

Fall 2021 - LIFESCI23L-1 - PFLUEGL

**Started on** Monday, 6 December 2021, 1:17 PM PST

**State** Finished

**Completed on** Monday, 6 December 2021, 2:02 PM PST

**Time taken** 44 mins 56 secs

**Feedback** **Thank you for completing Stage I of the LS23L final exam. Your answers will be available for review starting on Tuesday at 5pm.**

**Question 1**

Complete

Points out of 1.00

A p-value of 0.36 obtained from a two-tailed t-test means that there is a \_\_\_\_ % probability that the difference between the sample groups is due to chance. Given the conventional significance level, you would \_\_\_\_\_ the null hypothesis.

- a. 36, fail to reject
- b. 36, reject
- c. 3.6, fail to reject
- d. 3.6, reject
- e. 0.36, fail to reject
- f. 0.36, reject

**Question 2**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 3**

Complete

Points out of 1.00

Read the following hypothesis and then answer the question below:

"The hypothesis is that people who drank a big cup of coffee before taking the MIT will have a different response time than people who drank a small cup of coffee before taking the MIT. The null hypothesis is that people who drank a big cup of coffee before taking the MIT will not have a different response time than people who drank a small cup of coffee before taking the MIT."

This hypothesis is: \_\_\_\_\_

- a. Specific but not testable using the MIT
- b. Not specific and not testable using the MIT
- c. Not specific but testable using the MIT
- d. Specific and testable using the MIT

**Question 4**

Not answered

Not graded

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Answer:

**Information**

**Read over the following description of an experiment and then answer the questions below:**

Scientists compare response time on the MIT between two groups - 258 people who got 5 hours of sleep before taking the MIT and 325 people who got 8 hours of sleep before taking the MIT. They run a two tailed unpaired t-test on the data and use the conventional significance threshold. The resulting t-value is 1.872 and the p-value is 0.019.

**Question 5**

Complete

Points out of 1.00

Which of the following hypotheses are best given what you know of the experimental design?

- a. The hypothesis is that people who took the MIT twice, once after getting 5 hours of sleep and once after getting 8 hours of sleep, will have different response times on the MIT. The null hypothesis is that people who take the MIT after 5 hours of sleep and again after 8 hours of sleep will have the same response time.
- b. The hypothesis is that people who get less sleep before taking the MIT will have a different response time than people who got more sleep before taking the MIT. The null hypothesis is that there will be no difference in response time between people who got more sleep and people who got less sleep before taking the MIT.
- c. The hypothesis is that people who got 5 hours of sleep will have a slower response time on the MIT than people who got 8 hours of sleep before taking the MIT. The null hypothesis is that there will be no difference in response time between people who got 5 hours of sleep before taking the MIT and people who got 8 hours of sleep before taking the MIT.
- d. The hypothesis is that people who got 5 hours of sleep before taking the MIT will have a different response time than people who got 8 hours of sleep before taking the MIT. The null hypothesis is that people who got 5 hours of sleep before taking the MIT will not have a different response time than people who got 8 hours of sleep before taking the MIT.

**Question 6**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 7**

Complete

Points out of 1.00

Which of the following statements is **correct** regarding the experiment described above?

- a. We would fail to reject the null hypothesis
- b. We cannot determine significance from the data provided
- c. There is a 0.019% probability these differences are due to chance
- d. These groups are significantly different

**Question 8**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

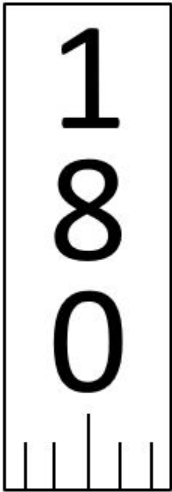
Answer:

**Question 9**

Complete

Points out of 1.00

Looking at the image of a volumeter window below, which pipetter is being used?



- a. p1000
- b. p200
- c. p20
- d. p2

**Question 10**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

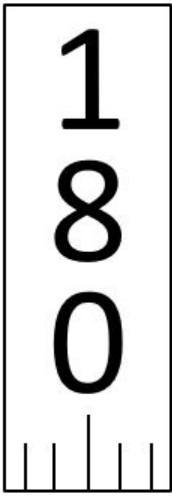
Answer:

Question 11

Complete

Points out of 1.00

Looking at the image of a volumeter window below, what volume is being pipetted?



- a. 18.0 uL
- b. 1.80 uL
- c. 180 uL
- d. 1800 uL

Question 12

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Question 13

Complete

Points out of 1.00

You want to pipette 250uL of a sample in the lab.

Which pipetter do you use?

- a. p1000
- b. p200
- c. p20
- d. p2

**Question 14**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

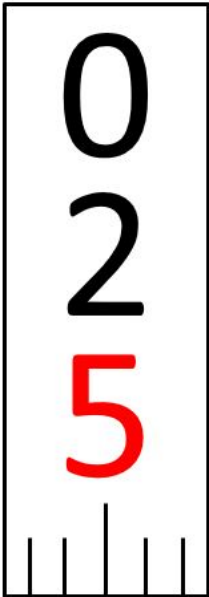
Question 15

Complete

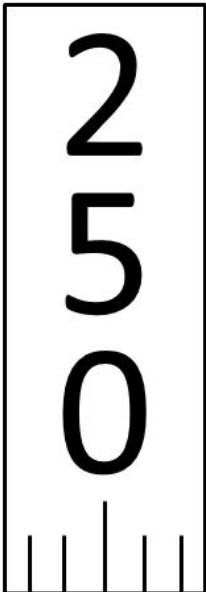
Points out of 1.00

Which of the following images shows the correct volumeter window settings to pipet 250uL?

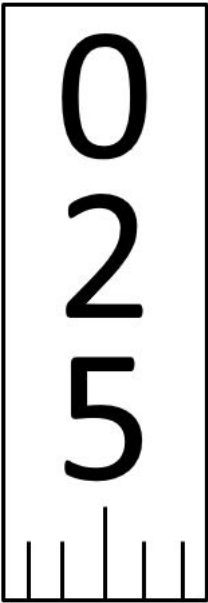
a.



b.



c.



d.



**Question 16**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:



Question 17

Complete

Points out of 1.00

This table shows a pattern of exposures with a partially vaccinated population. The names shaded in grey represent vaccinated people. Any people in grey shaded squares cannot be infected.

What is the **Rt** for this disease, assuming that these four days represent the full infectious period for patient zero (Natasha, highlighted red in the first panel)?

