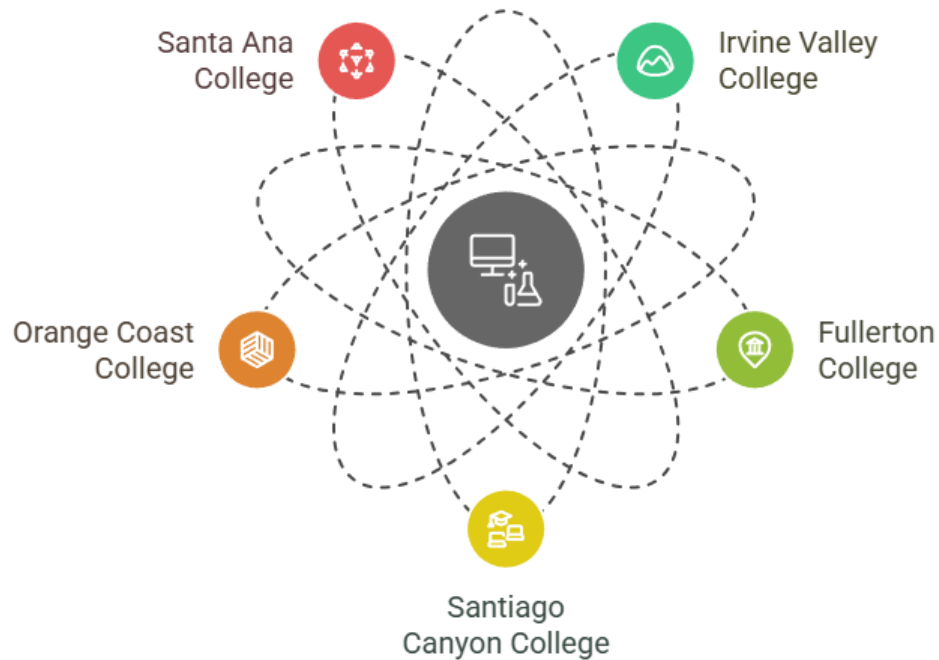


Orange County Regional Collaboration An Evaluation of the Biotechnology Program



Prepared by
RSCCD District Research, Planning & Institutional Effectiveness Department
November 2025

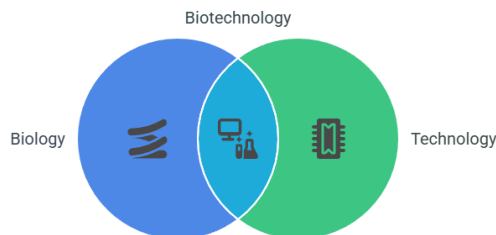


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Background

Biotechnology is an interdisciplinary field that integrates biology and technology to develop innovative products and processes aimed at improving human health, agriculture, and environmental sustainability. By leveraging living organisms and biological systems, biotechnology advances medical treatments, enhances agricultural productivity, and promotes ecological preservation.



The biotechnology program outlined in NOVA represents a collaborative regional initiative led by Santiago Canyon College, in partnership with Fullerton College, Irvine Valley College, Orange Coast College, and Santa Ana College. This multi-college collaboration enables a unified approach to curriculum development, resource sharing, and workforce training that aligns closely with the needs of local employers in the biotechnology sector. By leveraging shared expertise and infrastructure, the partner colleges aim to build a stronger educational pipeline that effectively bridges academic preparation and industry expectations.

The initiative also aims to cultivate robust industry partnerships, establish networks of subject-matter experts, and prepare a pipeline of skilled, job-ready interns and employees. By integrating existing biology and chemistry courses into the biotech program, the colleges have created flexible educational pathways that allow students to either earn a certificate for immediate employment or continue toward a STEM degree at a university. Additionally, biology majors can enroll in biotechnology-specific courses to gain relevant job skills while completing their degrees.

Although the program was originally launched in 2012 and incorporated into NOVA in 2016, it has evolved significantly under the leadership of the participating colleges. Orange Coast College (OCC) has had limited involvement in the initiative and does not offer a program in Biotechnology and Biomedical Technology; instead, OCC focuses on Nutrition, Foods, and Culinary Arts. This evaluation will focus on the most recent four years to provide a clearer understanding of the current activities and outcomes of the other four colleges that offer Biotechnology and Biomedical Technology programs.

The Collaboration Plan

Between 2018 and 2022, the OC Biotech Collaborative laid a strong foundation for expanding and stabilizing biotechnology course offerings across four Orange County colleges. Through targeted outreach and the creation of dual enrollment pathways, the initiative increased student participation and strengthened the educational pipeline from high school to college and into the biotech workforce. By deepening partnerships with both industry and academic institutions, the Collaborative positioned OC colleges as vital training hubs for middle-skill careers in the biotechnology sector.

The multi-year program focused on five core areas:

1. Faculty, Staffing, and Instructional Support

- Ensured program continuity by:
 - Backfilling full-time faculty positions.
 - Hiring lab assistants and instructional aides to support classrooms.
- Funded non-credit courses and provided essential lab supplies to align instruction with industry standards.

2. Outreach, Recruitment, and Engagement

- Raised awareness and boosted enrollment through:
 - Dual enrollment initiatives.
 - Engaging classroom events.
 - Hiring an Outreach Coordinator in 2019 to lead social media campaigns and promotional activities.

3. Student Retention and Certificate Completion

- Focused on student success by:
 - Emphasizing hands-on learning opportunities.
 - Creating multilingual instructional tools (English & Spanish) to reinforce course content.
 - Embedding career exploration into the curriculum to guide student interests and persistence.

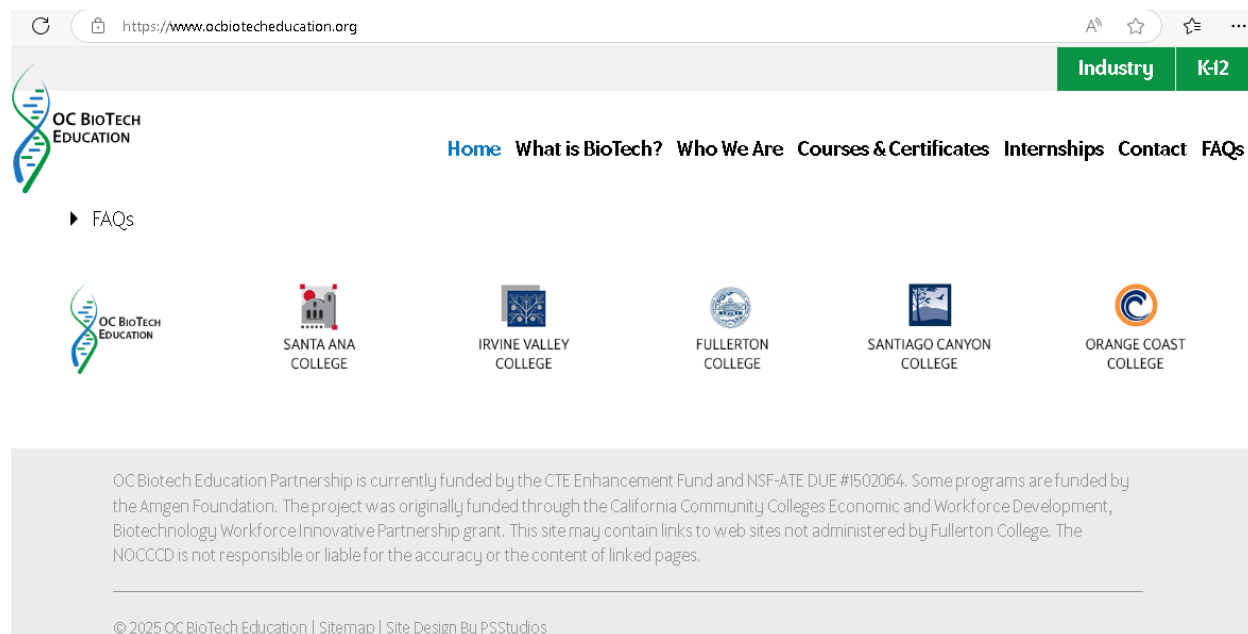
4. Career Readiness and Work-Based Learning

- Supported workforce preparation by:
 - Hiring a full-time Regional Job Developer (2019).
 - Provided job readiness training.
 - Coordinated internships.
 - Served as a liaison to employer partners.
 - Helping students pursue pathways toward living-wage biotech careers.

5. Regional Collaboration and Program Integration

- Advanced regional efforts through:
 - Regular stakeholder meetings and participation in strategic planning.
 - Developing articulation agreements with K–12 and higher education institutions.
 - Creating shared marketing and instructional resources.
 - Aligning efforts with the Southern California BioLink Initiative to support a cohesive regional biotech education ecosystem.

