Spring 2022 - LIFESCI23L-1 - PFLUEGL

Started on	Monday, 6 June 2022, 1:59 PM PDT
State	Finished
Completed on	Monday, 6 June 2022, 2:42 PM PDT
Time taken	43 mins 24 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 0.16 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. 0.16, reject
- b. 0.16, fail to reject
- c. 1.6, reject
- d. 1.6, fail to reject
- e. 16, reject
- f. 16, fail to 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 drink coffee daily will have more energy when taking the MIT than people who drink coffee monthly. The null hypothesis is that there will be no difference in energy levels while taking the MIT between people who drink coffee daily and people who drink coffee monthly."

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

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

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

Scientists compare response time on the MIT between two groups - 2764 people who took the MIT on a Monday and 4168 people who took the MIT on a Thursday. They run a two tailed unpaired t-test on the data and use the conventional significance threshold. The resulting t-value is 0.043 and the p-value is 0.03.

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 take the MIT on a Monday will have a faster response time than people who take the MIT on a Thursday. The null hypothesis is that people who take the MIT on a Monday will not have a faster response time than people who take the MIT on a Thursday.

b. The hypothesis is that people who take the MIT early in the week will have a different response time than people who take the MIT later in the week. The null hypothesis is that people who take the MIT early in the week will not have a different response time than people who take the MIT later in the week.

c. The hypothesis is that people who take the MIT on a Monday will have a different response time than people who take the MIT on a Thursday. The null hypothesis is that people who take the MIT on a Monday will not have a different response time than people who take the MIT on a Thursday.

d. The hypothesis is that people who take the MIT twice, once on a Monday and again on a Thursday, will have different response times on the MIT. The null hypothesis is that people who take the MIT on a Monday and again on a Thursday will not have different response times on 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. There is a 0.03% probability these differences are due to chance

b. We cannot determine significance from the data provided

c. We would fail to reject the null hypothesis

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. p200

b. p20

c. p2

d. p1000

Question **10**

Not answered

Not graded

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Answer:

Question **11**

Complete

Points out of 1.00

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

- a. 450 uL
- b. 45.0 uL
- c. 0.45 uL
- d. 4.50 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. p20
- b. p200
- c. p2
- d. p1000

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:

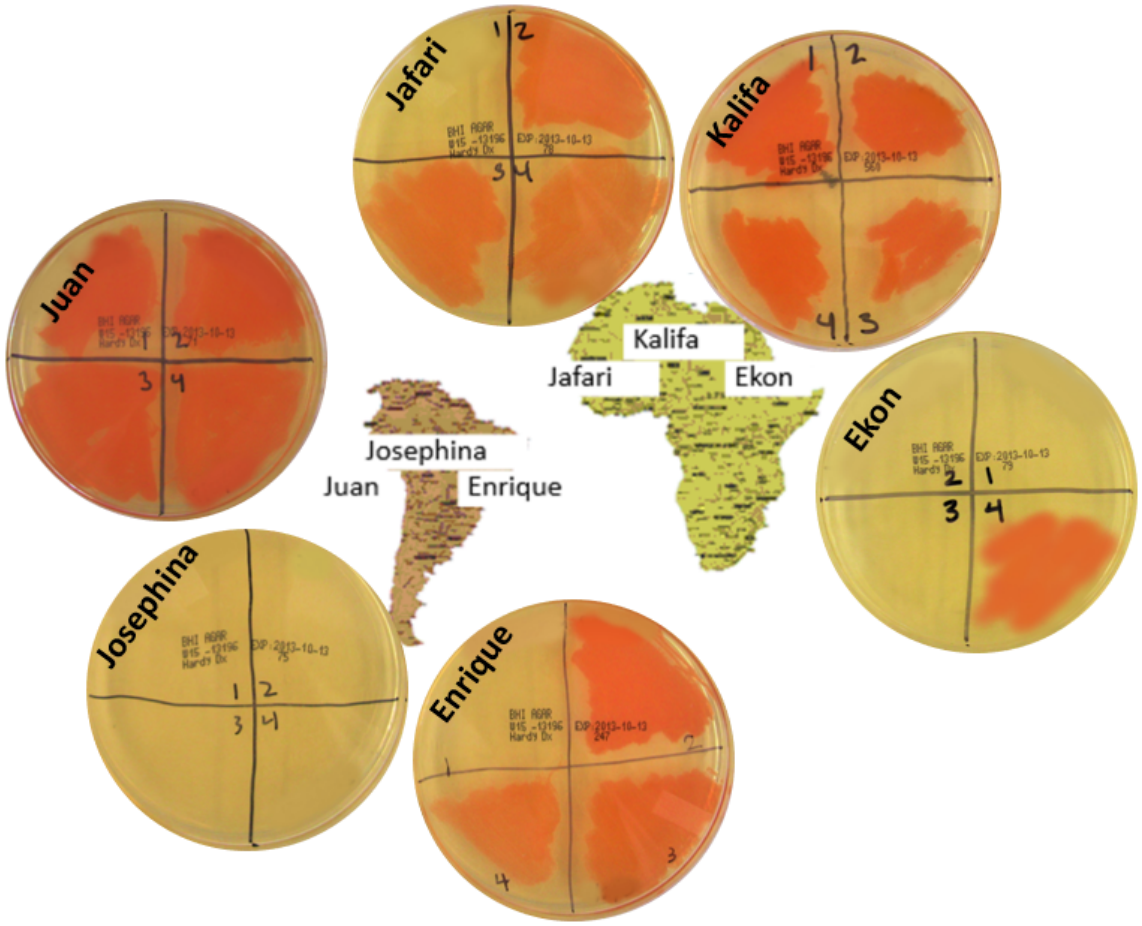
Question **15**

Complete

Points out of 1.00

Below is a **subset** of class handshake data, similar to the data you worked with in the Epidemiology and Lab Techniques lab.

Based on what you know about the bacterial transmission activity, who is patient zero?



a. Jafari
b. Juan
c. Ekon
d. Enrique
e. Josephina
f. Kalifa
g. Cannot be determined by the data

Question **16**

Complete

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: Either Juan or Kalifa - looking at quadrant 1 (after first round of handshakes, both s

Question **17**

Complete

Points out of 1.00

You are using a spectrophotometer to determine the concentration of DNA in a PCR product, but your samples need to be diluted to a 1:50 concentration in order to get an accurate reading.

Which of the following dilutions would result in a 1:50 concentration?

- a. 10uL of concentrated DNA into 490uL of DI water
- b. 50uL of concentrated DNA into 950uL of DI water
- c. 1uL of concentrated DNA into 50uL of DI water
- d. 5uL of concentrated DNA into 95uL of DI water

Question **18**

Complete

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: 1 DNA : 49 water --> 1 + 49 = 50 --> 1/50 DNA + 49/50 water

Question **19**

Complete

Points out of 1.00

A student in LS23L is conducting an additional trial of the B-galactosidase lab, this time with four culture tubes. The culture tubes contained the following:

- Culture tube A contains E. coli
- Culture tube B contains E. coli and 4% glucose
- Culture tube C contains E. coli and 4% lactose
- Culture tube D contains E. coli, 2% glucose, and 2% lactose

Based on what you know about B-galactosidase production, what do you predict will happen in Culture tube D?

a. E. coli cells prefer glucose over lactose, so they will begin transcribing B-galactosidase and turn the sample an opaque, yellow color

b. E. coli cells prefer glucose over lactose, so they will consume all of the glucose before they begin transcribing B-galactosidase. This may not result in a color change.

c. E. coli cells prefer lactose over glucose, so they will consume all of the lactose before they begin transcribing B-galactosidase. This may not result in a color change.

d. E. coli cells prefer lactose over glucose, so they will begin transcribing B-galactosidase and turn the sample an opaque, yellow color

Question **20**

Complete

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: Cleave of ONPG (lactose derivative) by β-galactosidase produces yellow compoun

Question **21**

Complete

Points out of 1.00

A certain disorder completely prevents the production of the Lac repressor for the Lac operon. Which of the following would result if a person acquired this disorder?

a. More transcription of the B-galactosidase gene, only during high levels of lactose.

b. Less transcription of the B-galactosidase gene, only during high levels of lactose.

c. Less transcription of the B-galactosidase gene, regardless of lactose concentration.

d. More transcription of the B-galactosidase gene, regardless of lactose concentration.

e. Less transcription of the B-galactosidase gene, regardless of glucose concentration.

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

In the "biochemical assay of b-galactosidase activity", what is o-nitrophenyl-b-D-galactosidase (ONPG) used for?