**Day 1 contacts**

|          |           |
|----------|-----------|
| Akama    | Dan       |
| Hiromi   | Natasha   |
| Sascha   | Otto      |
| Anita    | Paluu     |
| Luana    | Jiang     |
| Enrique  | Juan      |
| Gaston   | Sofiarak  |
| Imina    | Josephina |
| Ekon     | Ivan      |
| Brigitte | Kalifa    |
| Jafari   | Naoki     |
| Carol    | Keanu     |

**Day 2 contacts**

|           |          |
|-----------|----------|
| Luana     | Ekon     |
| Brigitte  | Paluu    |
| Josephina | Ivan     |
| Dan       | Jafari   |
| Otto      | Akama    |
| Gaston    | Sofiarak |
| Imina     | Hiromi   |
| Jiang     | Juan     |
| Carol     | Kalifa   |
| Naoki     | Keanu    |
| Anita     | Natasha  |
| Sascha    | Enrique  |

**Day 3 contacts**

|          |           |
|----------|-----------|
| Imina    | Anita     |
| Ivan     | Jiang     |
| Keanu    | Natasha   |
| Gaston   | Otto      |
| Juan     | Jafari    |
| Luana    | Enrique   |
| Naoki    | Akama     |
| Sofiarak | Dan       |
| Carol    | Kalifa    |
| Sascha   | Brigitte  |
| Hiromi   | Paluu     |
| Ekon     | Josephina |

**Day 4 contacts**

|           |          |
|-----------|----------|
| Otto      | Anita    |
| Kalifa    | Imina    |
| Naoki     | Ivan     |
| Natasha   | Paluu    |
| Carol     | Jiang    |
| Gaston    | Dan      |
| Enrique   | Hiromi   |
| Ekon      | Sofiarak |
| Keanu     | Juan     |
| Josephina | Brigitte |
| Jafari    | Akama    |
| Sascha    | Luana    |

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5
- f. 6

Question 18

Not answered

Not graded

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Answer:

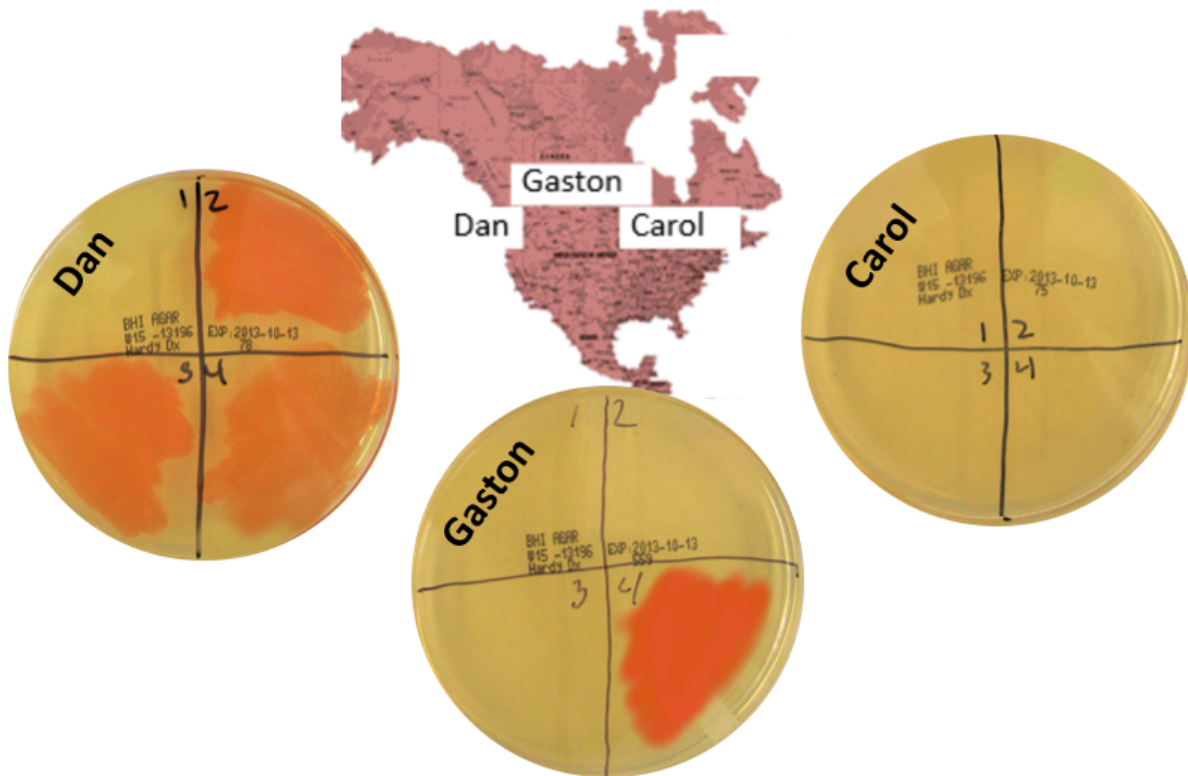
Question 19

Complete

Points out of 1.00

Below is a **subset** of class handshake data, similar to the data you worked with in the Working with Bacteria lab.

Based on what you know about the bacterial transmission activity, what round was Dan infected in?



- a. Round 4
- b. Round 3
- c. Round 2
- d. Round 1

**Question 20**

Not answered

Not graded

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Answer:

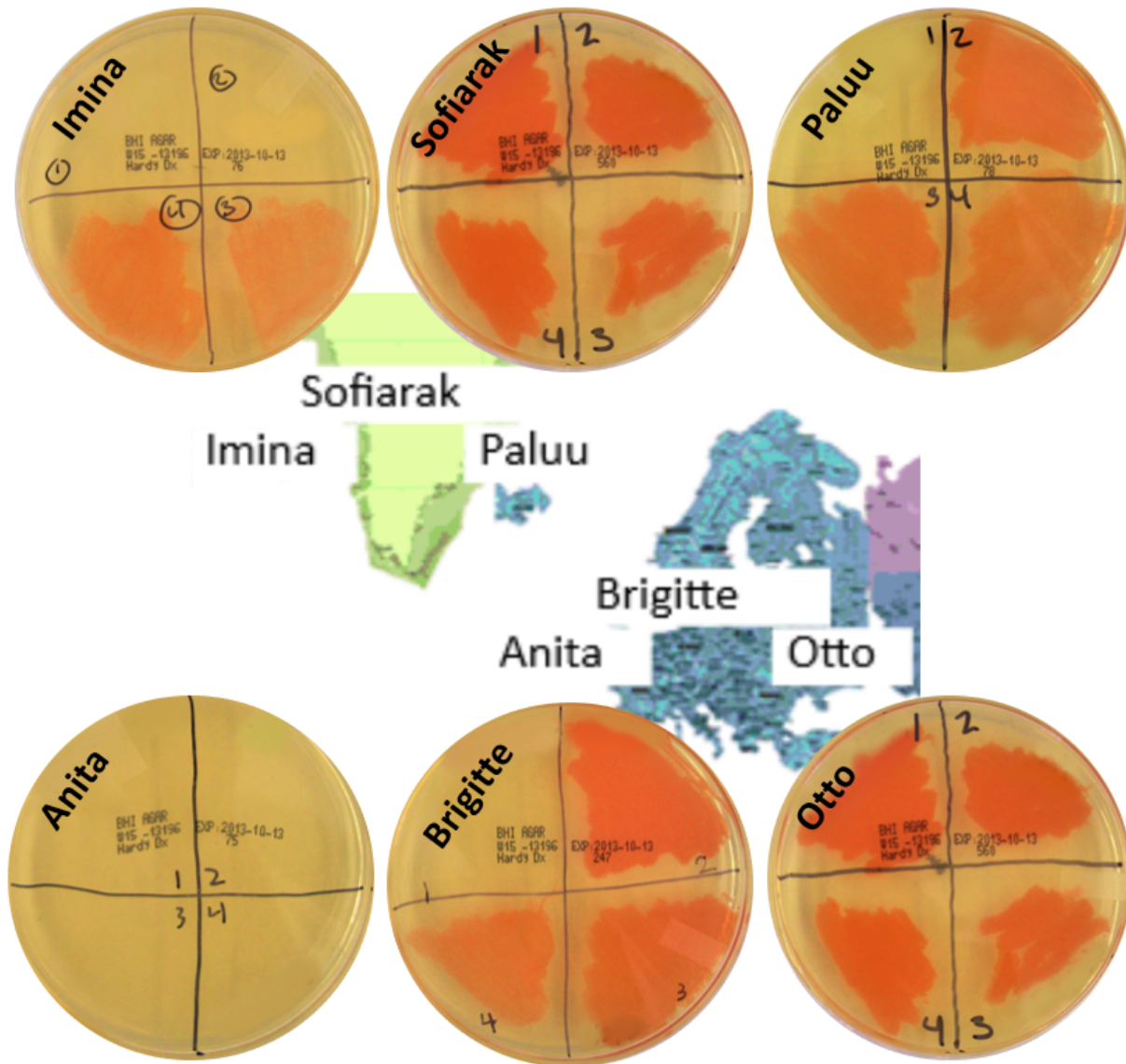
Question 21

Complete

Points out of 1.00

Below is a **subset** of class handshake data, similar to the data you worked with in the Working with Bacteria lab.

Based on what you know about the bacterial transmission activity, which of the following statements is **true** based on the data below?



- a. Otto and Brigitte shook hands in Round 1
- b. Sofiarak and Imina shook hands in Round 3
- c. Brigitte and Paluu shook hands in Round 2
- d. Paluu and Anita shook hands in Round 4

**Question 22**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

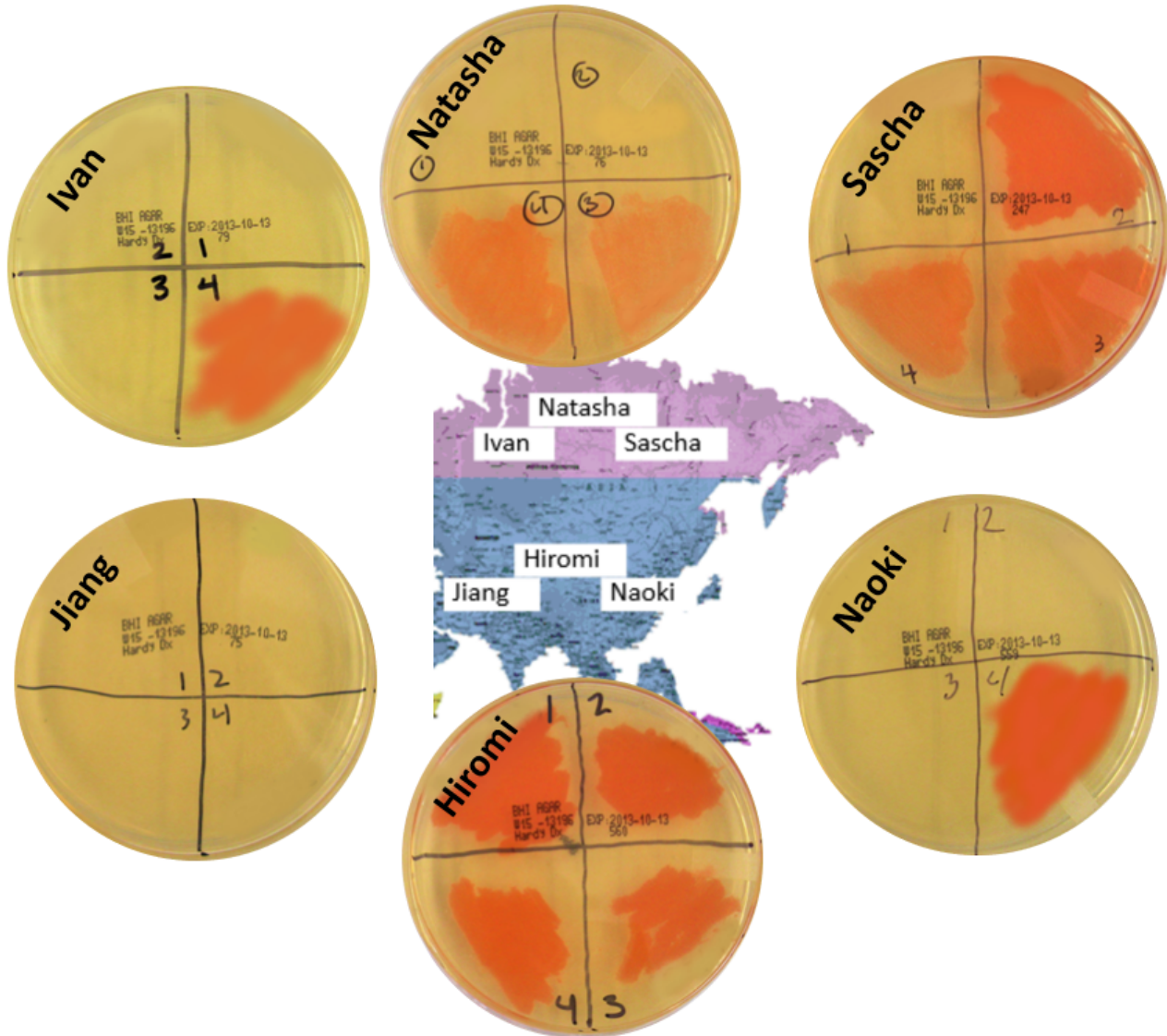
Question 23

Complete

Points out of 1.00

Below is a **subset** of class handshake data, similar to the data you worked with in the Working with Bacteria lab.