In 2018–19, the program focused on maintaining program consistency by backfilling full-time faculty and hiring lab assistants. Colleges were convened through the LAOC Biotech Collaborative, and partnerships with employers and high schools were pursued. Program management efforts included report submission, stakeholder engagement, and coordination of employment and externship opportunities. Investments were also made in faculty development, outreach, marketing, and the creation of a dedicated [website](https://www.ocbiotecheducation.org).



The 2019–20 investment plan sought to strengthen the four-college biotech collaborative by improving workforce readiness and expanding career pathways. New personnel included a full-time Internship/Job Developer, administrative and outreach staff, and instructional assistants at each campus. Resources were allocated to support non-credit courses, professional development, and community outreach. Strategic goals included enhancing K–12 and industry partnerships and positioning OC programs as regional leaders in life science training.

In 2020–21, the focus remained on developing a skilled biotech workforce through outreach, student retention, and work-based learning. Targeted recruitment activities—such as dual enrollment and skill-building workshops—boosted enrollment and awareness. Retention efforts

emphasized student engagement and career-aligned instruction, while continued support for a regional job developer ensured students had access to internships and job opportunities. The Collaborative leveraged institutional strengths across campuses to meet workforce demands.

Finally, in 2021–22, the investment plan addressed post-COVID recovery needs in the life sciences sector. Outreach and recruitment were sustained through engaging STEM events and refined strategies. Retention initiatives included integrated career exploration to guide students toward suitable pathways. Continued support for the regional job developer facilitated hands-on learning and employment readiness. The program’s success was underpinned by shared staffing, technology, and expertise among partner institutions, allowing for responsive and coordinated implementation across the region.

Program Activities

Key activities include increasing CTE enrollment and completions, expanding dual enrollment opportunities, supporting professional development for faculty, and strengthening high school-to-community college pathways. Industry collaboration efforts include internship opportunities, job fairs, and targeted recruitment strategies. The initiative also focuses on professional development workshops and career exploration to improve student success and employment outcomes.

The activities for each year are outlined as follows:

2018-19:

With a budget of \$635,194, the plan aims to enhance CTE programs by increasing enrollment, completion rates, industry-recognized credential attainment, and employment outcomes. To achieve this, key initiatives focus on marketing, dual enrollment, professional development, sector leadership, and third-party credentialing.

CTE Enrollment & Completion:

- Boost enrollment and completion of CTE students.
- Expand industry-recognized credential attainment.
- Improve job placement in related fields.

Marketing & Outreach:

- Develop a marketing strategy to increase enrollment and employment.
- Enhance messaging, student experience, and employer engagement.

Dual Enrollment:

- Expand dual enrollment opportunities in high schools.
- Provide support services for degree and certificate completion.

Professional Development:

- Support faculty participation in conferences and career fairs.
- Engage in local career and college fairs.
- Attend Bio International events.
- Assist faculty in obtaining industry certifications.

Sector Leadership:

- Coordinate efforts among five colleges.
- Strengthen industry partnerships for internships and employment.
- Establish performance metrics and represent colleges at industry events.

Third-Party Credentialing:

- Explore industry-recognized badging programs.

- Gather feedback and hire facilitators to define key competencies.

2019-20:

With a budget of \$547,270, the initiative focuses on coordinating regional personnel across four colleges to enhance program activities, strengthen industry and educational relationships, and support student and faculty development. Efforts include outreach, professional development, job readiness training, and alignment of programs with industry and higher education pathways.

Program Activities:

- Organize outreach events for the community, high school (HS) and college counselors, and current college students.
- Build relationships with high schools and industry partners.
- Offer professional development for faculty and provide best practices.
- Create instructional videos and tutorials for students.
- Conduct job readiness workshops focusing on resumes, interviews, and soft skills.

Structural Activities:

- Conduct classroom visits and workshops.
- Align programs across four colleges and ensure they are in sync with B.S. degree programs at Solano and Mira Costa colleges.

2020-21:

With a budget of \$580,511, the initiative focuses on strengthening connections with high school partners by assessing their needs and providing coordinated support. Activities include roundtable discussions, outreach events, faculty development, and a summer job exploration internship. The goal is to enhance student engagement, increase career awareness, and facilitate smoother transitions from high school to college and industry.

High School Partnership & Support

- Assess high school needs and coordinate tailored support.
- Host roundtable discussions with high school partners, college faculty, and administration at each college to develop campus-specific plans.
- Conduct coordinated outreach efforts, events, presentations, and workshops for high school students, both on their campuses and at college campuses.
- Organize faculty development workshops for high school teachers, led by college faculty.
- Transition activities to virtual formats as needed.

Summer Job Exploration Internship

- Host 12-15 students in an industry exploration internship.
- Faculty-led tours of local industries to expose students to potential career opportunities.

- Build on the previous Career Pathways-funded model, which covered transportation to industry sites.
- Encourage students to apply for jobs by reducing uncertainty and increasing enthusiasm for industry roles.

Regional Job Developer Support

- Conduct one-on-one meetings with students to provide career guidance.
- Deliver workshops on resume writing and cover letter preparation.
- Collaborate with regional industries to place students in internships and entry-level jobs.

2021-22:

With a reduced budget of \$351,220, the initiative aims to strengthen the high school-to-community college pathway in biotechnology by increasing enrollment and completion rates. Additionally, efforts will focus on expanding industry and community partnerships to enhance student internship and employment opportunities.

Strengthening the High School-to-Community College Pathway

- Enhance the biotechnology pathway to increase student enrollment and completion.
- Improve alignment between high school and community college programs to create seamless transitions.

Expanding Industry & Community Partnerships

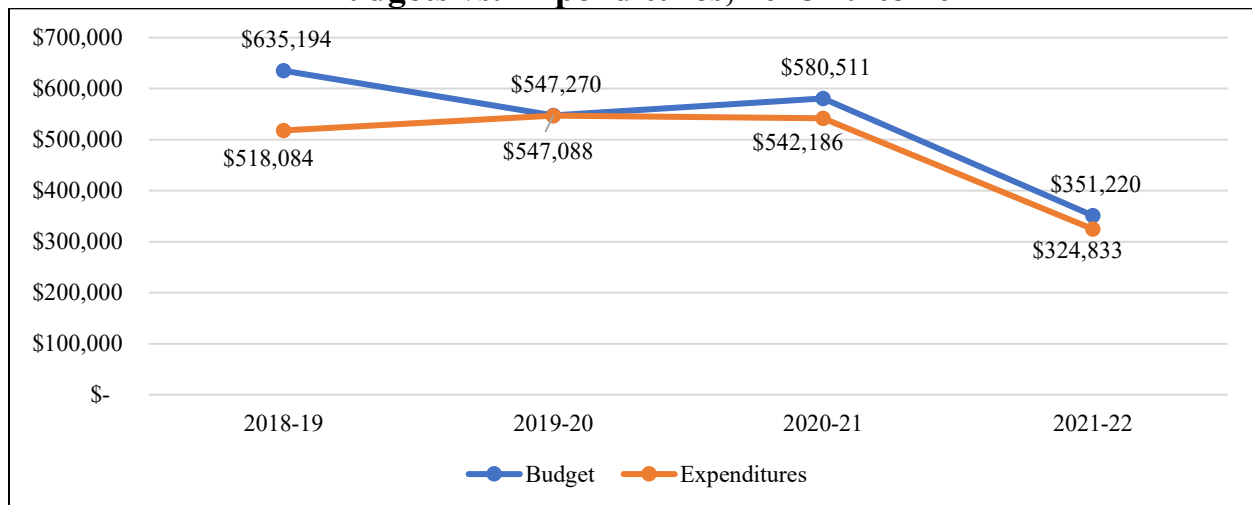
- Strengthen relationships with existing industry partners to improve the quality of engagement.
- Establish new partnerships with industry and community education organizations.
- Develop more internship and employment opportunities for students.



Budgets vs. Expenditures

The biotechnology collaboration received a total of \$2,114,195 in funding over the four-year period from 2018–19 to 2021–22. In 2018–19, funding reached \$635,194, with Santiago Canyon College receiving the largest share. The amount decreased to \$547,270 in 2019–20, with Santa Ana College and Santiago Canyon continuing as primary recipients. Funding increased slightly to \$580,511 in 2020–21, driven primarily by Santiago Canyon College. In 2021–22, funding decreased to \$351,220. While Fullerton College, Irvine Valley College, and Orange Coast College received similar amounts, Santiago Canyon and Santa Ana Colleges received comparatively higher funding to support job developer positions. Orange Coast College received limited funding overall due to its focus on Nutrition, Foods, and Culinary Arts rather than Biotechnology and Biomedical Technology. It should be noted that a significant portion of the Santa Ana College funding was dedicated to a full time Job Developer position that served as a link between students and industry partners.