- a. When ONPG is cleaved by b-galactosidase, we are able to assay b-galactosidase activity.
- b. It provides essential nutrients for bacterial growth.
- c. It partially disrupts the cell membrane to allow cellular proteins to diffuse out of the cell.
- d. ONPG cleaves the b-galactosidase that is made by the lac operon so we can see how much activity there is in the cell.
- e. ONPG cleaves galactose so we can measure how much lactose there is in the cell.

Question **24**

Not answered

Not graded

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Answer:

Question **25**

Complete

Points out of 1.00

You and your lab partners decide to redo the b-galactosidase lab, only this time, you incubate your E. Coli cultures for 20, 40, and 60 minute time points. After adding the PopCulture and the Z-buffer, you add ONPG and incubate for 30 minutes. All other steps remain the same. When calculating the Units of Enzyme Activity at the end of the lab, what value would you use for the "time" variable?

- a. 20 Minutes
- b. 30 Minutes
- c. 40 Minutes
- d. 50 Minutes
- e. 60 Minutes

Question **26**

Complete

Not graded

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Answer: Time = length of time that reaction of β-galactosidase and ONPG permitted to proc

Question **27**

Complete

Points out of 1.00

You are performing a biochemical assay of b-galactosidase activity. Test Tube A contains 5.0 ml of Luria Broth (LB). Test Tube B contains 4.6 ml of LB and 400 ul of 4% lactose. You pipette 500 ul of E. coli bacteria into each test tube, mix them, and incubate them for 20 minutes. After this incubation period, you retrieve two microcentrifuge tubes and the provided b-gal blank. You remove 300 ul each from Test Tubes A and B and add it to your labeled microcentrifuge tubes, then add 10 uL of PopCulture and allow it to incubate before adding 600 uL of Z-buffer mix. Later in the assay, you will measure the optical densities of these mixtures at 420nm after adding the appropriate substances (ONPG, and Na2CO3) and closely following the procedures. Which volume would you use in your calculation of units of enzyme activity?

- a. 100 ul
- b. 300 ul
- c. 500 ul
- d. 1.0 ml

Question **28**

Complete

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: Volume = volume of sample (removed from culture) that is assayed for β-galactosic

Question **29**

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. One set of goldfish is placed in regular fish water during control trial, then a second set of goldfish is placed in nicotine infused fish water for the experimental trial.

b. The goldfish are placed into cool (below room temperature) water during the control trial, then placed in warm (above room temperature) water for the experimental trial.

c. The goldfish are placed in regular fish water for the control trial, then placed in caffeine infused water for the experimental trial.

d. The goldfish are placed in regular fish water receiving ambient light during the control trial, then placed in 10 ppt saltwater next to a bright lamp during the experimental trial.

Question **30**

Complete

Not graded

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Answer: Using same set of fish for both control + experimental trials

Question **31**

Complete

Points out of 1.00

A student in LS23L wants to measure the metabolic rate of goldfish exposed to cold water. Their null hypothesis is that goldfish in room temperature water will not have a different metabolic rate than goldfish placed in cold water. They gather 4 goldfish, two for the first control and experimental trial and two for the second control and experimental trial. The relative metabolic rates for the control trials are 105 and 78. The relative metabolic rates for the experimental trials are 94 and 63. The p-value they obtained from the experiment is 0.23.

Taking into account both the p-value obtained as well as the relative metabolic rates, should the students reject or fail to reject the null hypothesis? Why?

a. They should fail to reject the null hypothesis because the p-value is above the standard threshold, indicating that any differences in the relative metabolic rates are due to chance.

b. They should reject the null hypothesis because the p-value is above the standard threshold, indicating that any differences in the relative metabolic rates are due to chance.

c. They should fail to reject the null hypothesis because the p-value is below the standard threshold, indicating that any differences in the relative metabolic rates are significant.

d. They should reject the null hypothesis because the p-value is below the standard threshold, indicating that any differences in the relative metabolic rates are significant.

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

A group of researchers is studying the effect of saltwater concentration on metabolism in guppies. They separate their guppies into 8 groups, each containing 4 guppies. All 8 groups will undergo one control round and one experimental round. They researchers then analyzed the results using a paired t-test.

