

**Citrus Community College
Biotechnology Advisory Council
Tuesday, May 19, 2025
3:00-4:30 PM
via Zoom
Zoom ID: 845 8397 1941
Password: 233068**

Attendees: Dr. Eleanor Tsark, *Citrus College Biotechnology Faculty*; Dr. Katherine Harker, *Citrus College Biotechnology Faculty*; Dr. Wendie Johnston, *Laboratory Director of Pasadena Bio Collaborative*; Jeremy Clark, *Assistant Dean of Natural and Physical Sciences, Citrus College*; Willie Zuniga, *President Emeritus, Grifols Biologicals*; Maria Berry, *Microbiology Manager, Grifols Biologicals*; Scott Eaker, *Chief Operations Officer, Prolacta Bioscience*; Dr. Jorge Osuna, *Associate Director of Technical Services, Gilead Sciences, Inc*; Brad Pollak, *Director of the Long Beach Small Business Development Center*; Dr. Ying-Tsu Loh, *Executive Director of Bay Area Bioscience Education Community*; Natalie Desimone, *Citrus College Career Counselor*; Kevin Tapia (2019 Citrus biotech graduate), *Manufacturing Technician III, Gilead Sciences (Oceanside)*; Julia Martinez (2016 Citrus biotech graduate), *QC Compliance Training Associate, Prolacta Bioscience*

Agenda	Discussion	Summary/Recommendation
Meeting commenced at 3:00 PM with welcome and introductions.	<p>Eleanor thanked everyone who is in attendance since the biotech program requires the input of the advisory board members to constantly improve the program and ensure the training is relevant and current. If modifications to the program are recommended, then the biotech faculty will work to implement these changes.</p> <p>Advisory Committee members introduced themselves to the other participants providing their name and the organization they work for. Two new members to the advisory council introduced themselves as well: Ying-Tsu Loh (BABEC) and Julia Martinez (Prolacta Bioscience).</p>	The Advisory Committee meeting was convened to allow industry partners and Citrus biotech faculty to come together to review the program at the present time and to discuss the proposed curriculum for the new EM course.
Eleanor asked industry partners: What are your current needs with respect to employment and positions that need to be filled projecting forward? Are we addressing these employment needs?	<p>Dr. Jorge Osuna of Gilead shared that there was a company restructuring in Q1 of 2025 which resulted in some layoffs and minimal hiring. Gilead now has 3 parenteral fill lines operational at the La Verne site and thus production will be ramping up over the next year. The focus will be on biologics and injectables. Expect hiring in manufacturing to support these 3 parenteral lines in La Verne.</p> <p>Scott Eaker of Prolacta Bioscience shared that there will be several manufacturing positions coming online in June and July at the technician/associate level. These positions will have a minimum of a high school diploma requirement. A certificate is sufficient (AS degree is not required).</p> <p>Maria Berry of Grifols shared that there is no major growth expected over the next year. Currently there are some openings in manufacturing, mostly from turn-over in staff.</p>	Gilead and Prolacta will see an increase in manufacturing positions during the upcoming year and staff turnover at Grifols will also necessitate hiring of manufacturing technicians.

