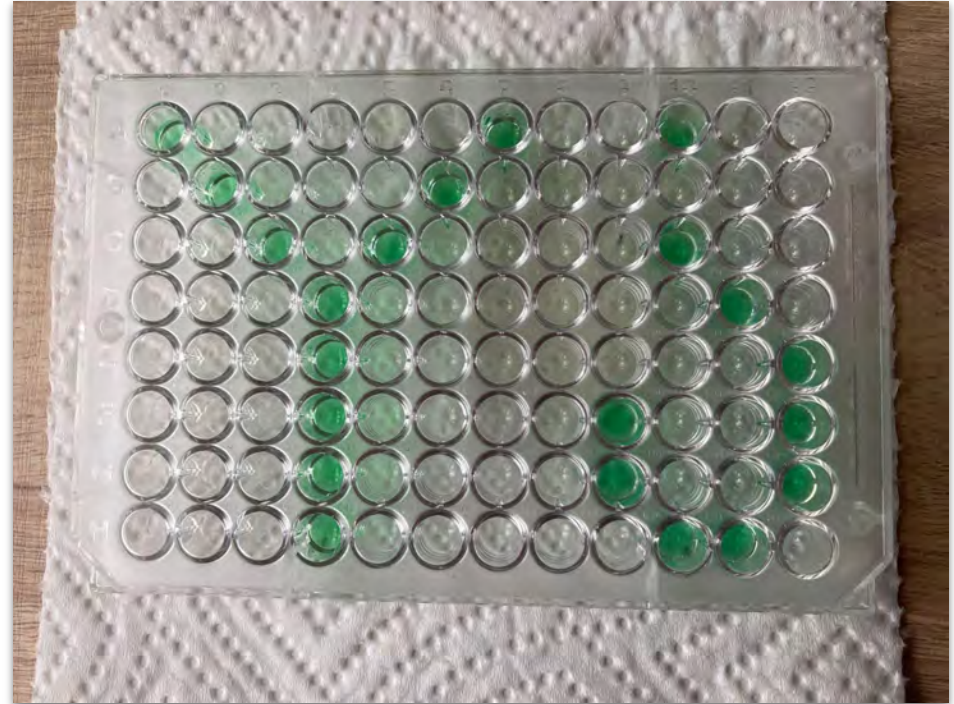


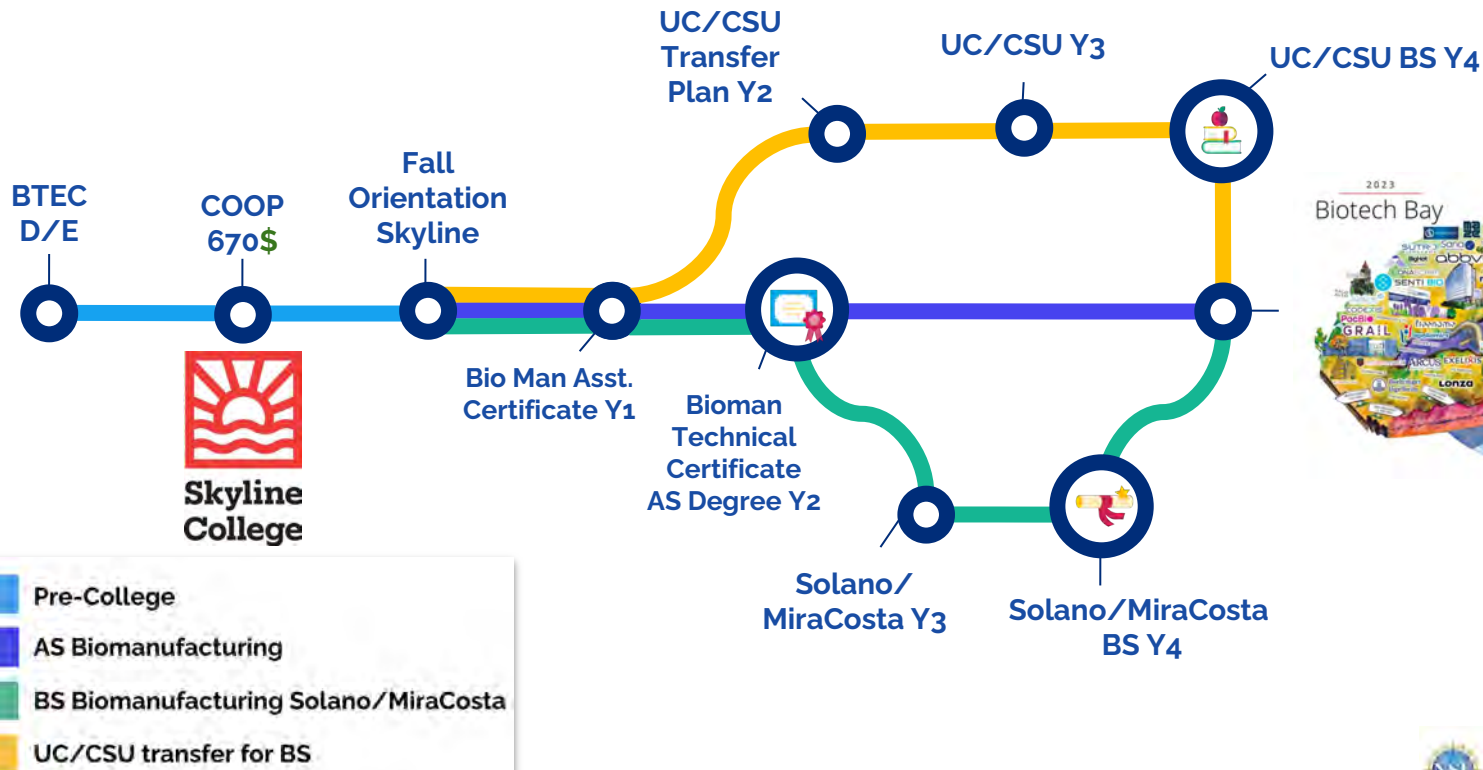
Biotech HS Pathways Team 2022-2023 timeline