What is the n of this experiment?

a. n = 16

b. n = 4

c. n = 64

d. n = 32

e. n = 8

Question **34**

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 **35**

Complete

Points out of 1.00

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

a. A pharmaceutical trial that compares the effectiveness of a new cholesterol medication between 200 people who took the new medication for 6 months and 200 people who took a placebo for 6 months.

b. A study that compares response time on the Face MIT between people who grew up in urban areas and people who grew up in rural areas.

c. A study that compares blood pressure in adults before and after attending an hour long meditation class.

d. A study that compares fruit size in apple trees that are fertilized once a month and apple trees that are fertilized every other month.

Question **36**

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 **37**

Complete

Points out of 1.00

Why are paired t-tests generally considered more powerful than unpaired t-tests?

a. Paired t-tests always result in significant p-values.

b. Paired t-tests have a stricter standard significance threshold.

c. Paired t-tests require large groups of researchers to conduct, so there are more people looking for errors in the data.

d. Paired t-tests reduce variation by taking before and after measurements from the same subjects.

Question **38**

Complete

Not graded

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Answer: A paired t-test often relies on “before” and “after” measurements. In this set up ea

Question **39**

Complete

Points out of 1.00

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

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

Question **40**

Complete

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: Forward primer binds to bottom strand, reverse primer binds to top strand

Information

Refer to the image below when answering the following questions:

For a larger view of the screenshot, click here.

Question **41**

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. TTTTTCTCTGATTTGTCCTTGG
- b. AAGTCCCGGTATTTCGGATTTA
- c. GGTTCCTGTTTAGTCTCTTTTT
- d. ATTTAGGCTTTATGGCCCTGAA
- e. TTCAGGGCCATAAAGCCTAAAT
- f. CCAAGGACAAATCAGAGAAAAA

Question **42**

Complete

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: Forward primer is identical to the top strand (write 5'-3')

Question **43**

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. TTTTTCTCTGATTTGTCCTTGG
- b. AAGTCCCGGTATTTCGGATTTA
- c. GGTTCCTGTTTAGTCTCTTTTT
- d. ATTTAGGCTTTATGGCCCTGAA
- e. TTCAGGGCCATAAAGCCTAAAT
- f. CCAAGGACAAATCAGAGAAAAA

Question **44**

Complete

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: Reverse primer identical to bottom strand (write 5'-3')

