**Biochemistry COVID Activities: Learning Objectives**

*Learning Goals/Outcomes*

* Discuss and analyze the structural impact of covalent and noncovalent on protein structure and protein interactions
* Identify and relate the composition and evolutionary change that leads to structural diversity of the S and other proteins
* Compare and relate the biological processes of major types of macromolecules involved in the synthesis and transfer (DNA or RNA) of information
* Compare primary and tertiary structures of macromolecules and relate to similar proteins and their functions
* Analyze and predict the ways a particular macromolecule might take on new functions through evolutionary changes
* Predict the effects of mutation on the activity, structure or stability of a protein
* Understand the biological and chemical effects of either mutation or ligand structural change or binding of a competitor on the affinity or binding between protein-receptor interactions
* Understand the interactions between biological molecules and describe how these interactions impact specificity or affinity leading to changes in biological function
* Discuss the impact of specificity or affinity changes on biological function and any potential evolutionary impact
* Describe how changes in cellular homeostasis affect signaling and regulatory molecules and metabolic intermediates
* Explain how RNA processing occurs and how splicing affects the diversity of gene products
* Understand how a mutation arises and how it could affect the organism from gene fitness to expression
* Relate how the life cycle and genome maintenance are coordinated and how disruptions in the coordination could affect the organism