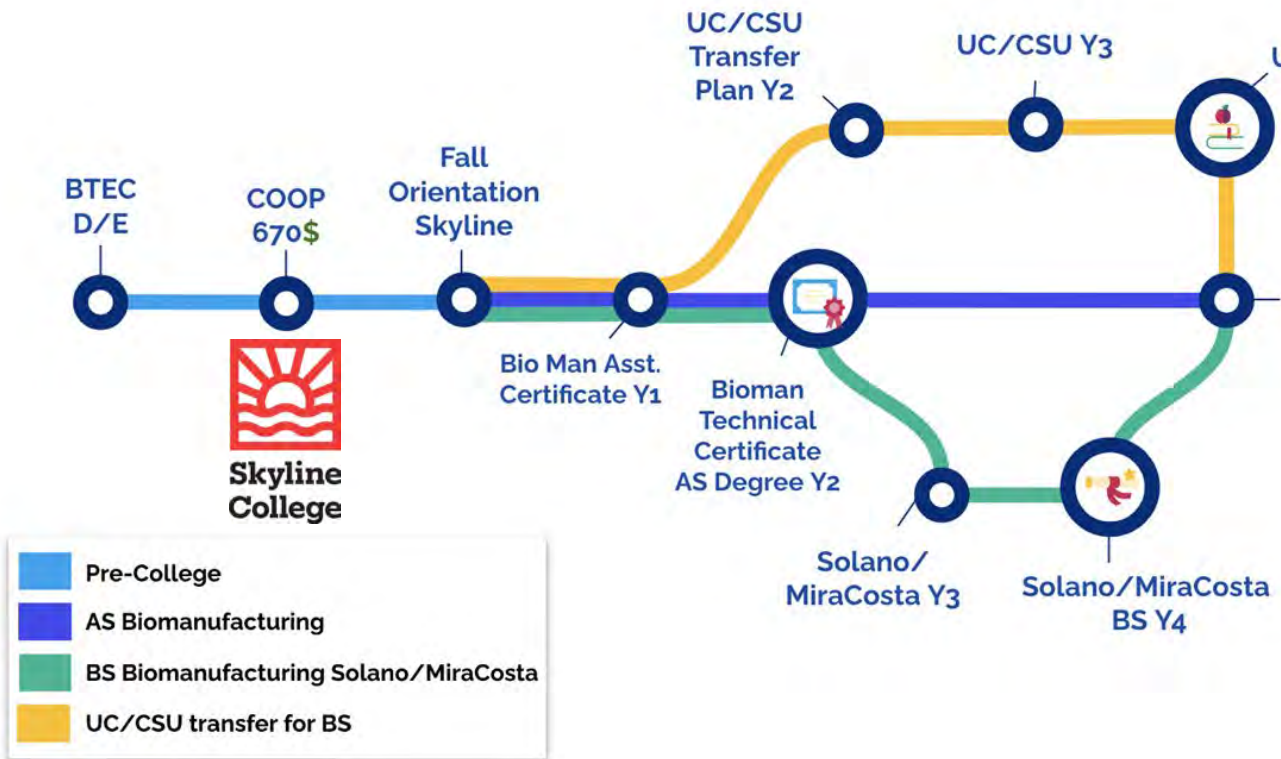


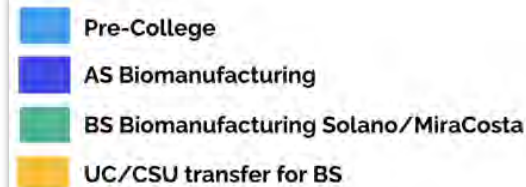
Visits to High School D/E and Biotechnology Classes

- Brief Hands on Micropipetting Activity with students
- Tube Graphic/Pathway materials
- About 45 minutes per visit across 12 sections









AS Biomanufacturing

This degree gives students hands on training in Biology and Chemistry and skills essential to the field of biotechnology.

2 year tuition*
estimate= \$2,000

BS Biomanufacturing

Students earning this degree work in medical, agricultural & engineering industries that includes a wide range of applications, from biofuels & breweries to food science.

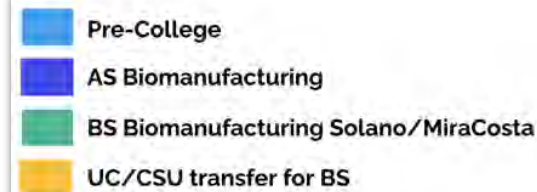
4 year tuition
estimate= \$10,000

UC/CSU transfer for BS

This pathway includes biotechnology, general education & courses related to a science major for transfer to UC or CSU from Skyline.

4 year tuition range
estimate= \$32k-\$55k

**Tuition for residents of San Mateo County is free. Financial Aid available for non-residents.*



Sample Semester
1 Schedule



| Course Name | Units |
|-----------------------------------------------|-------|
| BTEC 400- Foundations of Biotechnology | 2 |
| ENGL 100- Composition | 3 |
| COUN 100- College Success | 3 |
| CHEM 210- General Chem I | 5 |

Sample Semester
2 Schedule



| Course Name | Units |
|--------------------------------------------------------|-------|
| BTEC 170- Principles of Applied Biosciences | 3 |
| BTEC 171- Lab Principles of Applied Biosciences | 1 |
| Math 200- Elementary Probability & Statistics | 3 |
| BIOL 215- Organismal Biology: Core I | 5 |

