**Advisory Board Minutes 8-2-21**

Hello Biotech Advisory Board,

Here is a quick update of what we discussed during our 8/2/21 meeting. Thank you so much for attending and participating. It was a wonderful meeting.

Present: Amy Grant (ECC), Mia Dobbs (ECC), Pavan Nagpal (ECC), Megan DeLong (El Segundo High), Joel Espejo (Polypeptide Labs), Lori Ikari (North Torrance High), Chris Martin (Bachem), Fang Wang (CSUDH)

We discussed our funding, nearby programs, the C-ID system, and our two proposed stackable certificates and one AS degree.

* The Advisory Board emphasized that soft skills, such as technical writing of SOPs, communication, reading and comprehension should be emphasized.
* For the second course in the Biotech series, it was suggested that we cover material related to COVID and some material on biomolecules other than proteins. Our university partner reminded us that the second course in the series should build upon skills learned in the first course.
* Our industry partners thought that statistics was highly relevant and should be part of the AS degree.
* Our high school partners think that a hands-on component should be part of any dual enrollment course we might offer at the high schools.

We will continue to work on the curriculum and present our progress at the next Biotech Advisory Board Meeting, in October. We’re thrilled to work with you and so grateful for your input!

**El Camino College Biotech Advisory Board Minutes**

Friday, May 13, 2022

Present: A. Grant, M. Dobbs, C. Martin, P. Nagpal, C. Eichman, A. Hernandez, J. Sims

1. Last Meeting Recap
   1. We reviewed the curricula for 5 new courses in detail.
   2. We discussed an overview of the curriculum process.
   3. We discussed the content of our degrees and certificates. We have incorporated the suggestions of the Advisory Board on the math requirements (with the inclusion of statistics) and the content of our capstone course (both proteins and nucleic acids are featured).
2. Curriculum Progress
   1. Curriculum was submitted by M. Dobbs for all biotech courses: Biol-75, 76, 77, 78, 79.
   2. Approval was granted by the Life Sciences Department, then the Natural Sciences Division, then the Curriculum Committee, and finally the College Curriculum Committee.
   3. Curriculum has been sent to the CA Community Colleges Chancellor’s Office for final approval.
   4. Lecture-only classes have been approved for online instruction.
   5. Lab/Lecture courses were approved for hybrid instruction—the labs will be in person.
   6. Next semester, we will seek approval for the degrees and certificates.
3. Hiring
   1. The ECC Superintendent/President approved a full-time Biotech hire.
   2. The position closed on 4/29 and the hiring is underway. The new hire will start in Fall 2022.
   3. We went over the qualifications in the job advertisement.
      1. Minimum quals
         1. MS in a Life Science
      2. Some Desired quals
         1. Experience teaching life sciences
         2. Experience with biotech lab techniques & industry
         3. Knowledge of FDA regulations and ISO standards
         4. Experience building relationships with companies in biotech
         5. Knowledge of diversity, equity, and inclusion
4. Funding
   1. Our initial funding is through a Strong Workforce Regional Funds grant. 16 colleges were given such funding in this cycle.
   2. We recently were approved for a Strong Workforce Local Funds grant.
5. Equipment and Facilities
   1. We will soon start ordering supplies and equipment for the program.
   2. We appreciate the help from Phenomenex in the choice of our HPLC.
   3. We toured to future home of the biotechnology equipment room (Chem-158) and the laboratory space we will use for the program (Chem-153).
6. Next Steps
   1. Hire FT Biotech faculty member
   2. Await approval from Sacramento to offer courses
   3. Start the approval process for certificates/degree
   4. Prep rooms for the program
   5. Install equipment
   6. Next Advisory Board Meeting will be in Fall 2022. It’ll most likely be by Zoom so that more Advisory Board members can attend.

El Camino College

Natural Sciences Division

**Biotechnology Advisory Board Meeting Minutes**

**Date**: September 12th, 2022 **Time**: 1:15-2:15pm  **Location**: Zoom

**Participants**: Amy Grant, Carlos Lopez, Mia Dobbs, Eduardo Ayala, Pavan Nagpal, Arturo Hernandez, Chris Martin, Fang Wang, Megan DeLong, Sheldon Schuster, Siraj Elsamra, Sara Dorman, Sophia Toro

***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* opened the meeting at 1:15pm and facilitated the meeting agenda as follows:

**Agenda**

1. Approved Agenda
2. Welcome and Introductions
3. Minutes from the last Biotechnology Advisory Board meeting
   1. Final course curricula
   2. Hiring a full-time biotechnology faculty member
   3. Our funding and equipment ordering
   4. A tour of the new biotechnology laboratory space
4. Announcements

Hiring

* 1. Eduardo Ayala, PhD was hired to fill the position of full-time biotechnology Faculty at El Camino College. Dr.Ayala has worked in both industry and academia, and is excited to shape our biotechnology program to help our students become well rounded and competitive candidates for positions in industry.

