<u>**Online Data Supplement**</u>

Pivoting to a Remote-Learning Summer Student Program during the COVID-19 Pandemic

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Appendix 1. Pre- and Post-Assessment Questions

1. What laboratory method is used to diagnose a coronavirus infection in most hospitals?
    A. PCR
    B. Western blot
    C. Immunohistochemistry
    D. Flow cytometry

2. Which of the following is NOT a feature of the SARS-CoV-2 virus?
    A. Spike glycoproteins
    B. Mitochondria
    C. RNA genome
    D. Envelope proteins
    E. Nucleocapsid proteins

3. Which of the following animal models are used to study COVID-19?
    A. hACE2 transgenic mice
    B. Syrian hamsters
    C. Rhesus macaques
    D. Ferrets
    E. None of the above
    F. All of the above

4. Which of the following describes an experiment conducted in a test tube or cell culture dish (i.e. not in an animal model or using a computer simulation)?
    A. *In vivo*
    B. *In silico*
    C. *In vitro*
    D. *In papyro*
    E. *In utero*

5. Oxygen must travel through the lungs before diffusing into the bloodstream. Which of the following most closely describes the proper order of air flow?
    A. Pharynx, trachea, bronchi, alveoli
    B. Alveoli, trachea, bronchi, pharynx
    C. Pharynx, trachea, alveoli, bronchi
    D. Pharynx, bronchi, trachea, alveoli

6. Which cell surface receptor mediates entry of the SARS-CoV-2 virus?
    A. Platelet derived growth factor receptor alpha (PDGFRa)
    B. Integrin subunit beta 1 (ITGB1)
    C. Angiotensin II receptor type 1 (AGTR1)
    D. Angiotensin I converting enzyme 2 (ACE2)

7. Which of the following is a type of immune cell?
    A. Macrophage
    B. Epithelial cell
    C. Endothelial cell
    D. Neuron

8. You want to compare relative levels of protein X in Cell A versus Cell B. Which of the following methods would be best suited for this experiment?
    A. Single-cell RNA-sequencing

    B. Western blot
    C. PCR
    D. DNA *in situ* hybridization

9. Rank the following from smallest to largest: alveoli, coronavirus, alveolar epithelial type II cell (ATII), M (membrane) protein
    A. Alveoli, ATII, coronavirus, M protein
    B. M protein, coronavirus, ATII, alveoli
    C. M protein, coronavirus, alveoli, ATII
    D. Coronavirus, M protein, ATII, alveoli

10. Which of the following type of drugs would you expect to be most effective against COVID-19?
    A. Antibiotics
    B. Antivirals
    C. Anticoagulant
    D. Antifungal
    E. Anesthetic

11. Which of the following treatment has NOT been considered in COVID-19 clinical trials?
    A. Remdesivir
    B. Hydroxychloroquine
    C. Lopinavir-ritonavir
    D. Bleomycin

12. Which of the following is true of an effective vaccine?
    A. It results in the production of memory cells that allow the body to recognize antigens rapidly
    B. It is made up of a concentrated solution of antibodies
    C. It results in an activation of the innate immune system, but not the adaptive immune system
    D. It results in sustained activation of fibroblasts

13. Which of the following is most likely to result in the transmission of COVID-19?
    A. Inhaling respiratory droplets from someone talking one foot away from you
    B. Going on a walk through the city while wearing a mask
    C. Touching grocery bags without disinfecting them
    D. Petting a stranger's dog
    E. Living near a 5G tower

14. Which of the following is NOT a risk factor associated with severe COVID-19?
    A. COPD
    B. Chronic kidney disease
    C. Age 65 and older
    D. Age 5 and under

15. Which of the following statement is true?
    A. Someone who is infected with the coronavirus can only spread the virus if they have a fever
    B. If someone with non-severe COVID-19 infects their friends, their friend is not at risk of developing severe COVID symptoms
    C. Asymptomatic people can infect others
    D. Limiting testing will slow the spread of the disease