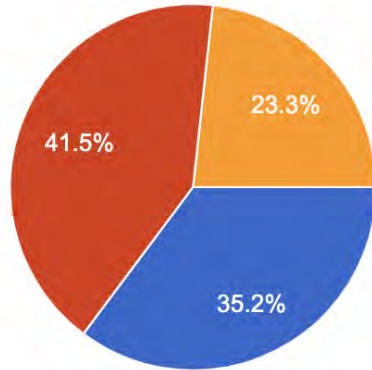


- **Reflections on any of the tools or strategies shared so far?**
- **Ideas, something you can build off?**

Student Survey Results (post visit)

Grade Level

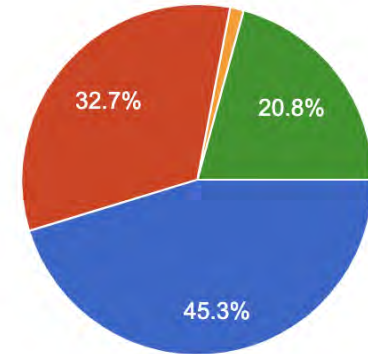
159 responses



- 12th grade
- 11th grade
- 10th grade
- 9th grade

As of right now, I am most likely

159 responses



- Going directly to a 4 year university after high school.
- Attending a Community College then transferring to a 4 year university.
- Looking at opportunities that do not include a 2 or 4 year university.
- I am unsure.

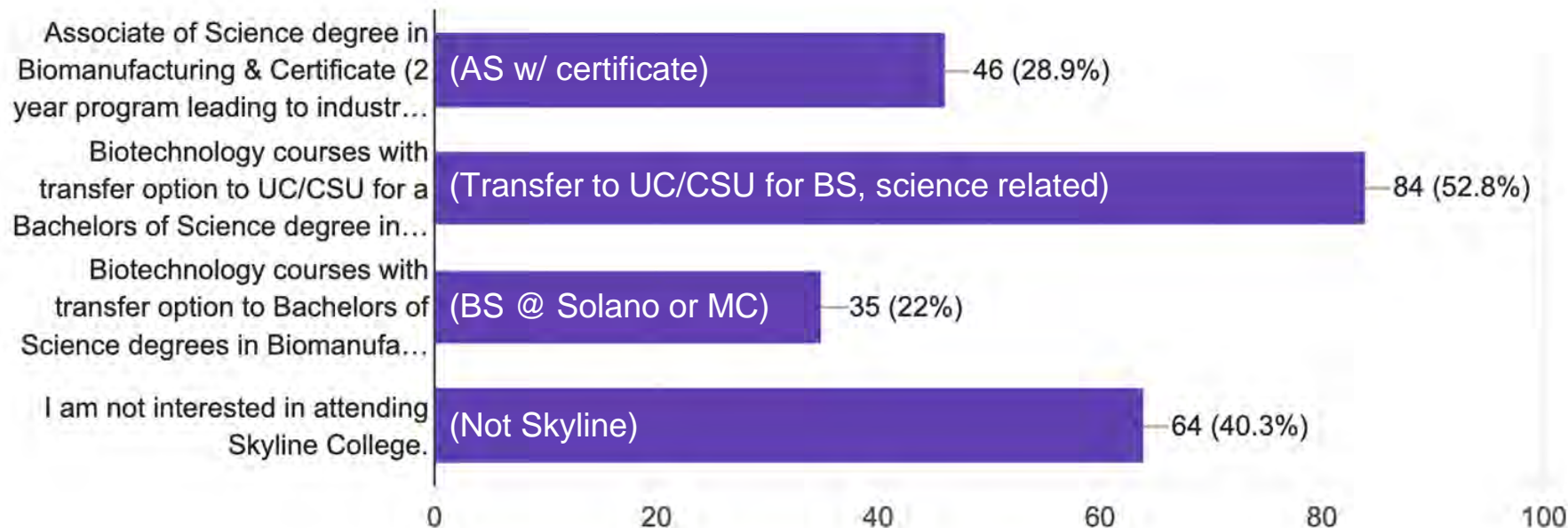


Student Survey Results (post visit)