Based on what you know about the bacterial transmission activity, which of the following statements is **false** based on the data below?



- a. Ivan and Hiromi shook hands in Round 4
- b. Sascha and Jiang shook hands in Round 1
- c. Jiang and Natasha shook hands in Round 2
- d. Natasha and Naoki shook hands in Round 3

**Question 24**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 25**

Complete

Points out of 1.00

A researcher is studying antibiotic resistant bacterial cultures in the lab. The bacteria culture they are using is resistant to penicillin. They streak two plates with bacteria, one plate of LB agar and one plate containing LB agar and penicillin. Why is it important for the researcher to streak a plate that doesn't contain penicillin?

- a. All of these answers are correct
- b. To verify the bacterial culture has not been contaminated
- c. To verify the bacterial culture is viable
- d. To verify the protocol for growing bacteria is correct

**Question 26**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 27**

Complete

Points out of 1.00

Which of the following experimental scenarios would be the best experimental set-up for the goldfish metabolism lab?

- a. The goldfish are placed into 10ppt saltwater water during the control trial, then placed into regular fish water during the experimental trial.
- b. The goldfish are placed in cold fish water during the control trial, then placed in warm fish water during the experimental trial.
- c. One set of goldfish is placed in regular fish water during the control trial, then a second set of goldfish is placed in tobacco infused fish water during the experimental trial.
- d. The goldfish are placed in ambient light for the control trial, then placed into darkness for the experimental trial.

**Question 28**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 29**

Complete

Points out of 1.00

A group of 3 students design an experiment to measure the rate of oxygen consumption of codfish at a young age. The null hypothesis proposed by these students is that exposure to nicotine has no effect on the rate of oxygen consumption by codfish. By using the Loggerlite program, the students ran four trials: two control, and two experimental, on two codfish. From these graphs they obtained slopes of -1.01 and -1.22 for the control trials, and -1.19 and -1.34 experimental trial respectively. The p-value they obtained from the experiment is 0.079.

Taking into account both the p-value obtained as well as the observed slopes of the two trials, should the students reject or fail to reject the null hypothesis? Why?

- a. The students should reject the null hypothesis because the p-value is low and the difference in the slopes obtained from the two trials is not significant.
- b. The students should fail to reject the null hypothesis because the p value is high, indicating that the difference in the slopes obtained from the two trials is not significant.
- c. The students should reject the null hypothesis because the p value is low, indicating that the difference in the slopes obtained from the two trials is significant.
- d. The students should reject the null hypothesis because the p value is low and the slopes obtained from each trial look very similar.
- e. The students should fail to reject the null hypothesis because the p value is low and there is a significant difference in the slopes of the control and experimental graphs.

**Question 30**

Not answered

Not graded

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Answer:



**Question 31**

Complete

Points out of 1.00

A group of researchers is studying the effect of saltwater concentration on metabolism in guppies. The experimental groups consist of 5 guppies each. The groups each undergo one control and one experimental trial, for a combined total of 10 control and 10 experimental trials overall. What is the  $n$  of this experiment?

- a.  $n = 5$
- b.  $n = 10$
- c.  $n = 20$
- d.  $n = 50$
- e.  $n = 100$

**Question 32**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 33**

Complete

Points out of 1.00

Which of the following experimental designs is the most suited for a paired t-test?

- a. A study that compares right hand grip strength, then left hand grip strength, between a group of 50 people who are all right handed.
- b. A study that compares response time on the MIT between 75 people who drink soda daily and 103 people who drink soda weekly.
- c. A study that compares resting metabolic rate of goldfish born and raised in 25°C water and goldfish born and raised in 35°C water.
- d. A pharmaceutical trial that compares the blood pressure in 250 people who received blood pressure medication and 250 people who received a placebo.

**Question 34**

Not answered

Not graded

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Answer:

Question **35**

Complete

Points out of 1.00

Which of the following statements is **TRUE** about the differences between paired and unpaired t-tests.

- a. A paired t-test compares two separate control and experimental groups, while an unpaired t-test often relies on "before" and "after" measurements.
- b. A dataset analyzed with both a paired and un-paired t-test will result in the same p-value.
- c. Unpaired t-tests have a stricter standard significance threshold than paired t-tests.
- d. Paired t-tests are considered more powerful, especially when there is a small sample size.

Question **36**

Not answered

Not graded

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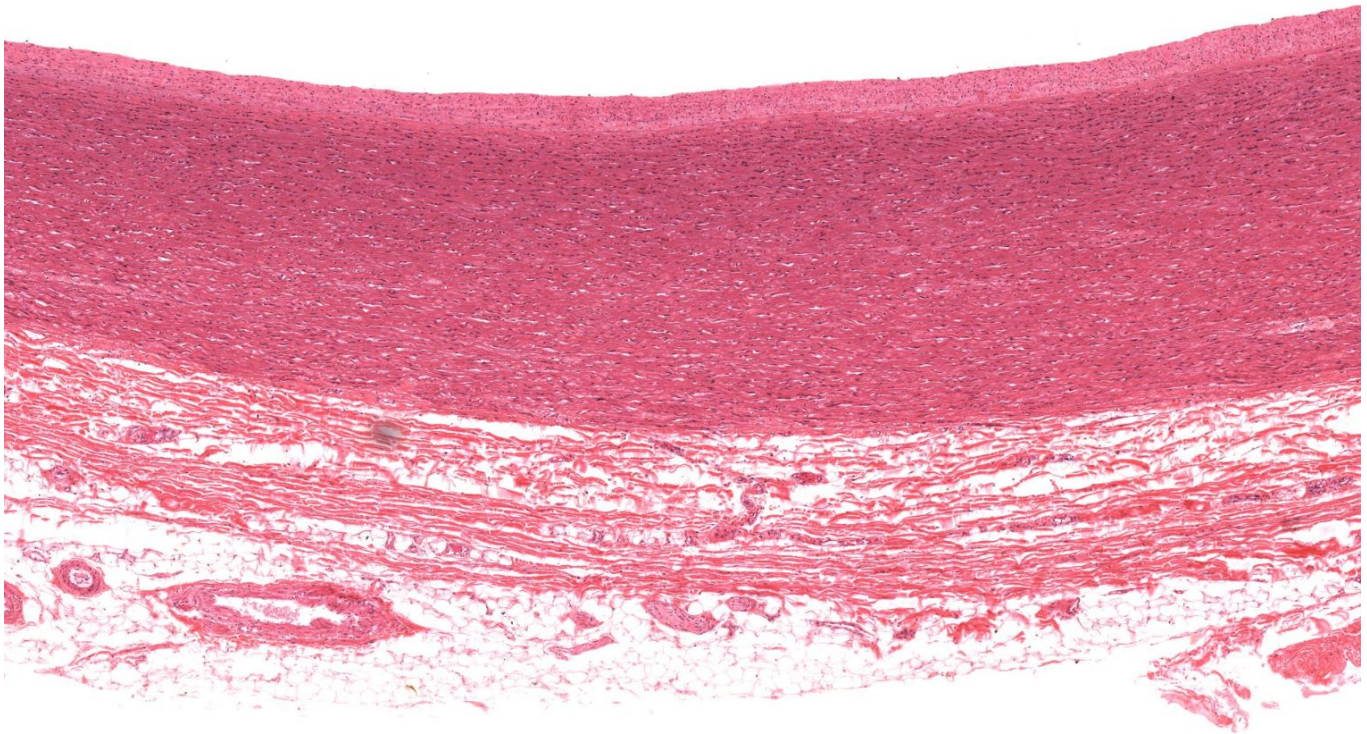
Answer:

Question **37**

Complete

Points out of 1.00

Based on your experience in the histology lab, examine the image below and identify the correct tissue and correct rationale.



- a. This tissue is skin based on the visible pores on the outer later.
- b. This tissue is aorta based on the distinct layers and visible lumen.
- c. This tissue is skin based on the distinct layers in the structure.
- d. This tissue is aorta based on the densely packed red blood cells throughout the structure.

Question **38**

Not answered

Not graded

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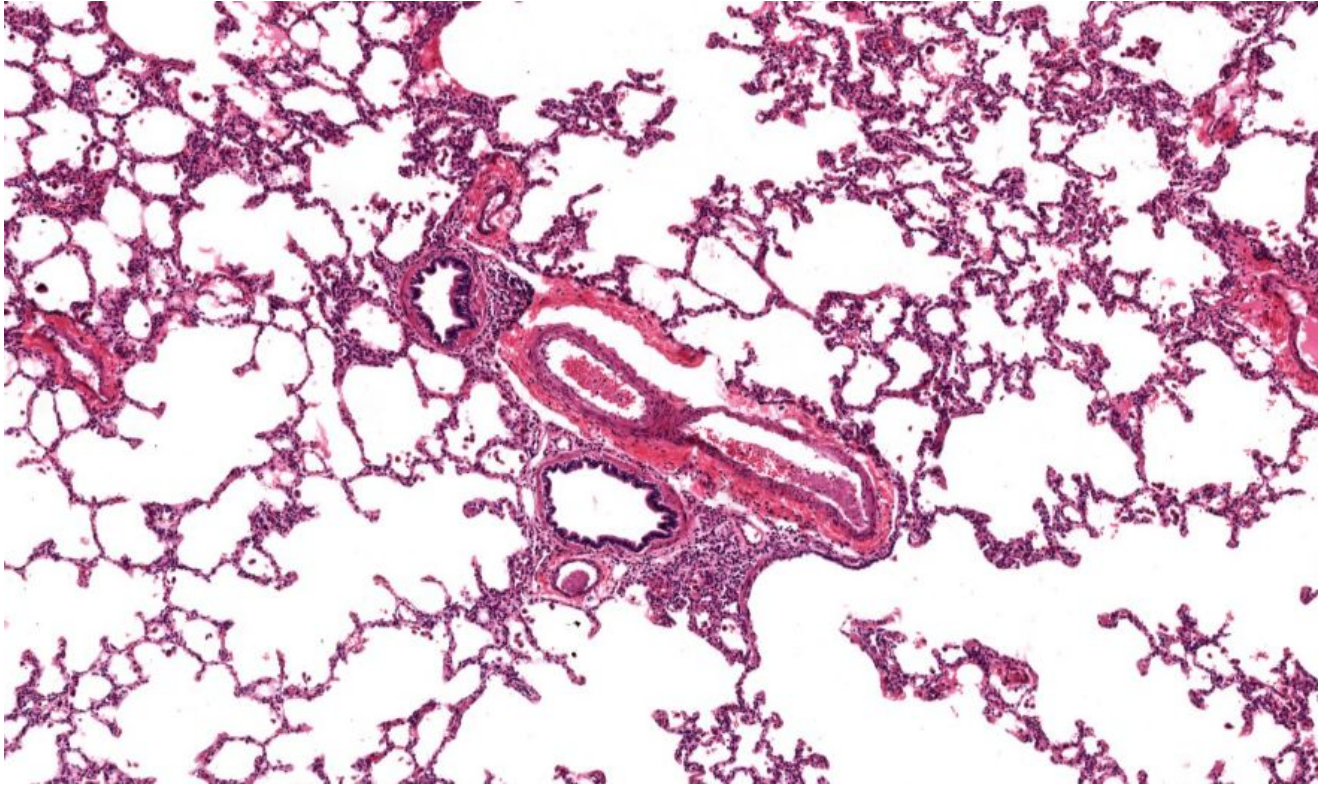
Answer:

Question **39**

Complete

Points out of 1.00

Based on your experience in the histology lab, examine the image below and identify the correct tissue and correct rationale.



- a. This tissue is liver based on the presence of large spaces used for filtration.
- b. This is neural tissue based on the long interconnecting dendrites and axons.
- c. This tissue is lung based on the large air pockets and presence of alveoli.
- d. This tissue is bone based on the spongy appearance and holes for blood vessels.

Question **40**

Not answered

Not graded

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Answer:

**Question 41**

Complete

Points out of 1.00

Which of the following is **TRUE** regarding H&E, the stain commonly used in histology slides?

- a. In H&E staining the cytoplasm will stain dark blue.
- b. In H&E staining negatively charged structures in the cell stain blue/purple, while positively charged structures stain pink/red.
- c. In H&E staining the nucleus will stain pink.
- d. In H&E staining negatively charged structures in the cell stain pink/red, while positively charged structures stain blue/purple.

**Question 42**

Not answered

Not graded

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Answer:

**Question 43**

Complete

Points out of 1.00

Your undergraduate colleague accidentally mislabels tissue samples taken from different parts of a rat. In order to correct his mistake, you make slides from each sample and stain all tissue red and all nuclei blue. Upon analyzing one slide under a compound light microscope, you see many small reddish pink dots but no blue. This slide must be a sample of tissue from the rat's \_\_\_\_\_.

- a. blood
- b. liver
- c. skin
- d. artery
- e. lungs

**Question 44**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

You ran a gel using SDS-PAGE.