**OC Biotechnology Regional Collaborative
Budgets vs. Expenditures, 2018-19 to 2021-22**



**OC Biotechnology Regional Collaborative
Budget by College, 2018-19 to 2021-22**

Year	Fullerton	Irvine Valley	Orange Coast	Santa Ana	Santiago Canyon
2018-19	\$ 45,000	\$ 45,000	\$ 58,057	\$ 119,568	\$ 367,569
2019-20	\$ 115,175	\$ 60,800	\$ 13,500	\$ 219,831	\$ 137,964
2020-21	\$ 117,000	\$ 22,300	\$ -	\$ 195,211	\$ 24,600
2021-22	\$ 35,000	\$ 35,000	\$ 35,000	\$ 140,000	\$ 106,220

Source: NOVA and RSCCD Resource Development Department

Total expenditures for the Biotechnology project over the four-year period amounted to \$1,932,191, with annual budgets generally exceeding expenditures. Notable differences were observed in most years, except for relatively minor variances in 2019–20 and 2021–22.

The figures in the following table indicate consistent fiscal management, with expenditures generally remaining within the allocated budget for each year.

OC Biotechnology Regional Collaborative Expenditure by Type, 2018-19 to 2021-22

Expenditure Type	2018-19	2019-20	2020-21	2021-22
1000 - Instructional Salaries	\$ 36,233	\$ 30,986	\$ 49,892	\$ 61,236
2000 - Non-Instructional Salaries	\$ 204,358	\$ 207,916	\$ 83,889	\$ 88,184
3000 - Employee Benefits	\$ 63,805	\$ 65,183	\$ 33,578	\$ 25,621
4000 - Supplies and Materials	\$ 64,369	\$ 89,810	\$ 158,267	\$ 68,838
5000 - Other Operating Expenses and Services	\$ 74,523	\$ 455	\$ 86,974	\$ 45,701
6000 - Capital Outlay	\$ 74,796	\$ 152,738	\$ 129,586	\$ 35,253
Unspent	\$ 117,110	\$ 182	\$ 38,325	\$ 26,387
Total Expenditure	\$ 518,084	\$ 547,088	\$ 542,186	\$ 324,833
Total Budget	\$ 635,194	\$ 547,270	\$ 580,511	\$ 351,220
Difference	\$ 117,110	\$ 182	\$ 38,325	\$ 26,387

Source: NOVA

Between 2018-19 and 2021-22, expenditures varied significantly across key spending categories. Instructional salaries demonstrated consistent growth, increasing from \$36,233 in 2018-19 to \$61,236 in 2021-22. In contrast, non-instructional salaries declined sharply in 2020-21, dropping from \$207,916 to \$83,889, with a slight recovery in 2021-22. Employee benefits also dropped substantially, from \$63,805 in 2018-19 to \$25,621 in 2021-22.

Spending on supplies and materials spiked in 2020-21, reaching \$158,267, driven primarily by purchases of books, magazines, and subscriptions at Santa Ana College, before returning to \$68,838 in 2021-22. Operating expenses and services showed considerable fluctuation, decreasing to only \$455 in 2019-20, then rising to \$86,974 in 2020-21, before falling back to \$45,701 in 2021-22. Capital outlay expenditures increased in 2019-20 but saw a sharp decline in 2021-22.

Overall, total expenditures peaked at \$547,088 in 2019-20, then declined each year, dropping to \$324,833 in 2021-22. This downward trend reflects a reduction in spending across several categories, particularly in non-instructional salaries, employee benefits, and capital investments.

Experiences from the Field

Since the project concluded over two years ago, it was challenging to reconnect with individuals who were involved. However, several project members, two faculty and two job developers, were interviewed to gain insights into their roles, experiences, and perspectives on the biotechnology program's development and impact. They were asked about their specific responsibilities and duration of involvement, their experiences with the program's activities, resources, and support, and which components they found most useful in achieving their goals. Additional questions explored how they defined program success, the metrics or outcomes they used to evaluate effectiveness, and the key challenges they encountered during implementation. Finally, participants were invited to reflect on lessons learned and suggest potential improvements for future regional consortium efforts.

Participants described a broad range of responsibilities, including curriculum development, instructional support, industry outreach, student engagement, and program coordination. Most team members were involved at various stages of the project, contributing to strategic planning, implementation of dual enrollment courses, and collaboration with local educational institutions and industry partners.

Interviewees identified several high-impact activities that advanced program goals, such as regular monthly meetings and the provision of shared resources. The dual enrollment Introduction to Biotechnology Laboratory course launched at El Modena High School was cited as a significant milestone, offering early exposure to college-level biotech training. Additionally, the BIOL190L Lab Manual, developed through the ASCCC OERI initiative, was recognized as a valuable open-access resource that will benefit students statewide.

Success was commonly defined in terms of increased student engagement, strengthened educational pathways, and expanded industry partnerships. Metrics such as student enrollment in biotech courses, participation in outreach events, and articulation agreements with high schools were frequently mentioned. The Pathway Day event serving 96 students and the dual enrollment orientations held on high school campuses were viewed as effective strategies for increasing awareness and participation.

Members acknowledged several challenges, including navigating inter-institutional coordination, securing sustained funding, and aligning curriculum across multiple partners. The decline in some funding categories over time added complexity to program expansion. These challenges were addressed through targeted grants—such as the ePrize grant for the Biotech Bridge Bus initiative—and proactive communication with stakeholders, particularly within the Orange Unified School District (OUSD).

Looking ahead, members expressed interest in strengthening cross-institution collaboration, streamlining administrative processes, and enhancing student support services. Suggestions included improving communication channels between colleges and high school partners,

expanding industry-informed curriculum updates, and offering more structured mentorship opportunities for students.

The program has made notable progress in outreach and development. Collaborations with OUSD continue to shape a curriculum bridge to the biotech certificate pathway at Santiago Canyon College. Community engagement is bolstered by events such as the Biotech Open House, co-hosted with the Upward Bound Math & Science program, and the STEM event at the Discovery Science Center in March 2020. The Regional Advisory remains a cornerstone of industry engagement, fostering deeper ties between the program and the biotech community. The partnership has significantly enhanced collaboration between colleges, faculty, and students. Faculty members have played a central role by offering career guidance, coordinating site visits, and providing letters of recommendation. These efforts have helped bridge the gap between education and employment, positioning students for success in internships and entry-level roles within the biotechnology industry.

Through its biotechnology certificate program, the initiative equips students with the technical and professional skills demanded by local biotech employers. Industry partners, in turn, benefit from the opportunity to communicate their workforce needs, ensuring that program content and training remain aligned with evolving industry standards. The partnership also supports the expansion of internship opportunities and increases awareness of biotechnology career pathways, facilitating a smooth transition from academic training to workforce entry.

Despite these successes, the COVID-19 pandemic presented a major disruption to the program. As a highly hands-on discipline, biotechnology education relies on in-person lab experiences where students interact directly with scientific equipment and materials. The shift to remote learning and the closure of campus facilities severely hindered students' ability to develop practical, job-critical skills such as operating lab instruments, conducting experiments, and troubleshooting processes. This loss of experiential learning significantly impacted student readiness for the biotech workforce.

In addition to pandemic-related setbacks, several long-standing challenges were identified through faculty and stakeholder input:

Procurement and Equipment Delays: Faculty cited significant delays and technical issues in acquiring lab equipment and materials essential for hands-on instruction. The inability to procure key resources compromised the quality of laboratory courses and diminished student engagement.

Low Enrollment and Course Cancellations: Consistently low student enrollment led to the cancellation of several biotech courses. This challenge was compounded by miscommunication by academic counselors, who often mischaracterized the program as solely vocational, thereby discouraging students seeking academic progression from enrolling. Improved communication about the program's dual focus on career readiness and academic advancement could help reverse this trend.

Administrative Support Gaps: Perhaps the most critical issue was a lack of sustained support from institutional leadership. Without strong administrative backing, the program struggled to secure necessary resources, maintain continuity, or articulate a long-term strategic direction. The absence of a unified vision led to faculty and students feeling disconnected and uncertain about the program's future. Administrative engagement is essential for driving program growth, aligning institutional priorities, and responding effectively to industry and student needs.