Check all Skyline Biotech Pathways that interest you (you can choose more than one—or none)



159 responses



COOP 670 summer

- COOP 670 applications increased from 6 to 74 compared to previous year
- 21 students participated from 5 high schools
- 71% of participants were self identified underrepresented minority students



Skyline Biotech Night

- 14 students from 3 high schools
- 12 family members attended
- Majority of students 10th, 11th grades



Takeaways & Next Steps

- 17 out of 21 participating students were 10th-11th grade students
- Consider site based opportunities at the high schools to engage families, counselors and students
- With counseling & workforce development staff share what makes Biotech unique:
 - Challenges with transfer (but it can work!)
 - Skills that travel (to four year &/or workplace)
 - 43% increase in LinkedIn on posting of *skills*

If possible, do this in person

Takeaways & Next Steps

Outreach suggestions

- **Seek ways to have multiple touch points with students throughout the year(s). One time events, like fairs, career days are a great start but try to pair with direct outreach in classrooms**
- **Provide options to students & families. Transferring to earn 4 year degree should be included in addition to Certifications and AS degrees**
- ***Show* students & families what their schedule would look like at your school—*how* might it lead to a certificate but also transfer options**
- **Internships, Apprenticeships, are greatly discussed topics across ATE disciplines right now. Paying students to participate in a field that many are unfamiliar with (or may not feel welcome), brings immediate value to the work and can diversify participation in Biotechnology.**

Acknowledgements



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Work-Based Biotechnology Education from High School to
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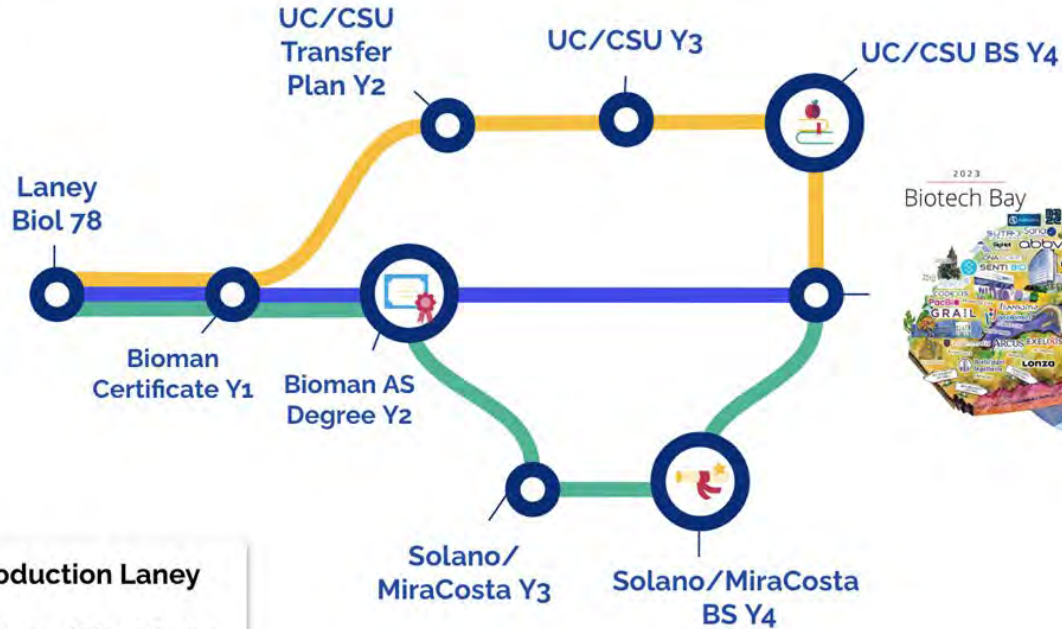
Genevieve Luna, *Graphic Design*



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Biomanufacturing Pathways



- AS Biomanufacturing Production Laney
- BS Biomanufacturing Solano/MiraCosta
- UC/CSU transfer for BS



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