Total molecular mass of your unknown protein (determined via gel filtration): 154 kDa

Standard curve equation based on your protein ladder:  $171.63e^{-0.368x}$

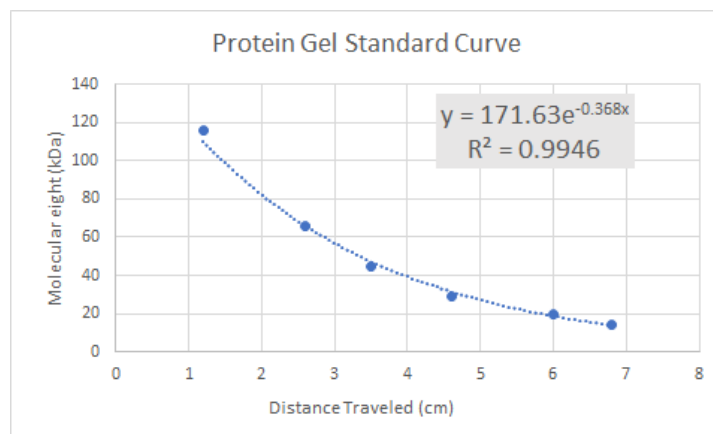
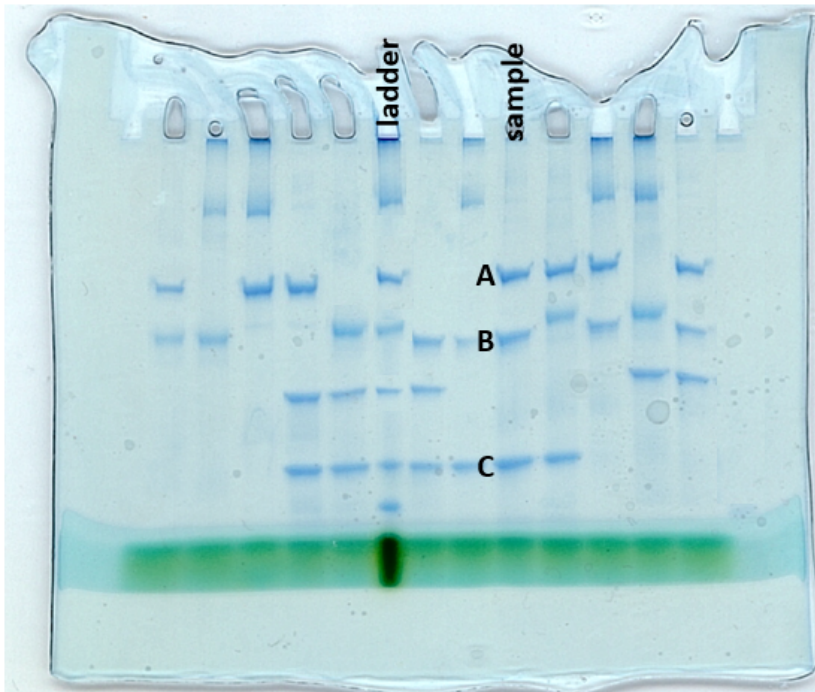
Number of bands in your unknown protein sample: 3

Distance each band traveled on your gel:

A measured at 2.5cm

B measured at 3.6cm

C measured at 5.9cm



With this information, answer the questions below:

**Question 45**

Complete

Points out of 1.00

What is the molecular weight of subunit A?

- a. 14 kDa
- b. 20 kDa
- c. 35 kDa
- d. 46 kDa
- e. 68 kDa
- f. 104 kDa

**Question 46**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 47**

Complete

Points out of 1.00

What is the molecular weight of subunit B?

- a. 14 kDa
- b. 20 kDa
- c. 35 kDa
- d. 46 kDa
- e. 68 kDa
- f. 104 kDa

**Question 48**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 49**

Complete

Points out of 1.00

What is the molecular weight of subunit C?

- a. 14 kDa
- b. 20 kDa
- c. 35 kDa
- d. 46 kDa
- e. 68 kDa
- f. 104 kDa

**Question 50**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 51**

Complete

Points out of 1.00

What is the subunit composition of this protein?

- a. 1 of A, 1 of B, 1 of C
- b. 2 of A, 1 of B, 1 of C
- c. 1 of A, 2 of B, 1 of C
- d. 1 of A, 1 of B, 2 of C



Question **52**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

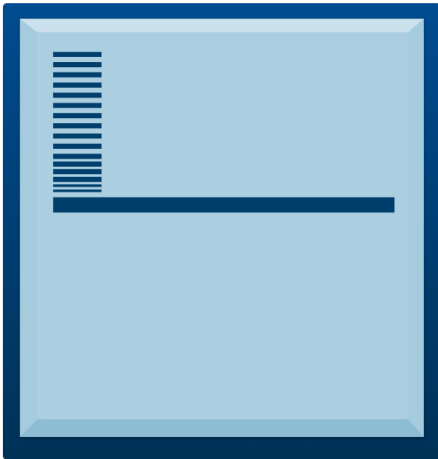
Answer:

Question **53**

Complete

Points out of 1.00

You receive the following gel after electrophoresis. What went wrong?



- a. You did not allow for enough time when running the gel
- b. You forgot to turn on the power source
- c. The temperature of the gel during the run was too low

Question **54**

Not answered

Not graded

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Answer:

**Question 55**

Complete

Points out of 1.00

Which of the following is **TRUE** regarding box plots?

- a. A box plot will show if you have bimodal data.
- b. The interquartile range (IQR) is the area of the box plot that contains a half of the data points.
- c. You can derive a p-value directly from a box plot.
- d. The inner fences in a box plot are always equidistant from the IQR.

**Question 56**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 57**

Complete

Points out of 1.00

In which scenario would it be **most** appropriate to use a Welch's t-test instead of a Student's t-test?

- a. You are studying the effect of caffeine consumption on mile time in long distance runners. On the first day of the experiment, 120 runners ran a mile without consuming caffeine. On the second day of the experiment, the same 120 runners ran a mile after consuming 100mg of caffeine.
- b. You are studying the difference in total lung capacity between students who are currently gymnasts and those who were gymnasts in the past. Your study contains data from 98 current gymnasts and 210 former gymnasts.
- c. You are studying the effects tea consumption on accuracy in students who have taken the MIT. You are comparing students who drink tea daily with those who drink tea weekly. The number of responses from students who drink tea daily is 387. The number of responses from students who drink tea weekly is 419.
- d. You are studying the effects of drought on tomato plant height. You are comparing the height of plants that were watered once a day and the height of plants that were watered once a week. The number of tomato plants that were watered daily is 25. The number of plants that were watered weekly is 25.

