## High School Apprenticeship Challenge 2023

### Schedule

**Monday, Thursday 4:00-5:30**

**Saturday 9A-noon**

<table>
<thead>
<tr>
<th>Week#</th>
<th>Monday, 4:00-5:30</th>
<th>Thursday, 4:00-5:30</th>
<th>Saturday, 9A-noon</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>3/18 Lab Orientation MANDATORY ATTENDANCE</td>
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<tr>
<td>3</td>
<td>3/27 Making solutions, Starting DNA miniprep</td>
<td>3/30 Abstraction for biodesign, Viability data analysis, Lab courtesy</td>
<td>4/1 DNA miniprep and digest, Biodesign project groups</td>
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<td>4</td>
<td>4/3 Gel electrophoresis, Reading scientific abstracts on BioTreks</td>
<td>4/6 DNA sequencing, Drafting Abstract, Cover letter &amp; CV</td>
<td>4/08 Protein Induction, Notebook review, Design system-level</td>
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<td>5</td>
<td>4/10 Seq analysis, Making solutions for b-gals, Project time</td>
<td>4/13 B-gal protocol writing, Project time</td>
<td>4/15 B-gal assays, Freeze samples, Project time</td>
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<td>Spring Break 4/17-4/23</td>
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<td>6</td>
<td>4/24 Lab math review, At the bench review, Project time</td>
<td>4/27 Protein purification lesson, POSTERS DUE</td>
<td>4/29 Protein Purification (Ni-NTA column chromatography)</td>
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<td>7</td>
<td>5/1 Poster Session</td>
<td>5/4 SDS-PAGE protocol writing Email etiquette</td>
<td>5/6 SDS-PAGE, Lab clean-up</td>
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<td>8</td>
<td>5/8 SDS-PAGE data analysis, mock interviews</td>
<td>5/11 Closing Ceremony</td>
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Overview

This 8-week program is designed to close any skills gap students may have so they can progress into a successful summer internship in a life science company or academic lab. No student is guaranteed a summer internship but everyone is promised our best efforts to place all students who complete the apprenticeship training.

Goals

We will focus on three aspects that lead to successful life science careers

- **Content knowledge**: we will spend several hours each week working with synthetic living systems to gain familiarity with terms and details of science and bioengineering.
- **Laboratory techniques**: we will spend several hours each week in our industry-grade research lab carrying out experiments to train hands and minds for benchwork.
- **Professional skills**: we will work in small teams to imagine, research and design a biotechnology. Teams will document then present their ideas – leading to important gains in motivation, initiative, listening skills and experiences interacting with others.

Requirements

**Students are expected to bring their best selves to our program.** All must

- Come with an open mind
- Come with energy to engage with the challenges
- Work collegially and constructively
- Tell people who need to know if there is a problem

Students with more than two absences, who fail to notify instructors of absences or tardiness, who are not paying attention during class or lab, or who are distracted during work times will be asked to leave the program and may not receive the stipend associated with our 8-week program.

Evaluation

Students will be offered constructive criticism throughout our program. Comfort with scientific content is important but equally important is the motivation and enthusiasm students show for working together, and their ability to listen, to discuss, and to accept direction and criticism. Troubleshooting laboratory experiments will be valued at least as much as good hands at the bench.

Materials

Students will receive two books that must be brought to class every time

- **BioBuilder: Synthetic Biology in the lab**
- a blank lab notebook

Milestones

- **March 18th, 2023**
  Mandatory Orientation
- **April 13th, 2023**
  Midway project presentations
- **May 1st, 2023**
  Poster Session and Networking Event
- **May 11th, 2023**
  Final projects on display at a celebratory closing ceremony