Program Outcomes

The regional project is designed to foster growth and stability in student enrollment and completion, while also enhancing career readiness and aligning with workforce needs. Success will be measured through course completion, certificate and degree attainment, as well as internship participation and job placement in relevant fields. However, data on internship completion and job placement outcomes are not publicly available.

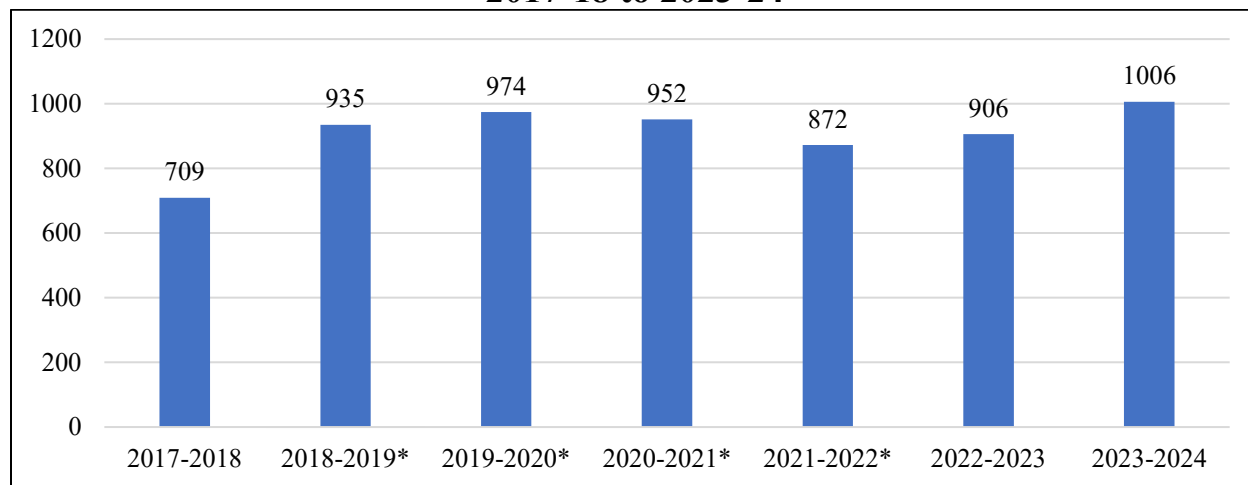
The funding period spans from 2018–19 to 2021–22, with combined outcomes from the four participating colleges presented below.

Please note that Orange Coast College did not offer a biotechnology program during this time. Although formal funding ended in 2021–22, program activities continued through 2023–24. The steps outlined below serve as a roadmap for tracking and assessing these outcomes.



Enrollment has demonstrated a consistent upward trend, rising from 709 in 2017-2018 to 1,006 in 2023-2024, with steady growth despite some minor fluctuations. By the end of the collaboration, the project had averaged 907 enrollments each year with four of the seven years having higher credit enrollment than the average.

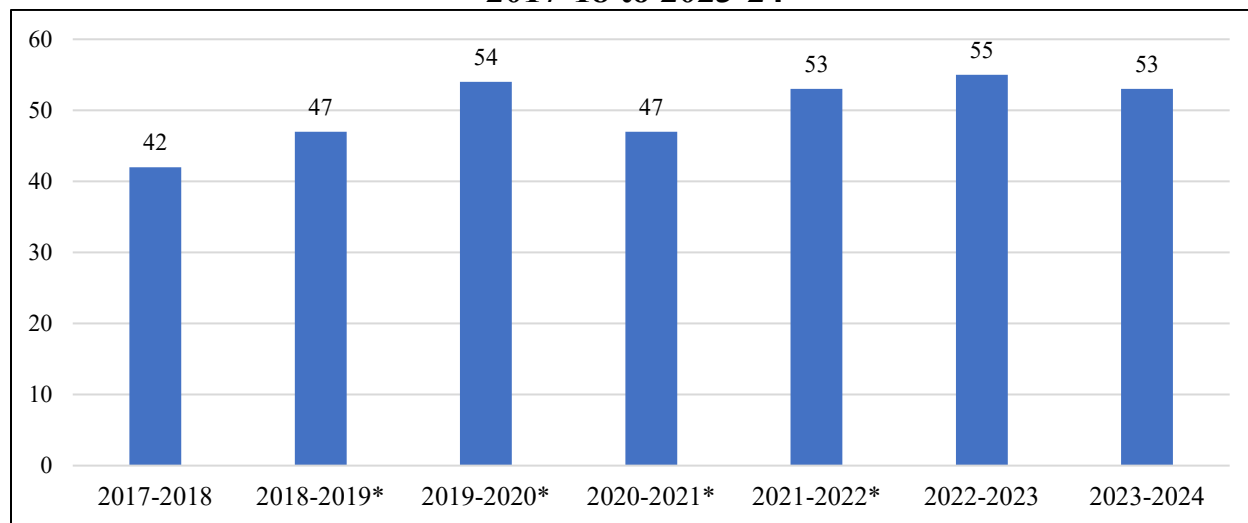
**OC Biotechnology Regional Collaborative
Number of Credit Enrollment for Biotechnology Program
2017-18 to 2023-24**



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

Similarly, the number of credit sections has generally increased over the years, from 42 in 2017-2018 to a peak of 55 in 2022-2023, indicating an expansion in course offerings, although minor fluctuations have occurred.

**OC Biotechnology Regional Collaborative
Number of Credit Sections Offered for Biotechnology Program
2017-18 to 2023-24**



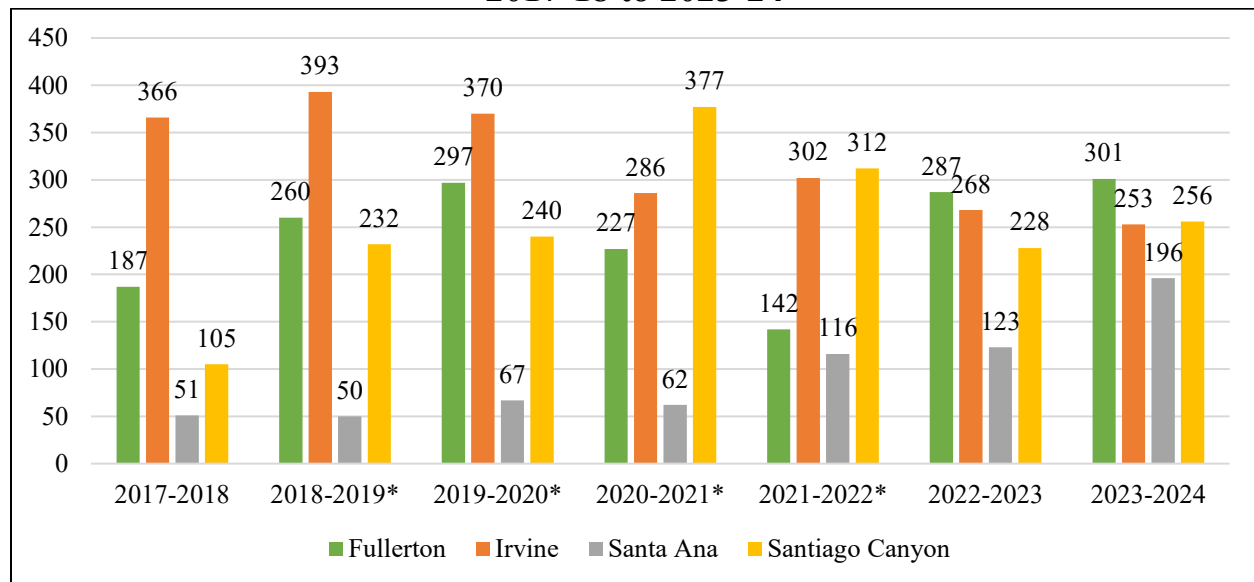
Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

In the next round of the project, identifying a target of enrollments and sections offered would be beneficial as that would offer a tangible goal and allow for targeted allotment of funding towards achieving that enrollment and section numbers. Better collaboration with counseling departments, as indicated earlier, would be beneficial so that the sections could also be tailored to meet the need and demand of students.

Fullerton and Santiago Canyon Colleges both saw steady growth in enrollment and section offerings over the years, with Fullerton College experiencing fluctuations and Santiago Canyon College showing significant increases, especially during 2020-2021. In contrast, Irvine Valley faced a consistent decline in both enrollment and sections offered, reflecting a shift in demand. Santa Ana College experienced notable enrollment growth in recent years, while its section count fluctuated, particularly during the pandemic when it dropped sharply before recovering.

