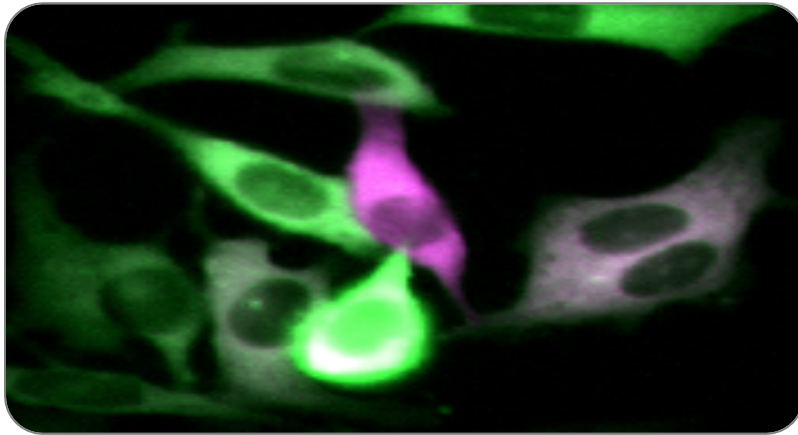




### Overview:

- Experience biotechnology research and explore its impact in research and industry.
- Students will gain hands-on experience with modern biotechnology techniques and develop technical skills for future laboratory research and industry positions.



### Lectures:

1. What is DNA Cloning?
2. Experimental Design
3. PCR Cloning & Gibson Assembly
4. Screening Recombinant Clones
5. Animal Cell Culture & Aseptic Technique
6. Next Generation Sequencing
7. RNA interference and Genome Editing with CRISPR-Cas9

### Labs:

#### **CaMPARI cloning**

- Hypothesis Design
- Cloning by PCR
- Plasmid DNA Purification/Quantification
- Ligation and Transformation
- Screening Clones (PCR, Sequencing)
- Gibson Assembly

#### **CaMPARI expression in *E. coli* & animal cells**

- Hypothesis Testing
- Protein Purification
- SDS-PAGE and Western Blotting
- Animal Cell Culture & Transfection
- Fluorescence Microscopy
- Quantitative Data Analysis