**Biochem I COVID – Therapeutics**

Read the following resources and answer the following questions with your assigned group.

1. There have been a lot of discussion on the potential and safe use of chloroquine/hydroxychloroquine alone or with Zpack. In terms of COVID-19 what is the potential mechanism of action for the drug(s)? What evidence in other viruses do these two drugs impact other COVID-19 like viruses? The study conducted in France showed promise, what was the impact of the study? What were the controls? The director of the NIH National Institute of Allergy and Infectious diseases, Dr. Anthony Fauci stated that the work so far was “antidotal”. What does that mean in the context of this or other similar studies? Were there flaws in this study and why should this only be pointed as “promising”? Can you find information of ongoing new studies? How do these differ from the smaller earlier studies?
2. Remdesivir (GS-5734) is a nucleotide analogue. Review the ASBMB article and other resources to explain the potential mechanism of action for this drug. Analyze the structure and explain some of the key features of this drug. What studies have been conducted and published that support this compound as a potential therapy?
3. Another drug with a very different mechanism of action is Tocilizumab. What is the mechanism of action for this drug and how is it different from the first two drugs? Another but similar class of drugs are neutralizing antibodies. Can you find anything about these types of drugs and effectiveness against COVID?
4. Currently one of the few drugs having a positive impact on treatment of patients with COVID is dexamethasone. Dexamethasone is a cortical anti-inflammatory corticosteroid. What is the biochemical mechanism (aka mechanism of action) of steroidal anti-inflammatory agents? How might this drug help fight the imact of the “cytokine storm”?
5. One of the issues when trying to get a drug to the public is safety and efficacy. How does using an existing drug for an off-target use help speed the process along? What are the exemptions to the typical clinical trial processes (hint: compassionate…)?
6. BONUS POINTS – find another drug or therapy that has EVIDENCE of working against a SARS virus. Include the evidence of potential as a therapeutic agent and describe its mechanism of action.

Note for adopting faculty – what is missing here is a section on vaccines. For those involved in immunology or vaccine related courses, a nice discussion could include: Ig types, how vaccines are designed and delivered, the impact of a protein/peptide vs siRNA vaccines and the shifting nature of viruses…