Most of the enrollments were located at the two colleges not a part of RSCCD. This could be an indicator that if the collaboration were to continue then stronger ties between the four institutions and between the RSCCD colleges would be beneficial. Despite being the largest college in the collaboration, Santa Ana College was the smallest in terms of enrollment each year. This should be examined and better support systems and marketing should be identified to strengthen the program at the college. Santiago Canyon College, as indicated earlier experienced growth in enrollment dramatically but then experienced a decrease post-Covid 19. Santiago Canyon College's success should be a model for others in the collaboration and their strategies implemented in the partnering institutions.

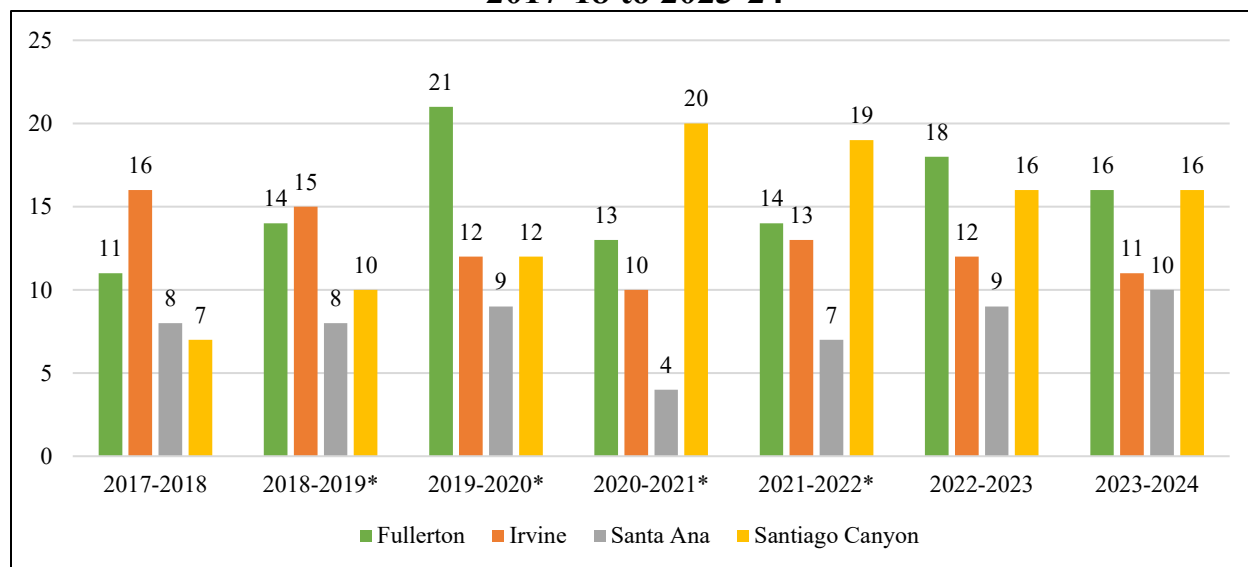
OC Biotechnology Regional Collaborative Number of Credit Enrollment by College for Biotechnology Program 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

There was inconsistency in the number of sections offered by each college throughout the collaboration and this would have impacted courses offered and subsequent student success. Consistency when possible or increasing sections would be ideal to ensure that continued success and timely completion of students. Irvine Valley College was the most consistent of the institutions so their scheduling and enrollment processes should be modeled by the other institutions. Similar to the enrollment trends, Santiago Canyon College experienced section growth. Assessing the demand for the section should be taken into account for future collaborations to ensure access to courses required for program completion.

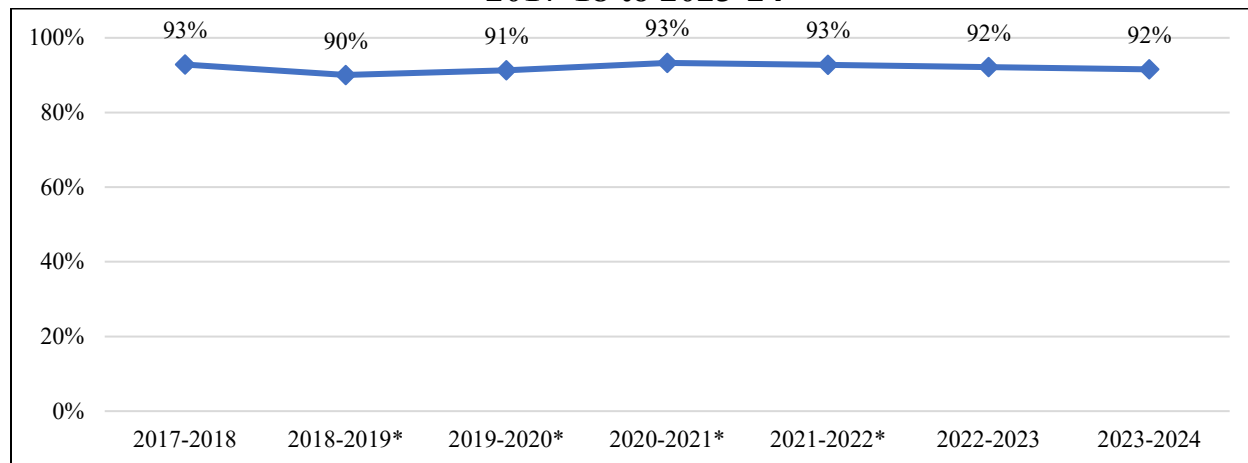
OC Biotechnology Regional Collaborative Number of Credit Sections Offered for Biotechnology Program by College 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

Retention rates have remained consistently strong, fluctuating only slightly between 90% and 93% over the years, reflecting stability in student retention. For future collaborations, reaching out to students who dropped the courses is key to better understanding how to better serve them and work towards a 100% retention rate. The consistency of retention rates does illustrate well how successful these courses and the project have been in engaging students.

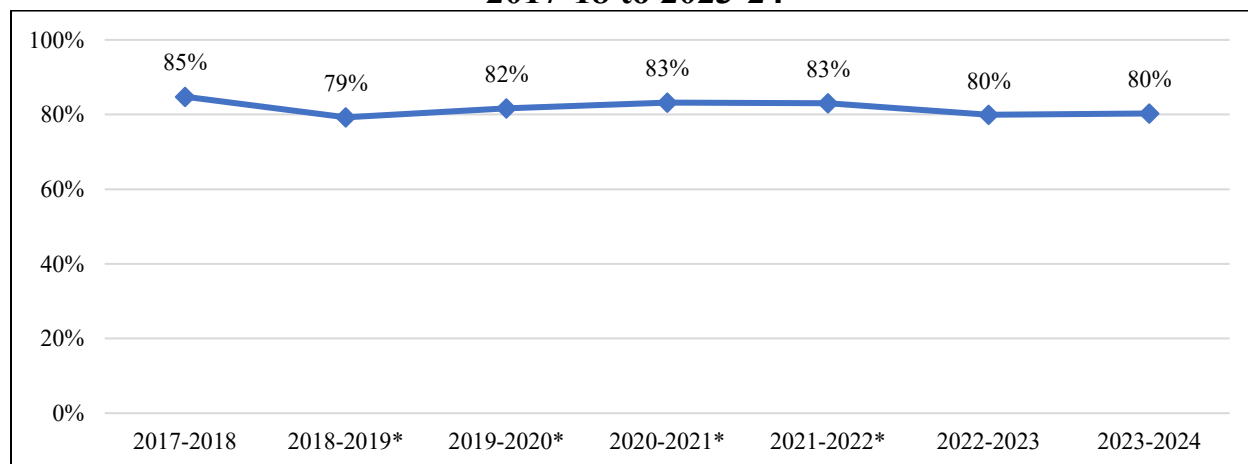
OC Biotechnology Regional Collaborative Retention Rates for Biotechnology Program 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

Success rates began at 85% in 2017-2018, then dropped to 79% in 2018-2019. However, they gradually recovered and stabilized around 80% in the most recent years (2022-2024). About 20% of students in the courses were not successful and it is incumbent on project leaders for future collaborations to assess the weaknesses of the courses and how to better support students.

