

Summer Research Program 2026 – Projects

Project #10

Title: Novel Biomarkers and Therapeutic Targets in Breast Cancer

Description: Breast cancer is the second most common cancer worldwide, highlighting the need for a better understanding of its biology and for improved diagnostic and therapeutic approaches. Although only about 2% of the human genome encodes proteins, most of the genome is actively transcribed, suggesting that noncoding RNAs play important roles in regulating normal cellular functions and disease processes.

In this project, students will explore the roles of long noncoding RNAs (lncRNAs) and protein-coding genes in breast cancer using modern molecular biology approaches. The study will involve CRISPR-Cas9 genome editing and functional validation using antisense oligonucleotides (ASOs) to assess the biological relevance of selected targets. Students will gain hands-on experience in bioinformatics analysis, next-generation sequencing data interpretation, and a range of cell and molecular biology techniques.

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