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EXPAND Mentor

From Benchtop to Benchside Using Cutting-edge Sequencing Techniques

Don W. Cleveland (Winter, 2021-22)

What you will do

Do you want to learn a cutting-edge technique in 10-weeks that many Ph.D. and Post-doctorates do not know and publish your results at the end as well?

If your answer is yes (if your answer is maybe, hold on and keep reading!), you are looking at the right project! In this 10-week project, you will be exposed to one of the hottest areas of biology, analyzing RNA-seq datasets of human patients. Learning how to analyze sequencing datasets is a skill that not many Ph.D. and post-doctorates have and could give you the edge in many cases, such as applying for graduate schools and medical schools. You might not know the meaning of many of the words you just read, which is fine. You are here to learn a great deal about the fascinating world of modern biology.

In this project, you will analyze the sequencing data of 366 healthy and human patients with different types of heart failure disease. Analyzing the mentioned sequencing datasets would tell you which genes are responsible for developing heart failure and which disrupted biochemical pathways. By identifying the differentially expressed genes, new drugs could be developed as possible treatments. So not only are you learning a unique technique, you are contributing to the scientific community for developing new therapies and saving the lives of patients! Oh, and did I say that you will publish your results at the end?! Your first publication starts here!

Skills you will acquire

- Learn about the biology of human heart failure

- Learn how cutting-edge sequencing techniques work

- Learn how to analyze RNA-seq datasets from A to Z

- Learn how to write a program in R and Python

- Learn how to work with supercomputers to do computationally-heavy tasks

- Learn how to write a scientific paper and generate publication-quality figures

- Learn how to publish your first paper and put it on your resume!

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