

Genetic Engineering: Recombinant DNA Technology

Venue: Eaton Hall, Seattle Pacific University

Genetic engineering is the process by which scientists intentionally alter an organism's genome, often by inserting a foreign gene. In this camp, students will genetically engineer bacteria to produce the Green Fluorescent Protein (GFP), normally found in the Pacific jellyfish *Aequoria Victoria*. Students will be using the same techniques as scientists did when making human insulin protein in bacteria. This camp consists of numerous experiments typically used by molecular biologists. Each experiment serves as the building block for the next day's experiment, thus requiring that students use proper laboratory techniques. The genetic engineering camp introduces students to recombinant DNA techniques and its practical applications. The curriculum will provide students with an overview of modern biotechnology, genetic engineering and gene regulation. Students will also gain an understanding for how scientists isolate genes away from the genome through cloning and/or PCR, which is key to investigate a gene's function. During the camp, students will: Perform ligation between the jellyfish GFP gene and bacteria plasmid Transform bacteria with the recombinant DNA plasmid carrying the GFP gene; Perform plasmid minipreparation and restriction enzyme digestion to identify the recombinant DNA; Analyze results through gel electrophoresis; Purify and isolate the GFP protein using chromatography.