Student COVID-19 Response

Literature Reviews

Week of April 19th, 2020

Generated and compiled by Washington University School of Medicine medical and graduate students
Biology

Structural basis for potent neutralization of betacoronaviruses by camelid antibodies
- Camelid antibodies generated against SARS-CoV-1 can neutralize SARS-CoV-2.

SARS-CoV-2 receptor ACE2 is an interferon-stimulated gene in human airway epithelial cells
- ACE2 and TMPRSS2 co-expression was detected in type II pneumocytes, ileal absorptive enterocytes, and nasal goblet secretory cells. ACE2 was found to be a human interferon-stimulated gene.

A site in the spike protein of SARS-CoV-2 is essential for infection of human lung cells
- Cellular protease furin cleaves the SARS-CoV-2 spike protein and the S1/S2 site and is essential for S protein-mediated cell-cell fusion and entry into human lung cells.

Epidemiology

Clinical characteristics of 5700 patients hospitalized with COVID-19 in the NYC area
- Common comorbidities were hypertension, obesity, and diabetes. For those with outcome data, 14.2% required ICU care, 12.2% required ventilators, 3.2% required dialysis, and 21% died. Mortality was 88.1% for those on ventilators.

Clinical characteristics of pregnant women with COVID-19 in Wuhan, China
- Pregnant women with COVID-19 may be at reduced risk of severe COVID-19 outcomes.

Diagnosis & Prevention

Mild or moderate COVID-19
- Patients presenting with mild COVID-19 symptoms with underlying conditions like hypertension should be tested for COVID-19 using a nasopharyngeal swab and chest radiography. Concomitant medication should not be discontinued. Recommended isolation for 7 days after symptom onset and 3 days after symptom resolution. Mild COVID-19 with no underlying conditions should resolve at home.

Treatment

Design of antiviral drug candidates targeting the SARS-CoV-2 main protease
- In this paper, the authors design and test two lead compounds to target the main protease of SARS-CoV-2.

Legal, Ethics & Management

COVID-19 exacerbating inequalities in the US
- The Native American, Latino, black, immigrant, and lower socioeconomic communities are likely to have greater morbidity and mortality from COVID-19 due to suspected preferential politically-based federal funding of states' requested support, their higher presence in the essential workforce, and their greater prevalence of other health conditions.
Student Volunteers