CREST - Protein Modeling Internship

2020 - 2021 Team

CREST Program

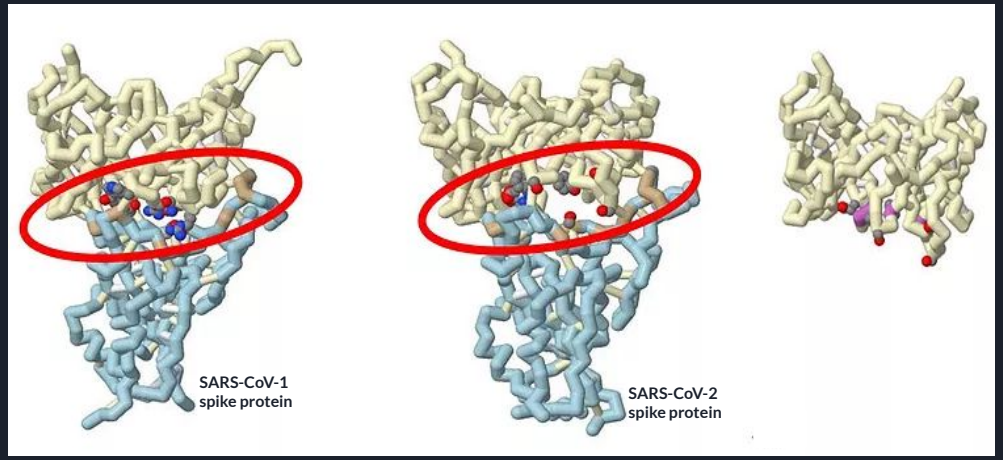
- **C**onnecting **R**esearchers, **E**ducators, and **S**tudents was part of the Center for Biomolecular Modeling and aimed to engage undergraduates in protein modeling
- We were one of 8 teams around the country that would meet to share our projects and learn from each other
- We delivered both poster and oral presentations at multiple conferences including ASBMB, ACS, PDB50, and the USS at NSU

Our Research

Goal: to predict a more universally effective antibody against SARS-CoV1 and SARS-CoV2 and future variations

- We used Jmol and PyMOL to model the spike proteins and their existing corresponding antibodies
- Using the trends identified in the binding domains of the antibodies, we proposed changes to amino acid residues to make a universal antibody
- We coded the amino acid changes and modeled our new antibody

80R Antibody | 362 Antibody | "NSU1" Hypothetical Antibody



Model A | Model B | Model C

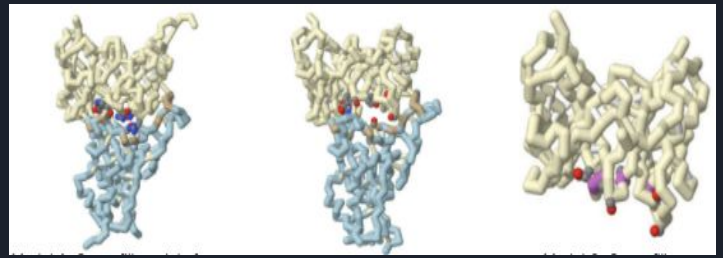
What We Learned

-How to work in a team setting , collaborate with renowned researchers directly working in the field of protein structure and function, and network with other CREST teams involved in protein modeling

-How to effectively present our findings at conferences including ASBMB, PDB50, USS, and ACS

-How to formulate an abstract, methods, results, diagrams, and a discussion as well as create in-depth posters and presentations

-How to visually represent molecular processes (through Jmol and Pymol) which allowed for a hands-on learning experience for biological, biochemical, and other related classes

How we got this opportunity:

- After taking my first BIOL1500 class, I found a passion for the intermolecular connection in amino acids and proteins
- Approached faculty on advice on protein modeling
    - Provided insight on their research interests
- Contacted upperclassmen, faculty, and other students who had done research in the past
- Showed interest early on and was offered a position on the team
- ASBMB Club
- Events that promote undergraduate research
- Determine your interest + select a professor