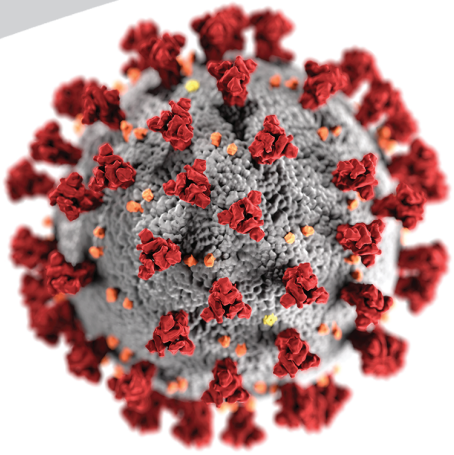

Using EdvoKit #271 to Simulate Immunoassay Testing for COVID-19 Infection

The virus responsible for COVID-19 infection, SARS-CoV-2, is a single-stranded RNA virus. The virus does not integrate itself into the human genome during infection (like HIV). Once the patient's immune system has cleared the infection, no viral nucleic acid remains in the body. However, the antibodies generated during the infection remain in the body after the patient has healed. The Enzyme-Linked Immunosorbent Assay, or ELISA, can be used to detect the presence of anti-SARS-CoV-2 antibodies in patient samples. By using this assay, healthcare professionals and researchers will be able to better calculate the number of individuals affected by this disease.

This technique for detection is still under development as of March 2020, though there are promising tests being validated at this time. For more information:
https://www.sciencemag.org/news/2020/02/labs-scramble-spot-hidden-coronavirus-infections

Directions to adapt EdvoKit 271 to simulate testing for SARS-CoV-2:

1. Create identities of two patients who may have COVID-19. Factors to include are symptoms, recent travel, and current outbreak locations As this information is subject to change, we suggest you refer to the CDC website for the most up-to-date information.
   a. Patient 1 should be negative for SARS-CoV-2
   b. Patient 2 should be positive for SARS-CoV-2
2. Follow the experimental protocol as outlined on pages 8-10 of the EdvoKit 271 literature.
3. Have your students analyze the patient profiles along with the biological data. Which patient was infected by Sars-CoV-2? Your students should outline their reasoning in their laboratory report.

Please note that this is a simulation for educational purposes and should not be used as a substitute for testing using the FDA-validated test by a healthcare professional.

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