Curriculum

* 1. Our biotechnology courses (Biol-77, Biol-76, Biol-77, Biol-78, and Biol-79) were approved locally and await approval from the chancellor’s office. This process is expected to take another year and a half.
  2. Submission of the two stackable certificates and AS degree will be submitted by October of this year:
* *Biotechnology Laboratory Assistant* – 2 semester program
* *Biotechnology Technician* – 3 semester program
* *AS Degree in Biotechnology* – 4 semester program; 60 units required to graduate
  1. The microbiology course will be taken in semester 2 for the certificate tracks compared to semester 4 for the AS degree track.

Internships

* 1. Bachem and Phenomenex are interested in exploring internships with our students.
  2. ***Siraj Elsamra*** *(Chemical Manufacturing Manager, Phenomenex)* discussed generating a pipeline that will help our students experience the real-world application of their coursework through these internships. Phenemonex envisions 1-2 paid interns per semester. The term (how long they will participate in the internship for) is to be determined. Phenemonex is using their Tech 1 job profile as the skeleton for their proposed internship program.
  3. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* added that once we have our cohort program together, we can organize and arrange various internship programs.
  4. The advisory board will be notified of any finalized internship opportunities.

Other Program Ideas

* 1. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* discussed other program ideas to enhance our program including:
* Soft Skills Workshop
  + Resume preparation including leveraging experiences outside of the lab setting (i.e. working as a hostess in a restaurant to show ability to handle a fast-paced environment, communication, and customer service skills)
  + Interview preparation including mock interview panels
  + Team building and conflict management
  + Long term career planning
* Conferences
  + BIO (Biotechnology International Organization) – highlights include one day of the conference dedicated towards students and an exhibit hall with vendors and prospective employers.
  + SACNAS (Society for Advancement of Chicanos/Hispanics and Native Americans in Science) – highlights include academic and industry focused conference where students of all levels (undergrad to post-doc) conduct talks and poster presentations; there is one free day specifically targeting community college students.
  + ABRCMs (Annual Biomedical Research Conference for Minority Students) – highlights include student presentations with low cost opportunities for students to attend and participate in
  1. ***Sophia Toro*** *(Dean, KGI)* added that SACNAS is especially phenomenal and students can achieve valuable networking and build their industry contacts. Further, SACNAS has student clubs that El Camino could consider starting. This could provide a valuable opportunity for creating pipelines with universities where alumni could communicate with and inspire current and prospective students.

Questions for Advisory Board

* 1. Question for industry partners: *What knowledge and skills would help our students hit the ground running?*
     + - ***Chris Martin*** *(Senior Director of Production, Bachem)* emphasized that students should have a solid theoretical background that can be built on during on the job training, including an understanding of the different biomolecules (behaviors, physical properties) and an understanding of the techniques applied in manufacturing.
       - ***Siraj Elsamra*** *(Chemical Manufacturing Manager, Phenomenex)* reiterated what Chris said and added that they are looking for candidates that have the fundamentals, and especially students who can use the language of a scientist.
       - ***Danielle Palmer*** *(Takeda Pharma)* agreed with both Chris and Siraj.
  2. Question for high school partners: *How can we engage your students in our program?*
* ***Megan DeLong*** *(Teacher, El Segundo High School)* addressed this question later when she came in towards the end of the meeting and highlighted partnering with parents, doing talks at the high school to introduce the program, and considering dual enrollment for the lecture portion of Biol-75 to engage seniors.
  1. Question for higher education partners: *What can we do to make our students a better fit for continuing their education?*
* ***Sheldon Schuster*** *(President, KGI)* emphasized computer skills and computational capacity (anything students can do to learn how to use computational tools available to people in industry). He highlighted that the biggest challenge isn’t educating students in the sciences, but rather, there is a large gap in academia’s ability to make students aware of the career opportunities that are out there (outside of the traditional nurse, doctor, etc.). Our program should focus on informing young people about the various diverse careers that are available in biotechnology including quality and regulatory, clinical trial management, medical affairs, etc. Informing students of these opportunities should be front and center.
* ***Sophia Toro*** *(Dean, KGI)* emphasized that we need to help students make a plan. They need something they can print out so they know exactly what needs to be done in terms of classes and internships for them to achieve their goal. We need to build awareness around the biotech industry and get it all in front of students at the high school level to plant that seed. She also highlighted the importance of programming for parents and offered to assist in workshops in both English and Spanish for parent nights at our local high schools to get the parents (especially our first generation and underserved student parents) on board.
* ***Fang Wang*** *(Associate Professor of Biology, CSUDH)* added that parent programming is done at the university level too, and not just for high school students. At CSUDH, she has her students to poster presentations where they introduce their work to their parents to show them what they have learned and to gain parental support. She also added the idea of possibly holding an elective class with biotechnology speakers.
* ***Amy Grant*** *(Dean, El Camino College)* mentioned that El Camino College has special topics classes where this idea could be explored.

