April 19, 2019 Industry Advisory Board minutes.

Present: Doug Bruce (Laney Biomanufacturing Lead Faculty) , Pallavi lal (Laney) , Leslie Blackie (Laney Biomanufacturing Program Director) , Nick Kapp (Skyline), Ying-tsu Loh (Babec), Natasha Koolmees (former student, Lonza biologics), Ryan Schumaker, Palmer Lam (Sangomo therapeutics), Ron Shigeta (wild Earth), Deept Tanjorei (ABPDU industrial biotech), James DeKloe (Solano College), Craig Bush (Rainin), Audrey Holt (Genentech) , Jon Blackie (Joinn) Tanya Eliason (Geltor)

Not present Fabio De Martino (BioMarin) , Andy Huie (Agenus)

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| Fabio De Martino | Biomarin | Operational Excellence Manager | De-martiono.fabio@gene.com |

Agenda:

Introduction to the program

Recent initiatives - hs outreach, Indie bio, working with community labs, - open insulin, guest speakers from industry, working with other programs (Solano 24 hour runs)

Continued BIOSCOPE – with strong workforce dollars

BABEC – more schools – developing relationship with Alameda High, building curriculum, also ARISE highschool (charter school), Contra Costa Highschool (partnered with Biorad)

Development of TAQ polymerase line (for highschools to do PCR) , patents for restriction enzymes may be expiring

Other ideas to give students industry relevant experiences ?

Audrey – suggesting ELN – for assessments, GMP, direct assay entry (pH and UV,maybe osmo) still paperbased DEEPTi- griffin data management,

Palmer – working in BSC – very manual working with cells, and relying on the technician

Ron – skill set in cell culture very important, also program automation – and maintaining the automated system. (platewasher, plate pouring) ,

 Jim – major initiative in NIMBLE,

 Deepti – how to program a pump, or work with accessories of the fermentor, (perhaps use Lab view software)

Students get in Lab management 1 or QC I

Discussion of computer skills -

Jon – better understanding and skills with Excel , data analysis in general (Ron), run simulations, complex formulas.

 Ron – learning how to take data and suggest the next experiment Natasha - statistics was great, really used excel. Biostats, or stats for science.

 Jim says that Mira Costa has the biostats curriculum)– could you run biostats as a contract ed?

Some small money ($5k-$7K) to buy used equipment for a short time

Small companies want more free thinking, creativity, pharma tends to want more regulated work repeatedly. (perfect day, geltor, wild earth )

Ron – encouraging people to be Consumer Package Goods area, people are very employable. Really encourage the food science area. Most programs emphasizing packaging, or sensory, - also thinking through USDA for food science the regulatory areas or – interns.

Clean meat – upstream side is biotechnology, downstream side is making food

Wild earth and geltor do have to comply with 2011 food safety act.

NOMA fermentation guide ($40) – make a lot of pickles

Noncredit certificate – ASQ (American society quality) - it is a national certification (Fabio – support for operational excellence). Audrey and Natasha – perhaps that would help someone in getting hired or in career development.

Ying- tsu – what about digital badging. Can go on their linked in site. Deepti – in industrial biotech – how does error creep in? Managing samples well is important.

Need 5 skills sets – how to operate equipment (learn the mechanical parts), biology/chemical engineering, statistics, communication skills (listening as well as speaking), automation

another question in interviews – how can you contextualize your skill sets from other jobs – Palmer

Jim – what is industry interested in for certifications – national or state. What does it take to mean something in Bay Area if it came out of Griffols in aseptic technique

Ron – those things will creep in from the culture as people are hired. Communication skills – that is available right now. Experience in projects and being able to communicate what they did and what happened in the lab

Regional science fair – Nick mentioned it, Yingtsu also encouraging Josie to do this

Ryan – artell certification – good in interview to start discussing what the certification was

IGEM (international genetically engineered machines) – working as a project. Nick has had students who have taken on a project. Assembling different modules and can they make something work.

Biobricks – more local – make genes or benchlink – to build plasmids (and is free)

\*\*\*\*independent study projects \*\*\*\* give units or workshops

How to attract more students in the program ?

* Talk about salary, patient impact,
* Entry level job is like you are still in school – you are entering on a job and will be moving up the career – what is the growth potential? EARN AND LEARN
* Job satisfaction
* Startup companies are where to start and then get hired into the bigpharma
* Collecting stories and get videos and put it on website or youtube
* What kind of career path – are you regimented (calibration, quality) or are you more of a freethinking person (startups),
* What is laney bioman known for? What is our brand?
* Biotech is huge – second biggest sector after tech. People know about silicon valley. How to get them to know about biotech beyond nurse, doctor, pharmaceutical
* Work the highschool interface more – what is the biotech industry?
* Importance of SAVING LIVES – don’t lose track of the importance of patient impact
* Sustainability less impact on the environment
* Selling the program

How to get donations for scholarships (like machine tech gave 51K)

-Genetech has gene academy (Audrey volunteer every other Thursday). Support Skyline

-try to get the name of the list of companies in the neighborhood, look at marketing budget

Other ideas:

Nick –

Groups of students to be auditors of other programs. Maybe part of the regulatory class – some type of benchmarking teams?