<p>Eleanor asked for an approval of the minutes from the last Advisory meeting (May 2024)</p>	<p>Advisory members approved the 2024 minutes.</p>	<p>Minutes from May 2024 Biotech Advisory Committee meeting were approved.</p>
<p>Eleanor discussed program enrollment and completion and strategies to increase enrollment were shared including a summer biotech bootcamp at Citrus for local high school teachers.</p> <p>Dr. Ying-Tsu Loh of BABEC shared information regarding the BABEC summer biotech bootcamps.</p>	<p>Eleanor discussed enrollment trends for current and previous cohorts. For the current year, 7 students completed the fall 2024 BIOT 110 course and 6 of these students enrolled in spring 2025 BIOT 150 and are on track to graduate in June. The program enrolls an average of 12 students/cohort with some years having greater than 12 students (15 students in 2018-19 and 16 students in 2021-22) while other years having fewer than 10 students. The number of certificates and A.S degrees conferred dropped as a result of the COVID pandemic but has been steadily rising with 14 awards conferred in 2022-23 and 20 awards conferred in 2023-24 which is encouraging. The program has done very well with retaining students as the majority of students who enroll in the program complete the program and are awarded a certificate and/or A.S. degree. Registration for fall 2025 is currently open and there is hope the class fills to the maximum of 16 students. High school outreach events to help advertise the program included the following: 1) Biotech table at Baldwin Park District College & Career Fair (Oct. 19th); 2); In-person presentation to juniors and seniors at Baldwin Park High School (March 14th); 3) Biotech table at the SoCal Trades Tour (week of March 17th) at Covina High, Hacienda La Puente District, Bassett, and Northview; 4) Biotech posters and flyers are also strategically placed throughout campus to increase visibility of the program for those students who are on campus for classes.</p> <p>Eleanor also shared that Citrus would be hosting a summer biotech bootcamp for local high school science teachers in partnership with Ying-Tsu Loh and BABEC. Ying-Tsu Loh and fellow colleagues at BABEC will provide the instruction for this bootcamp and the lab activities will be held in the biotech lab (LS 119). The bootcamp is scheduled for June 24-26. The goal of the bootcamp is to provide high school science teachers with engaging biotech curriculum to educate high school students about biotech careers and to inform high school teachers and their students about community college biotech training programs. Biotech faculty from Citrus College, Cerritos College and El Camino College will be in attendance and these faculty members will have an opportunity to provide a presentation during the lunch portion of the day informing the teachers about their college's biotech program and the many employment opportunities for graduates. Twenty high school teachers are currently registered with 11 teachers from high schools close to Citrus College (Claremont, Duarte, Glendora, Covina, Walnut, San Dimas, Pasadena and Alhambra).</p> <p>Eleanor introduced Dr. Ying-Tsu Loh of BABEC who provided a short presentation to the advisory council about the summer bootcamps that BABEC provides to increase awareness of community college biotech programs among local high school teachers and their students.</p> <p>Ying-Tsu shared that BABEC has had very good relationships with community colleges because of the high school teacher training that BABEC provides which raises visibility of community college biotech pathways among their students. Ying-Tsu spoke of bioliteracy and shared a report authored by the National Security Commission on Emerging Biotechnology (NSCEB) which discusses bioliteracy and the importance of</p>	<p>Industry partners were informed of current enrollment and completion data and activities to increase program enrollment.</p>

increasing the understanding of biology and biotechnology among all people so people appreciate how biotechnology helps in everyday living and throughout one's life. Ying-Tsu, who has experience teaching at City College of San Francisco, pointed to the graphic in the article which emphasizes that a bioliterate America relies on public (makes informed decisions when using biotechnology), students (think critically about biotechnology and pursues biotech careers), government (invests in and regulates biotechnology) and workers (contributes their talents, ideas and innovations). However, Ying-Tsu noted that one thing missing from the graphic was educators! Educators can get the word out to students and their families about biotechnology and career pathways. They can do this in a way that is both informative AND engaging and educators can impact many students. This is where BABEC comes in because this is what BABEC does. BABEC is a non-profit founded by teachers who believe in shared resources. These resources include curriculum that is available online as well as shared equipment lending/renting. BABEC lessons were developed by scientists and relate to real life so are engaging to students. BABEC also supplies reagent kits for all lab curriculum available through BABEC. BABEC also provides professional development to high school science teachers (such as the upcoming Citrus/BABEC summer bootcamp) which is a critical component of raising awareness of biotechnology among high schools. By providing biotechnology lesson plans and equipment and supplies to teachers, these bootcamps will indirectly impact over 15,000 high school students each year! BABEC works with over 100 schools and 160 teachers each year. So, by working with teachers, information about biotechnology can be disseminated to many, many students. Each student interacts on average with 3 BABEC biotech lessons each year. BABEC also works with community college faculty participating in the summer bootcamp to ensure high school teachers have access to clear, student-friendly information about postsecondary biotech education programs and career opportunities. BABEC assists the CC faculty in preparing a tube graphic that illustrates the career pathways available to students if they enroll in the biotech training program at their community college. This tube graphic is then presented by the community college biotech faculty during the lunch portion of the bootcamp so teachers can visualize the different paths their students can take once they complete a CC biotech training program. These tube graphics are then incorporated into a lesson plan that the high school teachers will develop to inform their students about CC biotechnology training programs which helps to market the programs to the local high school students since all students will be required to examine the CC biotech pathway tube graphic and complete the assignment related to this tube graphic. BABEC will be providing two summer bootcamps this year, one in Nebraska and one at Citrus College. The bootcamp provides hands-on activities in biotech and provides opportunities for teachers to work with biotech equipment which is fun for the teachers. All modules align with next-gen science standards. The main goal is to build comfort and confidence in teaching biotech among the high school teachers so they can then teach their students over multiple periods through their day. BABEC is best at building bridges between high school and community college faculty so faculty can work together and help each other in terms of bringing information to local students and raising awareness of biotech careers among local students.

Willie congratulated Ying-Tsu and the efforts being made by BABEC with respect to biotech education. Willie asked if the BABEC program is a sister program to the Amgen Experience or if they are independent of that program. Ying-Tsu shared that the Amgen program, funded through Amgen, is independent of BABEC. BABEC is not funded through Amgen and has several NSF grants for funding these opportunities.