OC Biotechnology Regional Collaborative Success Rates for Biotechnology Program 2017-18 to 2023-24

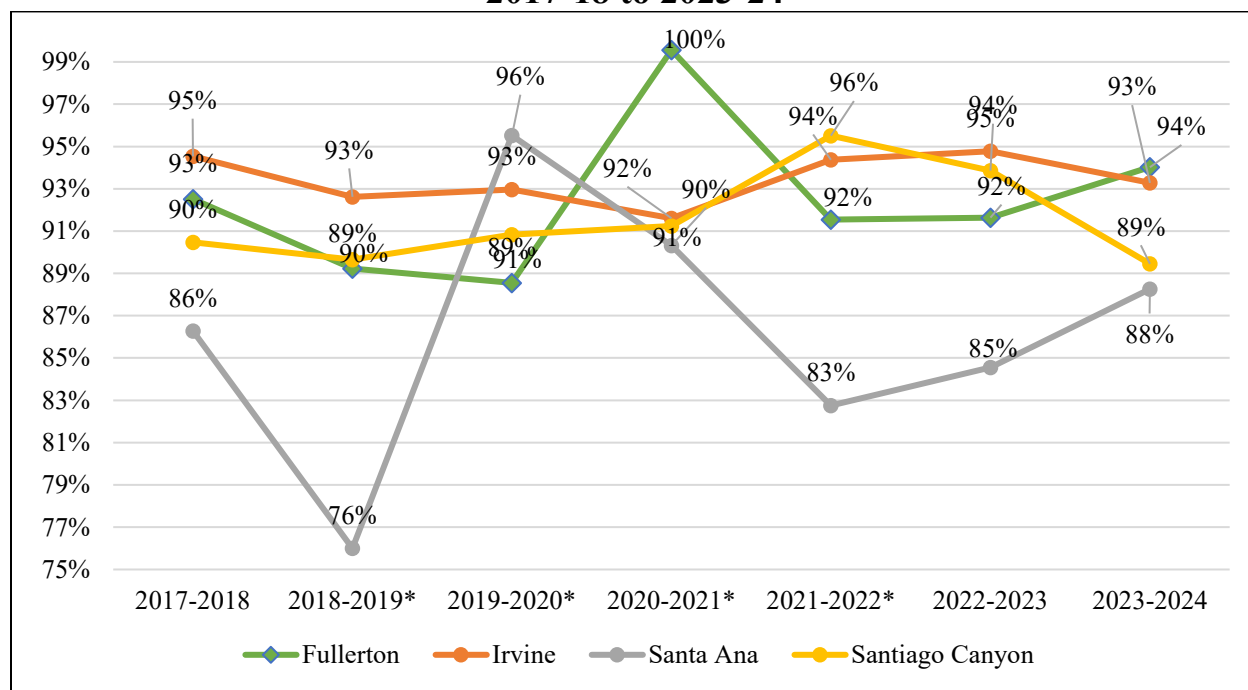


Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

Fullerton and Santiago Canyon College showed steady improvement in retention and success rates, while Irvine Valley maintained strong performance. Santa Ana College experienced fluctuations but showed signs of recovery post-pandemic, especially in retention.

The consistency of retention rates at Irvine Valley should serve as an example and their strategies modeled by others in the collaboration. The steady uptick at Santiago Canyon followed by a decrease needs to be investigated further to identify what is happening and how to remedy or correct the trajectory back upward.

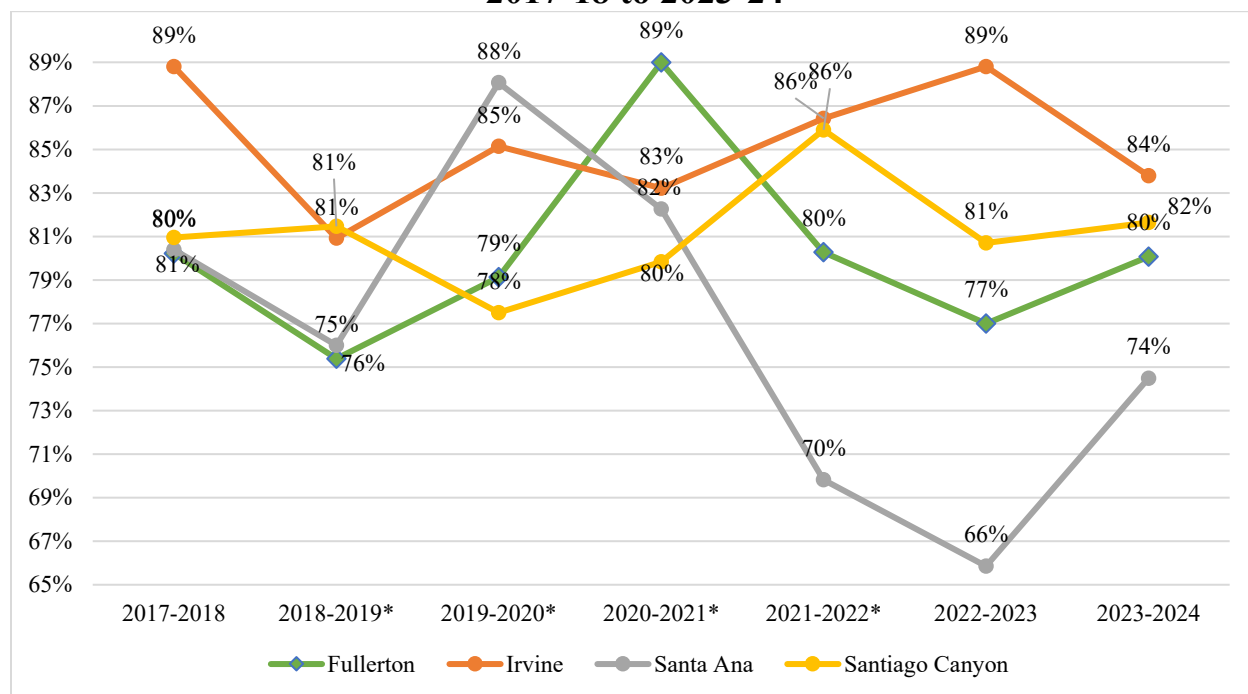
OC Biotechnology Regional Collaborative Retention Rates by College for Biotechnology Program 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

Success rates between the colleges varied widely and there was no real discernable pattern. All colleges in the collaboration need to investigate and work with their Institutional Effectiveness/Research offices to examine the underlying data to better understand the students and outcomes of the courses. Most of the institutions experienced a drop in success rates during and post-pandemic but this cannot be used as the main contributing factor since the drops and recovery of success rates was vastly different in severity and magnitude. Santiago Canyon and Irvine Valley were fairly consistent in the success rates after the start of the pandemic and their models and practices of supporting student success need to be lauded and built upon.

OC Biotechnology Regional Collaborative Success Rates by College for Biotechnology Program 2017-18 to 2023-24

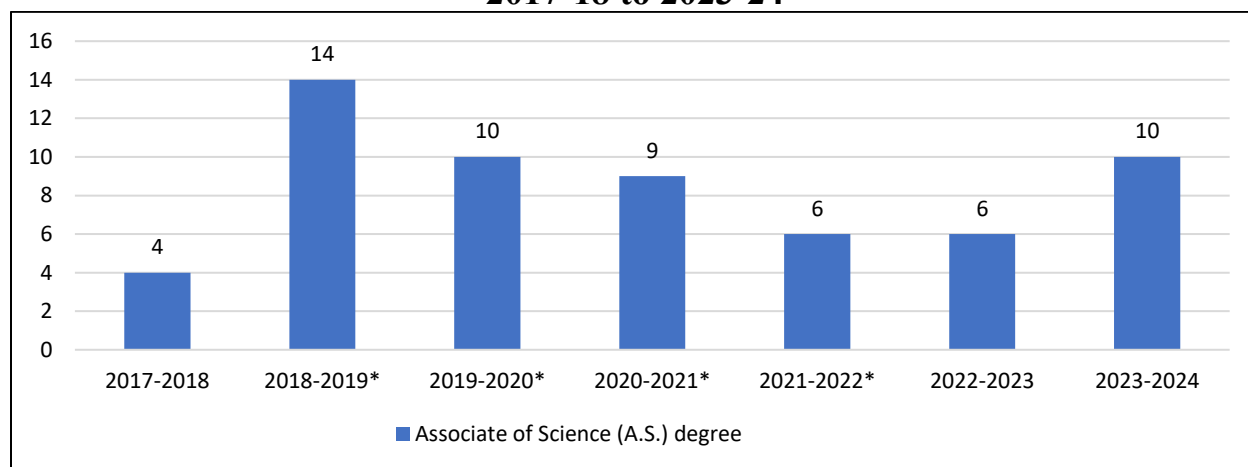


Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Retention/Success Rate (TOP code = 043000)

The number of Associate of Science (A.S.) Degrees awarded fluctuated over the years, starting with 4 in 2017-2018, peaking at 14 in 2018-2019, and ending with 10 in 2023-2024. Fullerton and Santiago Canyon Colleges had some fluctuation in the number of A.S. degrees awarded, while Santa Ana remained low. Irvine Valley awarded no A.S. degrees during the collaboration.

