Abstract 2402

Exploring Biodiversity in Metagenomics CUREs for General Biology

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Course-based undergraduate research experiences (CUREs) provide opportunities for all students to engage in scientific discovery. At Lane College, the Biology Department's goal is to increase student engagement in General Biology by incorporating CUREs in the General Biology laboratory courses. In the project described here, students isolate and characterize antibiotic resistant bacteria from soil samples. The newest iteration of this project incorporates metagenomics with nextgeneration sequencing. Specifically, students use 16S rDNA barcoding and sequencing with the Nanopore MinION to identify the genus of the isolated bacteria using the Epi2Me 16S fastq algorithm. Students then explore the phylogenetic relationships between their isolated bacterial strains. They can also use whole genome sequencing and the Epi2Me antibiotic resistance algorithm to explore possible mechanisms of resistance. Faculty are expanding the metagenomics projects to explore biodiversity of campus plant and fungal species. Together, these projects emphasize foundational concepts covered in General Biology II, including biotechnology, evolutionary relationships, and ecology. NSF HBCU-UP IMP EDU/EES #2011938.