1. Next Steps
   1. Approval of the two certificates and AS degree
   2. Approval from Sacramento to offer courses
   3. Preparing the rooms for the program (including finishing purchases and installing equipment)
2. Final Thoughts
   1. ***Sheldon Schuster*** *(President, KGI)* introduced us to an activity done at KGI where students engage in a science topic-related business plan competition (typically done in their Summer classes) that we could consider introducing at El Camino. He graciously offered to assist in this endeavor and possibly provide Amy Grant with sample materials for the activity.
   2. ***Siraj Elsamra*** *(Chemical Manufacturing Manager, Phenomenex)* highlighted some critical skills for students including elemental analyzer, HPLC, and GCs. He also recommended the book The Jungle by Upton Sinclair for reading to be incorporated in the program.
   3. ***Arturo Hernandez*** *(Director of Mesa, El Camino College)* inquired about the requirements for regulatory affairs positions in industry.
   4. ***Mia Dobbs*** *(Full-time Anatomy and Physiology Faculty, El Camino College)* and ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* confirmed that in their research of and experience in biotechnology industry that quality and regulatory personnel is in high demand, and while a higher education degree in these is ideal, the demand is so high that a certificate is a great place to start and companies may choose to train the appropriate candidate if they have sufficient background in quality and regulatory.

This meeting was adjourned at 1:15pm.

Minutes written by Mia Dobbs.

El Camino College

Natural Sciences Division

**Biotechnology Advisory Board Meeting Minutes**

**Date**: May 8th, 2023 **Time**: 1:30-2:30pm  **Location**: Zoom

**Participants**: Amy Grant, Carlos Lopez, Mia Dobbs, Eduardo Ayala, Arturo Hernandez, Chad Eichman, Chris Martin, Fang Wang, Megan DeLong, Sofia Toro, Jose Anaya, Joel Espejo, Lequina Miles

***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* opened the meeting at 1:30pm. After introductions, ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* facilitated the meeting agenda as follows:

**Agenda**

1. Approved Agenda
2. Welcome and Introductions
3. Recap of minutes from the last Biotechnology Advisory Board meeting
   1. Overview of certificates and degree
   2. New biotechnology hire
   3. Ideas for networking and enrichment opportunities
4. Today’s Biotechnology Advisory Board topics:
   1. Review of proposed programs and curriculum
   2. Equipment acquisitions and installation
   3. Building a stable student pipeline
   4. Statewide biotech instructor community of practice
   5. Faculty training opportunities
   6. Input from our board partners

Review of Propsed Programs and Curriculum

* 1. Our biotechnology courses (Biol-77, Biol-76, Biol-77, Biol-78, and Biol-79) were approved locally and await approval from the chancellor’s office.
  2. The two stackable certificates and AS degree have been submitted:
* *Biotechnology Laboratory Assistant* – 2 semester program
* *Biotechnology Technician* – 3 semester program
* *AS Degree in Biotechnology* – 4 semester program; 60 units required to graduate
  1. ***Sophia Toro*** *(Dean, KGI)* asked if students will get a chance to get hands on experience in the summers, or possibly do an internship?
  2. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* answered that we do plan to make those experiences a part of the program, but did not list it in the requirements due to us not having those relationships established yet. Once our program is established, we plan to partner with the South Bay Workforce development team, our advisory board partners, and companies in the local Torrance area.
  3. ***Lequina Miles*** *(Phenomenex)* asked how many students are going to be in a single cohort?
  4. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* answered that we plan to have 24 students max to start.

