



Molecular Biology Intern

Company overview

Esper Biosciences is a biotech startup located in Cornell's Center for Life Science Ventures in Ithaca, NY. Innovating in nanotechnology and biotechnology, we develop molecular assays to provide comprehensive high-quality information to researchers and clinicians. In the area of DNA sequencing, this means providing high-accuracy reads, without sacrificing read-length; in the area of diagnostics, this means providing accurate quantification of all relevant biomarkers at the single-molecule level, in a single assay.

Job description

We are seeking a fulltime summer intern to help us with molecular biology assays, specifically molecularly labeling DNA and preparing DNA for sequencing. An overview of the project is below. The intern will work with our biomedical engineer to create labels, attach them to DNA, amplify products, characterize the results via gel electrophoresis and spectroscopic techniques, prepare DNA for sequencing, and, depending on their skillset, aid in the analysis of the resulting sequencing data. It will be an 11-week summer internship paying \$22.70/hr, with a 40 hour work week.

Project overview

Because the genetic instructions contained in DNA play a crucial role in the healthy functioning of the body, it is often important for researchers and clinicians to read this information using DNA sequencing devices. To do this, the DNA is usually broken into small "words" that the sequencer can read, and then computer algorithms are used to guess the original order that those words appeared in the DNA, before it was broken apart. This project aims to develop a new way to molecularly label DNA fragments, to make it easier to determine the original full-length DNA sequence. This more-complete, "long-read," sequencing has the potential to greatly simplify sequencing, helping to accelerate scientists' ability to perform de novo sequencing, haplotype phasing and transcriptomics. Such long-read information is often not available to researchers due to the near impossibility of reconstructing the original DNA sequence computationally, but such information can be very important, as long-range DNA mutations are, for example, observed in >60% of all cancers.

Qualifications

Education: undergraduate, masters, or PhD with a background in experimental molecular biology, biochemistry, or related fields. To be eligible for this internship, you must be a current Cornell student.

Skills/techniques*: PAGE, gel shift assays, bead pulldown, spectroscopy, qPCR, thermocycling, DNA separation and purification.

In addition, good lab practices such as clear sample labeling, note taking, data analysis and summary, accurate pipetting, and attention to detail will be critical.

* These skills/techniques are useful, but not strictly required for this internship, as they can be taught. However, the greater the familiarity, the faster the project is likely to progress.

Please send your resume to Jonathan Alden, PhD, CEO: jonathan.alden@gmail.com.