StopCOVID Study

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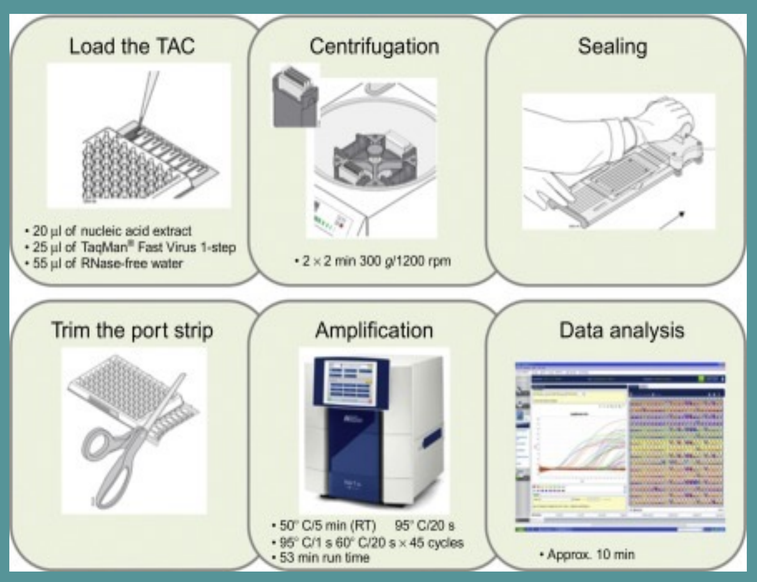
College Park Scholars Academic Showcase, May 6, 2022

Introduction

For my practicum project, I worked in an aerobiology lab, studying the aerosol transmission of COVID-19. Over the summer of 2021, I helped test COVID positive samples for co-infection with another viral/bacterial infection while infected with SARS-CoV2. This helped understand the transmission and symptoms of COVID-19. We were looking for co-infection to see if it affected transmission or symptom severity.



RT-qPCR Process

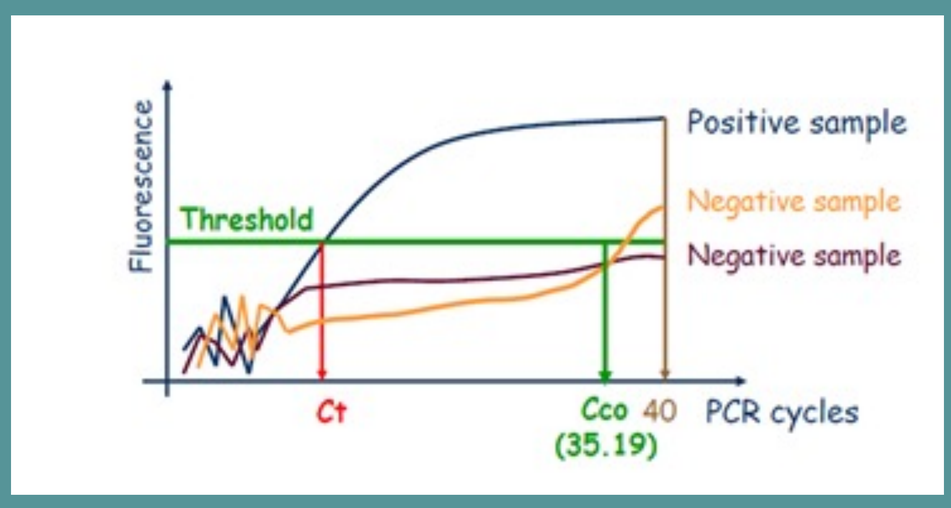
Image from https://www.sciencedirect.com/science/article/pii/S0580951715000112

Activities

For my project, I performed research on saliva and nasal swab samples from individuals positive for SARS-CoV2 to test for co-infection.

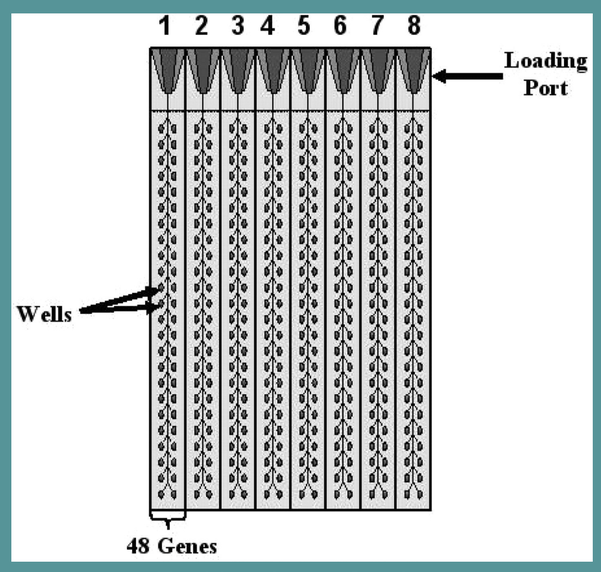
Some of the methods we used for testing were...