Equipment Acquisitions and Installation

* 1. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* thanked Phenomenex for recommending Agilentto help us set up and do troubleshooting for the HPLC. We will be incorporating this into Biol-79 as part of the protein purification and analysis for the course, and that we are always on the lookout for donation opportunities that align with our program.
  2. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* added that we received two large centrifuges from Dendreon, and one will be used directly for our biotechnology program and the other for the natural sciences division at large.
  3. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* noted that we have about 20k from our current Strong Workforce Grant remaining, and the next thing we are looking at is a gel documentation system that we can use to image gel electrophoresis for DNA analysis along with SDS page as part of our protein purification workflow. He added that we are keeping an eye on costs for our consumables.
  4. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* noted that the application for the next round of SWF funding opens Summer 2023, and that we will aggressively pursue those sources of funding.

Building a Stable Student Pipeline

* 1. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* discussed that a challenge community colleges are facing is student enrollment, especially in biotechnology. Although it is a challenge, we see it as an opportunity to connect with and leverage the talents of the dedicated folks in our student support office on campus. We plan to spread the word at on-campus events, conduct student workshops, and participate in career and majors fair. We also plan to leverage our existing connections with our high school partners. Additionally, our Natural Sciences Division is spreading the word, and students are showing a lot of interest in joining our biotechnology program.
  2. ***Mia Dobbs*** *(Full-time Anatomy and Physiology Faculty, El Camino College)* shared that many of her pre-nursing students who are considering alternative paths in the sciences are especially interested in our budding biotechnology program. The faculty in the Life Sciences department value that our new biotechnology program can help us retain these students and allow them to pursue careers in the sciences outside of nursing.
  3. ***Carlos Lopez*** *(Vice President of Academic Affairs, El Camino College)* shared his excitement to give our biotechnology students at El Camino an industry-level experience with the actual equipment that they would use in the field.
  4. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* added that we plan to build a stable student pipeline with our local high schools: Torrance and El Segundo. He highlighted that he plans to visit these high schools to share information about our biotechnology program and future biotechnology careers, and hopes that this will allow us to tap into a large population of future students.
  5. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* asked our high school partners how many students are in the biomedical pathway.
  6. ***Megan DeLong*** *(Biomedical Science Pathway Faculty, El Segundo High School)* replied that there are close to 200 students in the entire biomedical pathway.

Statewide Biotech Instructor Community of Practice

* 1. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* commented that we are a part of a strong support network (biotech instructor community of practice), headed by Terri Quenzer. This community meets via Zoom calls every Friday to share best-practices for biotechnology across college, high school, and industry. He added that we were able to acquire our centrifuge donations through this community, and also did a site visit to Dendreon as an initial step to creating a formal partnership. He noted that Dendreon is interested in internships for our students and training opportunities for faculty. Eduardo also added that it is critical for our program’s success that faculty stay current and sharp with the skills being used in industry. Eduardo also added that we submitted a letter of support to expand the existing  BIOSCOPE Program (Biomanufacturing Supply Chain Operations Projects for Education).

Faculty Training Opportunities

* 1. ***Eduardo Ayala*** *(Full-time Biotechnology Faculty, El Camino College)* shared that he will be attending a DNA barcoding workshop where they will perform DNA barcoding experiments. The workshop includes a component that takes you through the steps as if you were a company.
  2. ***Fang Wang*** *(Associate Professor of Biology)* invited El Camino faculty to visit their campus to utilize their sequencing machine.

Input From Our Board Partners

* 1. ***Sophia Toro*** *(Dean, KGI)* emphasized the the high need on the industry side for qualified hires. She highlighted the importance of spreading awareness about these career paths.
  2. ***Jose Anaya*** *(Dean of Community Advancement, El Camino College)* added that as soon as we start the program, we need to highlight the number of students that land jobs with select employers, and that this can be a strong recruiting tool for our program.
  3. ***Amy Grant*** *(Dean of Natural Sciences, El Camino College)* concluded the meeting by adding that our program’s stackable programs are built to inspire students and motivate them to complete their pathway.

1. Next Steps
   1. We will await approval from Sacramento to offer courses
   2. Preparing the rooms for the program (including finishing purchases and installing equipment)

This meeting was adjourned at 2:30pm.

Minutes written by Mia Dobbs.