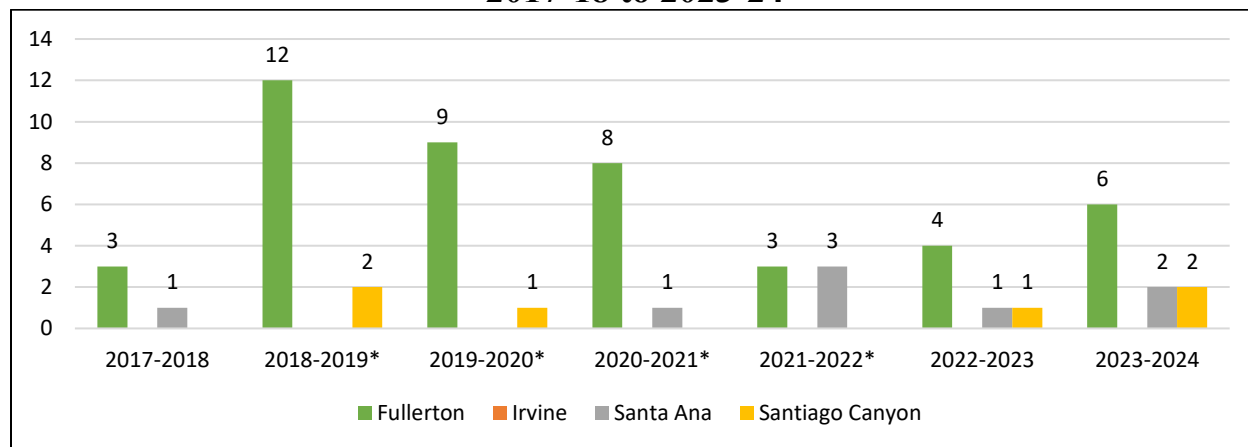
While the number of degrees awarded is to be lauded, the collaboration only graduated 59 students between the four institutions. Project leaders need to investigate how many students are biotechnology majors, their first enrollment, and barriers towards completion. With Fullerton as the main source of degree awards, the other institutions need to examine how well the program is known among potential students and what they can do to better promote the degree.

OC Biotechnology Regional Collaborative Number of Associate Degrees Awarded for Biotechnology Program 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Program Awards Summary (TOP code = 043000)

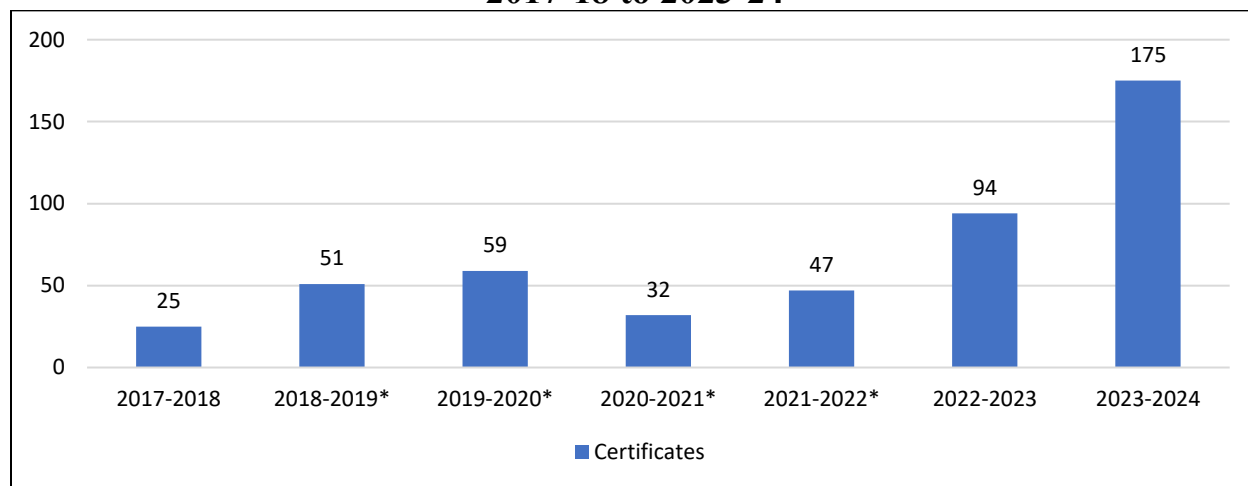
OC Biotechnology Regional Collaborative Number of Associate Degrees Awarded by College for Biotechnology Program 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Program Awards Summary (TOP code = 043000)

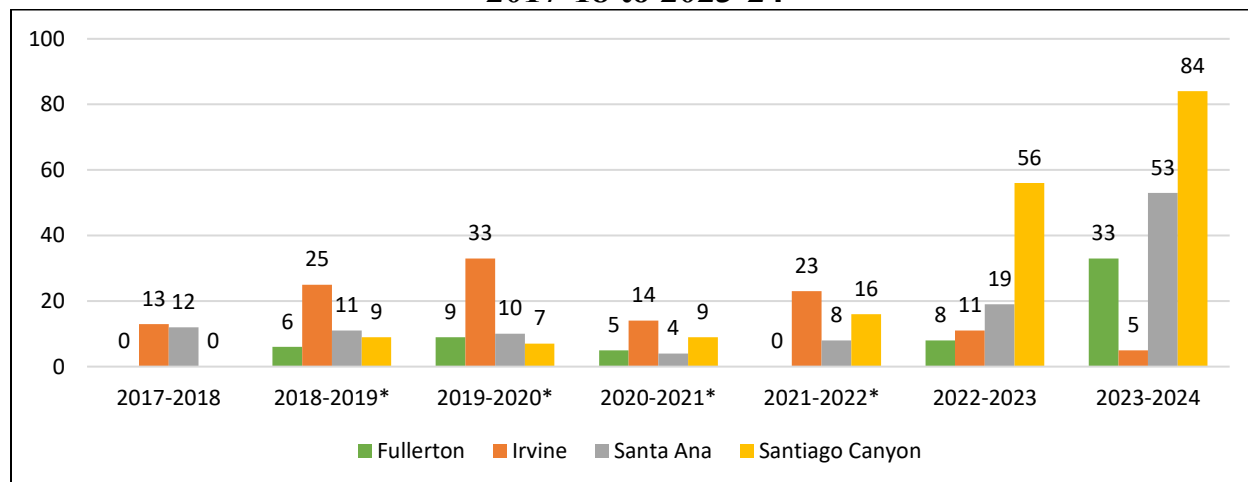
A significant upward trend is observed in certificates awarded, starting at 25 in 2017-2018 and dramatically increasing to 175 in 2023-2024, with the highest jump occurring between 2022-2023 (94) and 2023-2024 (175). Fullerton, Santa Ana, and Santiago Canyon Colleges showed significant growth in certificates, with Fullerton reaching 33 in 2023-2024 and Santiago Canyon peaking at 84. Santa Ana College also saw an increase, reaching 53 certificates. Irvine Valley's certificates peaked at 33 in 2019-2020 but declined to 5 by 2023-2024.

OC Biotechnology Regional Collaborative Number of Certificates Awarded for Biotechnology Program 2017-18 to 2023-24



Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Program Awards Summary (TOP code = 043000)

OC Biotechnology Regional Collaborative Number of Certificates Awarded by College for Biotechnology Program 2017-18 to 2023-24

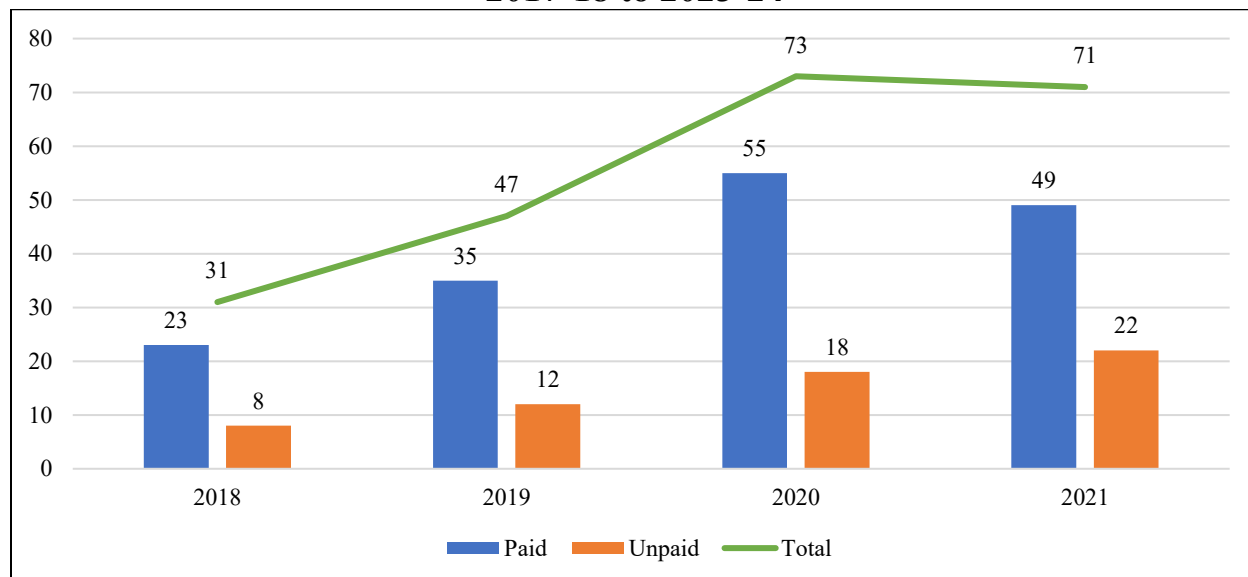


Source: California Community Colleges Chancellor's Office - Data Mart > Outcomes > Program Awards Summary (TOP code = 043000)

