SAN JUAN NM REGIONAL SCIENCE & ENGINEERING FAIR

JUNIOR AND SENIOR DIVISION ABSTRACT & CERTIFICATION

TITLE: Optimizing Methods for Analysis of Novel Corona-Virus SARS-CoV-2 Receptor A

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Grade Levl: 12

Type the Body of Your Abstract Here (250 Word Maximum)

SARS-CoV-2 is a quickly evolving world pandemic. To understand this virus better and prepare for future variants, understanding the spike-receptor interactions is important. SARS-CoV-2 attaches to the angiotensin cleaving ACE2 protein. This protein has several known polymorphisms that are suspected to change SARS-CoV-2 binding affinity and thus affect COVID-19 severity. Three common polymorphisms were selected for study and had ligation and PCR primers constructed. A section of the ACE2 gene is amplified through PCR and a ligation is ran on the amplified section to detect if the ACE2 gene had the polymorphism or wild-type sequence. Polymorphisms found in the four corners area population have the potential to help understand how single nucleotide mutations may affect SARS-CoV-2 infections. The materials and machines used are affordable and common, showing that a small lab with motivated undergraduates can obtain this information. Gaining demographic data in a small lab will increase the viability of other small labs to do the same, which will increase the speed of advancements in COVID-19 research. The purpose of this study was to find the optimal conditions for these procedures before human testing begins.

1. The student independently performed all procedures as outlined in this abstract ☑ Yes ☐ No
2. This project is a continuation. ☐ Yes ☑ No
3. This project is being presented at ☐ SJRSEF ☑ NMJAS Paper Competition

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

William Burris — Student's Signature

2/16/2022 — Date

San Juan Regional Science and Engineering Fair