Question 58

Not answered

Not graded

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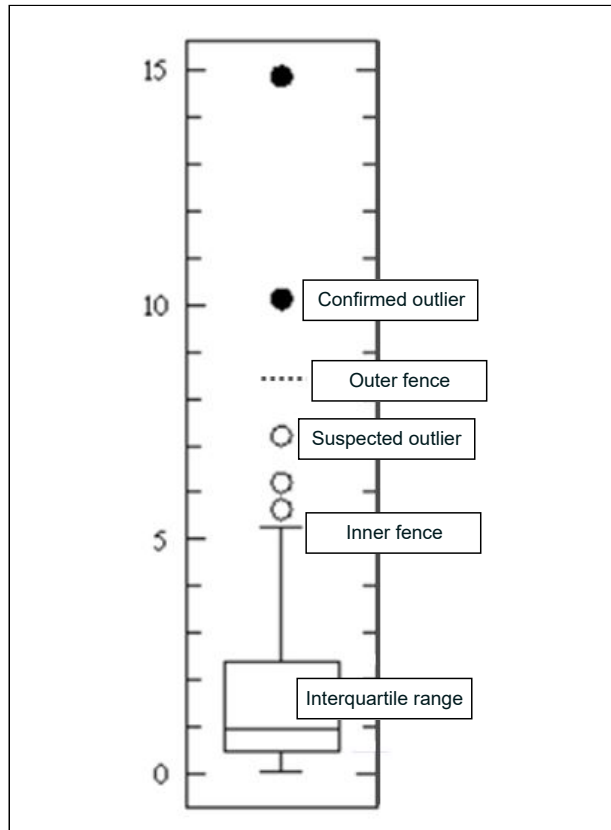
Answer:

Question 59

Complete

Points out of 1.00

Drag and drop the correct labels onto the image below.



**Question 60**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 61**

Complete

Points out of 1.00

You are a scientist looking at how exercise affects lung function. Your alternative hypothesis is that jogging in place will cause a change in lung function. Which of the following would be the most appropriate sensor to use for your experiment?

- a. Hand Dynamometer
- b. EKG Sensor
- c. Spirometer
- d. Heart Rate Monitor

**Question 62**

Not answered

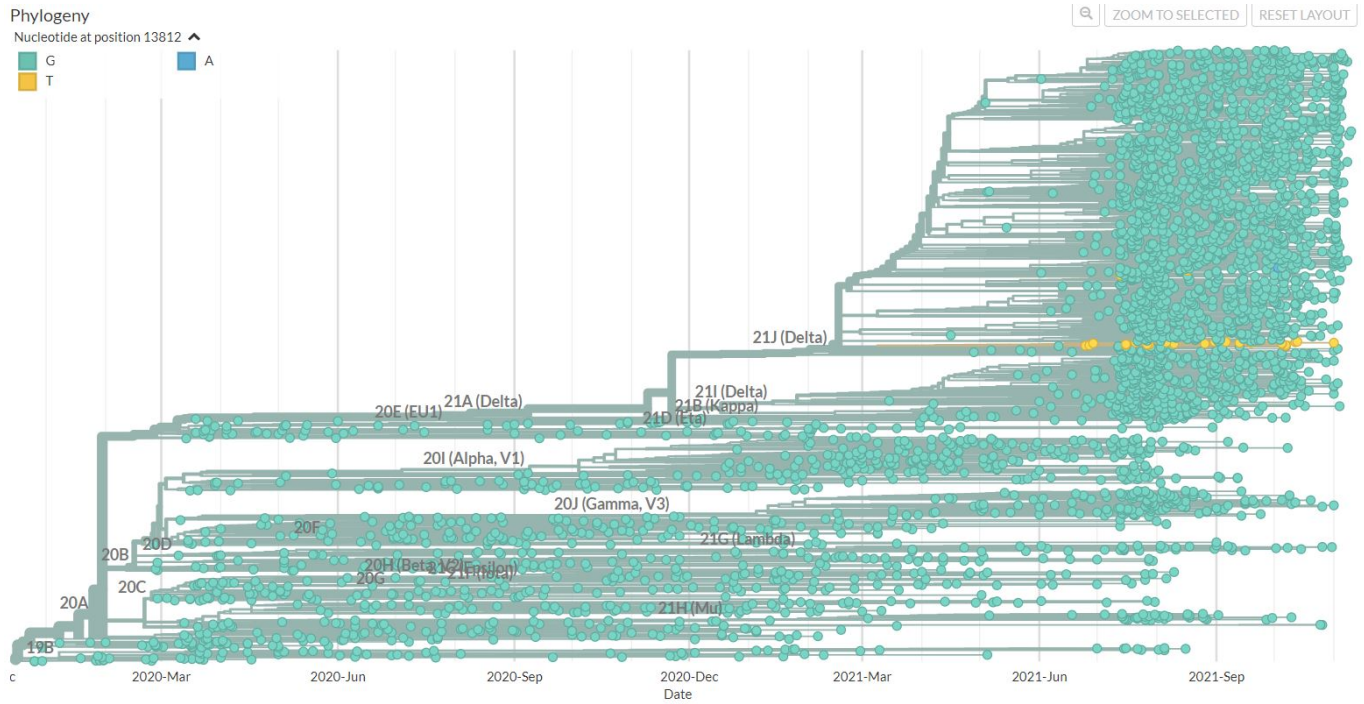
Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Please refer to this screenshot from Nextstrain when answering the following three questions:

[For a larger view of the screenshot, click here.](#)



### Question 63

Complete

Points out of 1.00

Looking at the screenshot above -

What is the nucleotide present in the Wuhan reference sequence at this position?

- a. Thymine
- b. Tyrosine
- c. Adenine
- d. Alanine
- e. Glycine
- f. Guanine

Question **64**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Question **65**

Complete

Points out of 1.00

Looking at the screenshot above -

Which SNV is **MOST** common at this position?

- a. Thymine
- b. Tyrosine
- c. Adenine
- d. Alanine
- e. Glycine
- f. Guanine

Question **66**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Question **67**

Complete

Points out of 1.00

Looking at the screenshot above -

Which of the following is a **CORRECT** mutation notation for the most common SNV at this position?