Upon completing a series of biotechnology lab courses (Intro to Biotechnology/Lab, Basic Lab Skills, and Intro to Chemistry), students will earn a certificate that can enhance their prospects when applying for internships. From 2018 to 2021, internship and job placements steadily increased each year, with a notable rise in both unpaid and paid opportunities. Total placements grew from 31 in 2018 to 71 in 2021. Paid placements consistently outnumbered unpaid ones, showing strong employer engagement and support for student employment.

If the collaboration is to be continued or expanded, project leaders need to conduct more outreach to graduates of the program to get a better sense of what was successful in helping them gain employment, what they wish they could have done, and what the project could do better to prepare them. The collaboration should also separate out internships from paid careers when tracking the information to more completely assess the success of this outcome.

OC Biotechnology Regional Collaborative Internship and Job Placement 2017-18 to 2023-24



Source: Orange County Biotech Education

Outcomes Assessment Summary

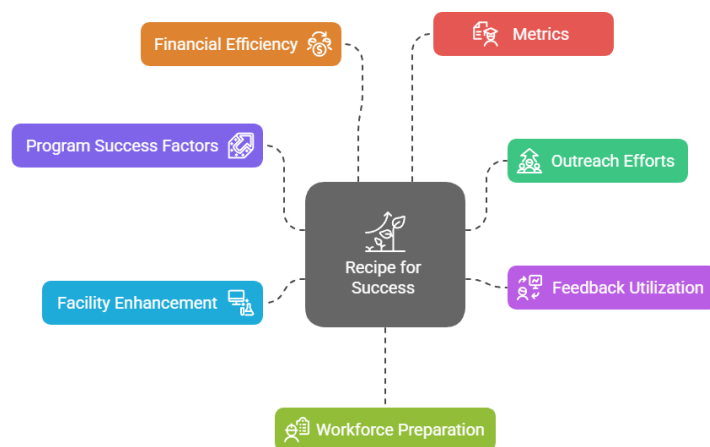
At the conclusion of the project, a full assessment based on available data needs to be made to better understand the successes and areas of improvement for the project. This assessment is based on subjective understanding of the degree of success of the collaboration. For each outcome, the degree of success will be one of three ratings: Was not successful, mixed success, and successful. Each metric will also be assessed at the collaboration project level to assess how successful the overarching collaboration was and at the college level to assess how successful the collaboration was at the college level, if applicable.

Outcome	Metric	Degree of Success	
		Collaboration Level	College Level
Enrollment Growth	Increasing student enrollment in programs	Successful	Mixed success
Course Completion	Students successfully completing their courses	Successful	Mixed success
Certificate Achievement	Earning certificates as a milestone	Successful	Mixed success
Degree Attainment	Completing degree programs with excellence	Mixed success	Not successful
Internship Participation	Engaging in internships for practical experience	Mixed success	Not Applicable
Job Placement	Securing jobs in related fields	Mixed success	Not Applicable

Overall, the assessment of the collaboration at this point would be a mixed success with the overarching outcomes successful or with mixed success and the college level outcomes mixed success or not successful.

Recommendations

After a concerted effort to evaluate a project that has already been completed, including a review of existing documents and interviews with those we were able to schedule, this section outlines recommendations to the Orange County Regional Consortium for funding future projects that pertain to academic programs:



- **Each Project Should Have an Evaluation Plan**

A key recommendation is that future collaborations begin with a well-developed and clearly defined evaluation plan. This will enable the project team to report measurable outcomes and better articulate project successes. A strong evaluation plan supports effective tracking of outcomes, a more complete understanding of project activities and impacts, and the development of sustainability practices to ensure long-term continuity. The evaluation should include both formative components (real-time feedback to guide adjustments) and summative components (final assessments to measure overall success). Formative evaluation allows the project to be responsive to stakeholder needs, while summative evaluation provides benchmarks and milestones for success.

- **Increase Accountability Through Research Support**

A dedicated researcher should be assigned to co-create the evaluation plan, including timelines, responsible individuals, and expected outcomes for each activity. This researcher should monitor progress, collaborate with college researchers for data collection, report findings to project leads and partners, and adjust objectives as needed. This role is essential to ensure transparency, consistency, and accountability throughout the project.

- **Strengthen Annual Reporting and Oversight**

Regional directors should review information submitted in NOVA on an annual basis to ensure that progress is accurately documented. Many current reports contain inconsistent descriptions, copied content, or overly long lists of activities that do not clearly reflect meaningful outcomes. Reports should be concise, specific, and aligned with project goals.

- **Expand Outreach to Underserved Communities**
Programs should strengthen efforts to reach underserved populations by offering scholarships or financial aid and working with institutional research offices to identify gaps in access. Counseling services should be expanded to help students navigate academic challenges, make informed career decisions, and develop professionally. Identifying counselors who specialize in academic or career and technical education (CTE) programs would provide students with more targeted and effective support.
- **Gather and Use Feedback from Stakeholders**
Regularly collect and analyze feedback from current students, alumni, faculty, staff, and employers regarding the program's effectiveness, including curriculum and internship opportunities. This feedback can be gathered through surveys, focus groups, and interviews. Direct input is essential for formative evaluation and can guide program adjustments to better meet student needs. Employers can offer valuable insights into the skills and competencies required in the workforce. Establishing a permanent advisory board with industry or community partners can help guide curriculum development and create pathways for internships and job placement. Continuous use of this feedback will support ongoing program improvement and elevate the collaboration in future rounds.
- **Align Curriculum with Labor Market Needs**
Assess regional job postings and employer feedback to ensure the program's curriculum aligns with current workforce demands. Collaborate with industry partners to identify emerging needs and areas of growth. This alignment will help create a workforce development pipeline and ensure that students are gaining relevant, in-demand skills. It will also support targeted recruitment and marketing efforts.
- **Track Enrollment, Retention, Completion, Graduation and Transfers**
Monitor the total number of students enrolled in the program, along with trends in retention, graduation, and cohort performance over time. These metrics provide a clear picture of program growth, student persistence, and overall effectiveness. Future iterations should include benchmarks and goals for these metrics, with data disaggregated by college and student group. This information can be used to improve recruitment strategies, tailor student support services, and refine course design and delivery. Surveys of both successful and struggling students can help identify key factors that influence student outcomes.
- **Measure Internship and Job Placement Outcomes**
Track the number of students who secure internships and entry-level positions after completing the program. These outcomes provide a direct measure of how well the program prepares students for the workforce and can inform improvements in career readiness and employer engagement.
- **Ensure Strong Administrative Support and Sustainability**
Institutionalizing successful elements of the collaboration and securing ongoing funding are critical to long-term success. Once grant funding ends, project leads must have the time and resources to oversee goals, monitor progress, and be held accountable for outcomes. When colleges are listed as "partners," it can be difficult to enforce accountability for both funding and results. Clear roles, responsibilities, and expectations must be established and supported by leadership.

- **Monitor Program Costs and Budget Alignment**

Compare actual expenditures against the program's budget over time to evaluate financial efficiency and sustainability. Track how resources are distributed across scholarships, faculty, facilities, and other areas to ensure effective use of funds. Evaluate which aspects of the program have the greatest impact and adjust funding accordingly. All partners should contribute in proportion to the funding they receive. Securing external funding in future rounds will be essential to sustaining the program's success and building on the progress already made.

In summary, the recipe for success for academic programming includes faculty who deliver essential classroom instruction and mentorship, job stewards who oversee outreach and career development, and data stewards who manage data collection and reporting. When these key components are in place and supported by administrators, academic programs can provide students with a comprehensive education that prepares them for long-term success.