- Real time qPCR (using TaqMan array cards)
- RNA/DNA extraction
- Analysis of CT levels to see amount of target nucleic acid in the sample



CT Graph

Image from https://www.eppo.int/MEETINGS/2013_meetings/wk_cut_off_values



TaqMan Array Card

Image from https://www.jmdjournal.org/article/S1525-1578(10)60295-4/fulltext

Site Information

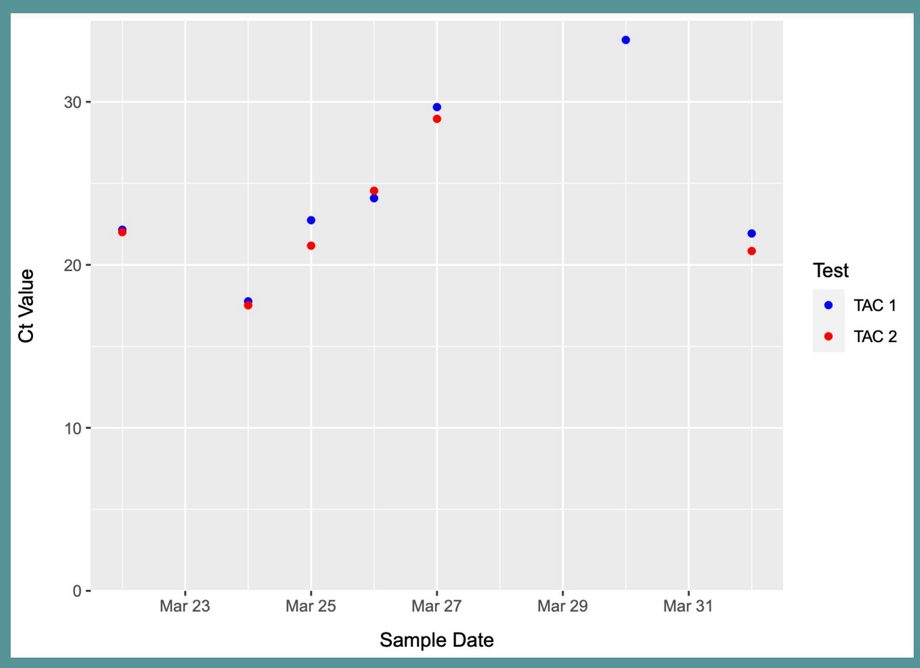
Name of Site: UMD School of Public Health, Milton Aerobiology Lab

Address: 4200 Valley Drive

Your supervisor: Jennifer German

The site mission: To find out how individuals transmit COVID-19 and how to prevent future transmission

The particular goals of the site you were at: To see if samples from COVID-19 positive individuals had any trace of co-infection with other viruses or bacteria.



Results

Most samples had no trace of co-infection.

Many of the samples appeared to have a co-infection with rhinovirus_3 and rhinovirus_4, but the low CT values indicated it was probably background due to the array.

One sample, 458, we found there was a solid co-infection with coronavirus OC43. We tested this twice and the results are presented on the graph to the left.

Discussion

Since this was the only prominent co-infection we found, the results did not provide us with much information about how co-infections may or may not affect symptoms and transmission.

These results likely show that co-infection does not play a large role, if any at all, in how COVID-19 is transmitted or the symptoms severity.

Impact

This project will impact how individuals understand SARS-CoV2 and its transmission. By finding out how it is transmitted, we are one step closer to knowing how to stop transmission. Understanding how COVID-19 is transmitted is not only important to mitigating the spread of COVID-19, but any other aerosol-spread disease.

Future Work

Test samples for RnaseP to make sure there is DNA in the samples (I did this over fall semester)

Work to better understand aerosol transmission

In my future, I want to take this a step further and work on the more clinical end of research, working directly with patients.

Acknowledgments

Thank you to Dr. Holtz and Dr. Merck for all their help and guidance

Thank you to Dr. German for letting me work on this project

Thank you to SGC and Scholars for making this possible