	<p>Reagent kits are sold and equipment is rented which assists with program funding. Willie stated that both programs are great with similar intent and that the Amgen Experience also focuses on high school instructors. Willie attended a half-day session out of curiosity the other day and he believes these types of programs are great because low enrollment in CC biotech programs is still a challenge for everyone. Willie shared that he has an upcoming meeting with Bioscience LA and the 19 regional CC presidents on Friday and during the meeting he will have an opportunity to speak to the importance of this industry (14 of 19 LA county CC programs have biotech programs). Willie hopes to connect the community colleges with local high schools to help boost program enrollment. Willie also sees how social media could be used to help get the word out about these programs. Willie is excited to see Citrus and BABEC working together to help raise awareness of the Citrus biotech program among our local high school students.</p>	
<p>Eleanor reviewed the four core biotech courses required for both the certificate in biomanufacturing and the A.S. degree in biotechnology.</p> <p>Eleanor highlighted the soft skills training provided to students through the program.</p> <p>Eleanor discussed the proposed additional (stackable) certificate of achievement in environmental monitoring which will include a new short 6-week EM lab course to better prepare students for EM technician positions.</p>	<p>Eleanor outlined the four core biotech courses required for both the certificate in biomanufacturing and the A.S. degree in biotechnology and when these courses are offered during the academic year. BIOT 107 (Intro to biotechnology) offered in the fall and spring; BIOT 110 (Basic Lab Skills and Documentation) the first of the lab courses offered in the fall semester; BIOT 150 (Biomanufacturing and Quality Control) the second lab course offered in the spring; BIOT 125 (Quality and Regulatory Practices) offered in the spring. Technical skills training for BIOT 110 and BIOT 150 remain unchanged from previous years and have been discussed and approved in previous council meetings. However, Eleanor did discuss the employability/soft skills training which includes:</p> <ul style="list-style-type: none"> • Working collaboratively in teams to perform/troubleshoot lab activities • Communication skills: lab notebook documentation, SOP writing, oral presentations, teamwork • Time management • Punctuality • Integrity • Career Guest Speakers: Students are confident during the job search process <ul style="list-style-type: none"> ➢ Natalie Desimone, Citrus Career Counselor (Fall): Resume building workshop ➢ Brad Pollak, Career Coach (Fall & Spring): Interviewing skills workshops (Fall and Spring) <p>Peer-to-peer mock interviews with LATTC biotech/chem tech students via Zoom (BIOT 150)</p> <ul style="list-style-type: none"> • Welcomed Industry guest speakers: Keys to success <ul style="list-style-type: none"> ➢ Willie Zuniga, President Emeritus of Grifols (BIOT 110)- “Everyday is an interview” ➢ Aldahir Pereira, PCC Biotech Alumnus, Xencor (BIOT 110)- “Find ways that you can be useful, even if it’s not explicitly in your job description. If you see a problem, try to find a solution.” <p>Eleanor thanked partner companies for the tours that our students participate in during the year of training including a tour in the fall of Prolacta and tours of Grifols and Gilead during the BIOT 150 course.</p> <p>The certificate of biomanufacturing includes the four core biotech courses (BIOT 107, BIOT 110, BIOT 150, BIOT 125) in addition to a math course (either technical math, MA 144, or statistics MA 165 since</p>	<p>Eleanor provided an overview of the certificate and A.S. degree course requirements noting that the certificate math requirement has changed to include statistics (MA 165) since intermediate algebra can no longer be offered at CA community colleges.</p> <p>Eleanor provided a summary of the current courses to highlight the need for the new EM course that will be offered in summer of 2026. Eleanor discussed how this new EM lab course will allow students to earn an additional stackable certificate with a focus on environmental monitoring in biomanufacturing since this certificate will require the four core biotech courses for the existing certificate in addition to the new EM lab course.</p>

