

Biology 483- Infection, Immunity and Evolution of Disease
Spring 2022
Homework 16

Directions: See the following papers on SARS-CoV-2 genetic variants. You can find PDF files of these papers in the Unit 3 Folder.

[Li et al. 2020 Nj](#)

[Tillet et al. 2020 Lancet](#)

We discussed Li et al. in class. This paper focuses on mutations in SARS-CoV-2 within an individual patient.

Please read Tillet et al. 2020. This paper also concerns mutations in SARS-CoV-2 and it also provides evidence from an individual patient. However, this paper is dramatically different.

How or why is this case study different?

These case studies are different as they involve only one individual for the experiment. Furthermore, these studies correlate with the SAR-CoV-2 virus and its different mutations as well as how a virus evolves resulting in a more/less virulent pathogen.

How do the methods used in these studies different?

The methods used in these studies are unique as you usually have more than one individual in a study. Constant analysis of the same individual is needed in gathering data. Furthermore, as a constraint to the study, the methods used can only be reproduced once as each person is different.

Based on your understanding of the papers, generate 2-3 questions about viral evolution.

1. Since viral pathogens can cultivate within an individual that are in an immunocompromised state, will it be possible for a viral infection to mutate within an individual that is resistant to most humans' immunities (causing another global pandemic)?
2. Due to the nature of viral evolution, can a constant tug-of-war between immune system and virus happen within a person for their entire lifetime? Individual will always have the virus fighting back their immune system thus will always be sick
3. Do you think there will be a mutation of a virus that we cannot defeat? No vaccine or any antibody can stop it

If you're interested, here is a recent news report on this topic:

[Clues to the origin of coronavirus variants](#)