- a. G13812A
- b. T13812G
- c. G13812T
- d. T13812A
- e. A13812G
- f. A13812T

Question **68**

Not answered

Not graded

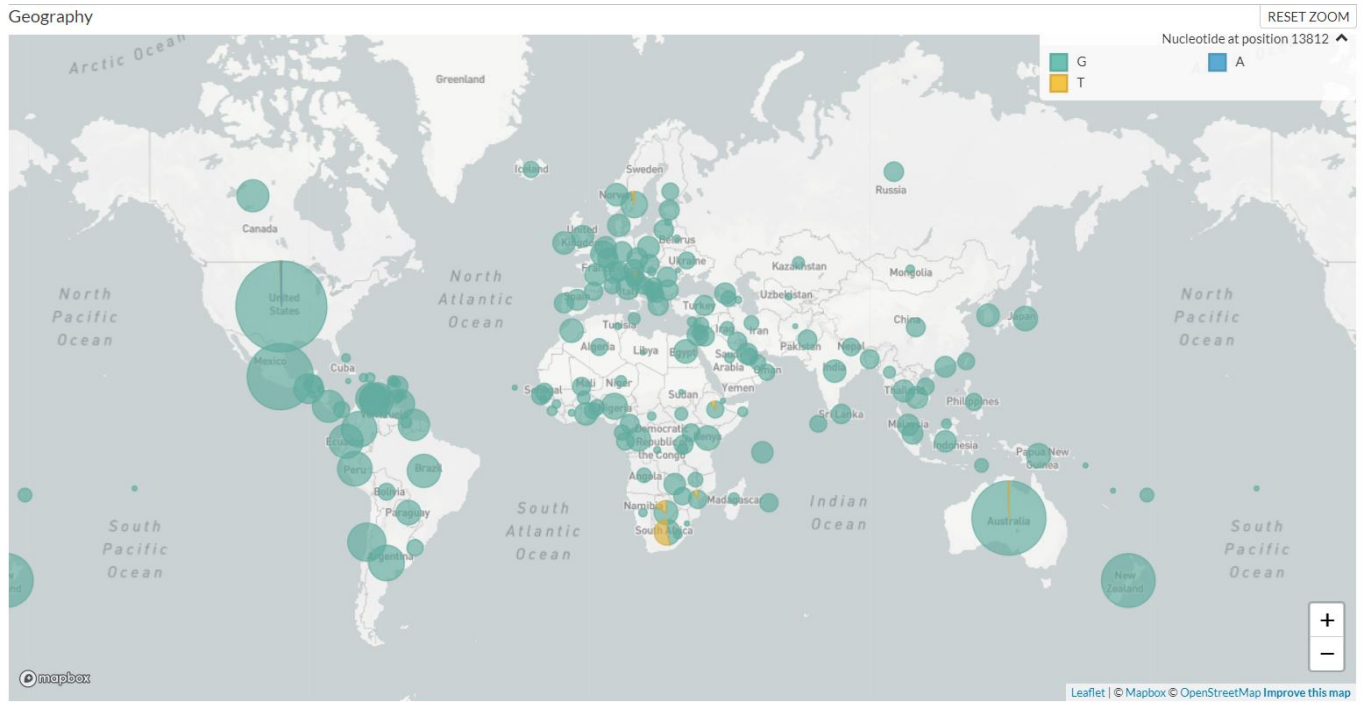
This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Information

Please refer to this screenshot from Nextstrain when answering the following two questions:

[For a larger view of the screenshot, click here.](#)



Question 69

Complete

Points out of 1.00

Looking at the map screenshot above -

Which region is most impacted by SNVs at this nucleotide position, based on the geographical distribution shown above?

- a. Europe
- b. Russia
- c. South America
- d. Africa

Question 70

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:



Question **71**

Complete

Points out of 1.00

Looking at the same map screenshot -

If the 5' end of your forward primer was located at this position, which of the following statements is most likely to be true?

- a. There is a high risk your PCR test would yield false negatives in Africa.
- b. There is a high risk your PCR test would yield false positives in South America.
- c. There is a high risk your PCR test would yield false negatives in South America.
- d. There is a high risk your PCR test would yield false positives in Africa.
- e. This nucleotide change should not impact your PCR test.

Question **72**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Question **73**

Complete

Points out of 1.00

Which of the following statements is **INCORRECT** regarding primers in PCR?

- a. Forward primer is identical to the top strand.
- b. Forward primer binds to the bottom strand.
- c. Reverse primer is identical to the bottom strand.
- d. Reverse primer binds to the bottom strand.

Question **74**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

Refer to the image below when answering the following questions:

[For a larger view of the screenshot, click here.](#)

```

16701 5' ->TGAAGTGTCTGTCTGACAGAGAATTACATCTTTTCATGGGAAGTTGGTAAACCTAGACCACCACTTAACCGAAATTATGTCTTTACTGGTTATCGTGTAAC->3' 16800
NSP13 3' <-ACTTCACGACAGACTGTCTCTTAATGTAGAAAGTACCCTTCAACCATTGGATCTGGTGGTGAATTGGCTTAAATACAGAAATGACCAATAGCACATTGA<-5'
      1         2         3         4         5         6         7         8         9         0

16801 5' ->AAAAACAGTAAAGTACAAATAGGAGAGTACACCTTTGAAAAAGGTGACTATGGTGTGCTGTTGTTTACCGAGGTACAACAACCTTACAAATTAATGTG->3' 16900
NSP13 3' <-TTTTTGCATTTTCATGTTTATCCTCTCATGTGAAACTTTTCCACTGATACCACTACGACACAACAATGGCTCCATGTTGTTGAATGTTAATTTACAAC<-5'
      1         2         3         4         5         6         7         8         9         0

16901 5' ->GTGATTATTTTGTGCTGACATCACATACAGTAATGCCATTAAAGTGCACCTACACTAGTGCCACAAGAGCACTATGTTAGAATTACTGGCTTATACCCAAC->3' 17000
NSP13 3' <-CACTAATAAAACACGACTGTAGTGTATGTATTACGGTAATTCACGTGGATGTGATCACGGTGTTCTCGTGATACAATCTTAATGACCGAATATGGGTG<-5'
      1         2         3         4         5         6         7         8         9         0

```

### Question 75

Complete

Points out of 1.00

How would you write out the sequence for the FORWARD primer if you needed to purchase it for use in PCR?

- a. ACTAGTGTAGGTGCACTTAA
- b. TAAAGCCAATTCACCACCAG
- c. GGAGAGTACACCTTTGAAAA
- d. AAAAGTTTCCACATGAGAGG
- e. AATTCACGTGGATGTGATCA
- f. GACCACCACTTAACCGAAAT

### Question 76

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 77**

Complete

Points out of 1.00

How would you write out the sequence for the REVERSE primer if you needed to purchase it for use in PCR?

- a. ACTAGTGTAGGTGCACTTAA
- b. TAAAGCCAATTCACCACCAG
- c. GGAGAGTACACCTTTGAAAA
- d. AAAAGTTTCCACATGAGAGG
- e. AATTCACGTGGATGTGATCA
- f. GACCACCACTTAACCGAAAT

**Question 78**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

**Question 79**

Complete

Points out of 1.00

What is the product size of the sequence amplified using these primers?

- a. 164 bp
- b. 165 bp
- c. 166 bp
- d. 204 bp
- e. 205 bp
- f. 206 bp

**Question 80**

Not answered

Not graded

This is a space for you to take notes on the previous question. These notes are not graded and are just to help you when you review your exam with your group later. Be mindful of your time limit on the exam and just write enough to jog your memory later.

Answer:

◀ LA end of quarter feedback ...

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