	<p>intermediate algebra is no longer offered at CA community colleges). Overall, the certificate includes 19-20 units. For the A.S. degree in biotechnology, students will need to complete the four core biotech courses in addition to MATH 165 and one year of chemistry (CHEM 103/104 or CHEM 111/112) and includes 29 units in the major along with the required GE units.</p> <p>The biotech training has prepared students very well for manufacturing technician and lab assistant roles, but our students are also interested in EM/QC technician roles that our partner companies offer. Our current curriculum could better target these specific roles. We need more time to provide the specific training needed to adequately prepare students for these positions. So, we have proposed adding a short course on environmental monitoring/QC microbiology skills training which council members have shown strong support for in previous council meetings. This course will be added to the current curriculum to produce a stackable certificate for environmental monitoring in biomanufacturing which would be offered during the summer session as a 6-week course. Students who take this additional summer EM course will earn the additional, stackable certificate in addition to the existing certificate in biomanufacturing. Both certificates can be completed in one year. To provide the necessary funding to support this additional EM course, Jeremy Clark suggested that Kathy and Eleanor apply for a Perkins V grant. Perkins V funds are used to help strengthen CA CC CTE programs and workforce preparation to ensure CTE programs meet the demands of the 21st century economy. Perkins V funds will be used to support and launch this new EM course.</p>	
<p>Kathy discussed the new BIOT 160 EM/QC microbiology course and how Perkins funds will be used to support the launch of this course.</p>	<p>Kathy discussed what activities will be supported by the Perkins funds which include:</p> <ul style="list-style-type: none"> • Externship to further faculty training • Modular, portable cleanroom (Instant Cleanroom Solutions) <ul style="list-style-type: none"> ○ Inflatable with HEPA-filters and positive pressure with a gowning area ○ One-month long rentals x 3 ○ Company sets up the cleanroom and will remove after a month • Cleanroom equipment and consumable materials (gowning and furniture) • Curriculum development <ul style="list-style-type: none"> ○ Funds to support Kathy as she develops the lab and lecture materials for robust skills training • Marketing materials to inform community of new course and stackable certificate <p>Perkins: Total of \$71,605 was requested.</p> <p>Kathy discussed the current progress on the EM course (BIOT 160):</p> <ul style="list-style-type: none"> • Initial Industry site visit conducted at Grifols Biologics during Winter 2023 <ul style="list-style-type: none"> ➢ Toured facilities and met with multiple department leaders ➢ Identified essential equipment and procedures • BIOT160 COR was written and approved by: <ul style="list-style-type: none"> ➢ Industry Advisory Council (completed Spring 2024) ➢ Chancellor's Office (completed Fall 2024) 	<p>Kathy discussed the activities that will be supported by the Perkins V funding.</p> <p>Industry partners were enthusiastic about its launch of the new EM course and new stackable certificate.</p>

- Stackable Certificate in Environmental Monitoring currently going through Curriculum Review, pending LARC (Los Angeles Regional Consortium) approval.

Kathy emphasized that no other colleges offer environmental monitoring skills training within cleanroom spaces in biomanufacturing, so she does not foresee any trouble securing LARC approval. Kathy believes LARC approval should be secured by this fall. This would allow for our upcoming 2025-26 students to be able to enroll in the new EM/QC micro course in summer of 2026.

Kathy asked industry partners to consider hosting her for an additional externship after the fall 2025 semester (January of 2026). Additional on-site faculty externships and continued dialog with industry professionals will ensure the course curriculum adequately prepares our graduates with the proper equipment and skills training for these competitive positions. Kathy would love the opportunity to spend time with employees at our partner companies engaged in EM and QC microbiology roles to ensure the correct training is provided to our students. Curriculum could then be developed during the winter session of 2026.

Brad asked if the new course would be a 6-week course in the summer and asked if this would then permit students to receive two certificates. Kathy confirmed that students who complete this EM summer course would then be able to obtain two certificates since the new EM course (along with the existing four core biotech courses) is the only additional course needed to obtain the environmental monitoring in biomanufacturing certificate.

Scott asked if the new EM course will be exclusively as part of the biotech certificate or is it possible that it could be a stand-alone course. Scott is considering that within Prolacta there could be interest in sending employees to this summer EM course. Kathy said that she would love to have Prolacta employees enroll in the course. EM in the food and infant world is very different from EM for drugs, but Prolacta is now entering into that space so they have a whole group of people that would have to learn a slightly different type of approach.

Willie congratulated Kathy as she has been working on this project for a while so it is great to see this progress!

Eleanor thanked Jeremy for his role in securing Perkins funds to provide the necessary support for the new EM course. Jeremy said that the team did a great job in putting the proposal together and that the strength of the advisory council was instrumental in the forward progress that has been made. Jeremy confirmed that the Perkins proposal submitted was strong and there was a desire to ensure that it would be fully funded. This is due to the close relationship faculty members have with industry partners and the support the council has shown for this project in terms of externships, advice, and feedback. Jeremy thanked the council members and the faculty for their all their efforts.

	Eleanor shared that industry council minutes are required as part of the Perkins grant application and that she submitted the three previous years of advisory council meeting minutes highlighting the support of council members for the proposed new EM course and stackable certificate which strengthened the application. Eleanor thanked industry partners for their continued support which made the Perkins grant possible.	
Meeting Adjourned at 4:00 PM	Eleanor thanked the members for their invaluable input and willingness to continue supporting the Citrus biotech program. The next advisory meeting will be held in 12 months.	Follow-up advisory meeting will be held at the end of the spring semester next year.

Minutes prepared & submitted by: Eleanor Tsark