Question **45**

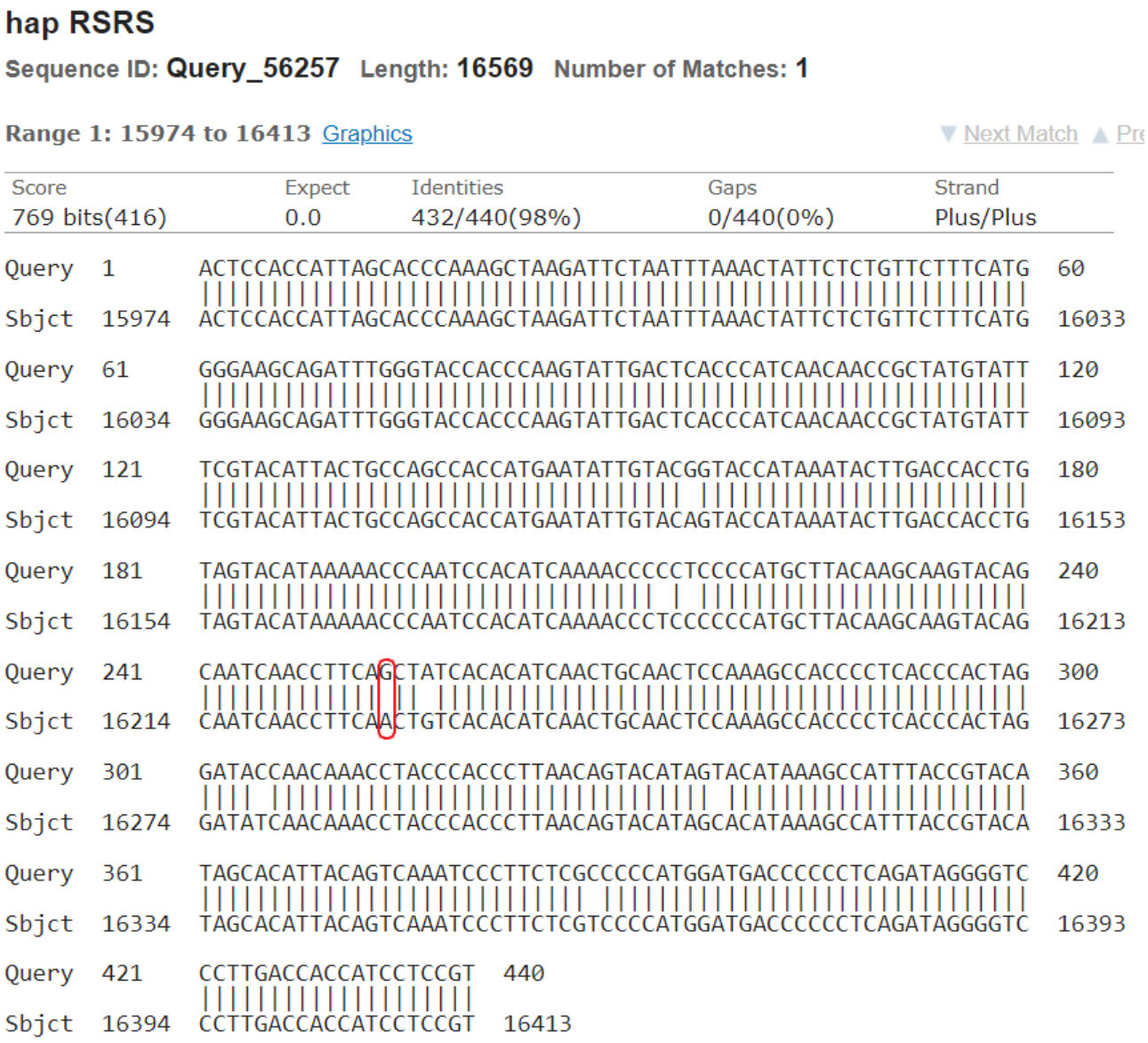
Complete

Points out of 1.00

The following image shows a sequence alignment between a segment of mtDNA from an individual with haplotype G and the Recent Sapien Reference Sequence (RSRS). The query sequence is the mtDNA from the individual with haplotype G. The subject sequence is the RSRS.

Based on what you learned in the DNA Isolation and Primer Design lab, how would you writing the mutation notation for the mutation in **red** below?

For a larger view of the screenshot, click here.



hap RSRS

Sequence ID: Query_56257 Length: 16569 Number of Matches: 1

Range 1: 15974 to 16413 Graphics ▼ Next Match ▲ Pre

Score	Expect	Identities	Gaps	Strand
769 bits(416)	0.0	432/440(98%)	0/440(0%)	Plus/Plus

```
Query  1      ACTCCACCATTAGCACCCAAAGCTAAGATTCTAATTTAAACTATTCTCTGTTCTTTCATG  60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  15974  ACTCCACCATTAGCACCCAAAGCTAAGATTCTAATTTAAACTATTCTCTGTTCTTTCATG  16033

Query  61     GGGAAGCAGATTTGGGTACCACCCAAGTATTGACTCACCCATCAACAACCGCTATGTATT  120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  16034  GGGAAGCAGATTTGGGTACCACCCAAGTATTGACTCACCCATCAACAACCGCTATGTATT  16093

Query  121    TCGTACATTACTGCCAGCCACCATGAATATTGTACGGTACCATAAATACTTGACCACCTG  180
              |||||||||||||||||||||||||||||||| ||||||||||||||||||||||||||
Sbjct  16094  TCGTACATTACTGCCAGCCACCATGAATATTGTACAGTACCATAAATACTTGACCACCTG  16153

Query  181    TAGTACATAAAAACCCAATCCACATCAAAACCCCCTCCCCATGCTTACAAGCAAGTACAG  240
              |||||||||||||||||||||||||||||||| | ||||||||||||||||||||||||
Sbjct  16154  TAGTACATAAAAACCCAATCCACATCAAAACCCTCCCCCCATGCTTACAAGCAAGTACAG  16213

Query  241    CAATCAACCTTCAGCTATCACACATCAACTGCAACTCCAAAGCCACCCCTCACCCACTAG  300
              |||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||
Sbjct  16214  CAATCAACCTTCAACTGTCACACATCAACTGCAACTCCAAAGCCACCCCTCACCCACTAG  16273

Query  301    GATACCAACAAACCTACCCACCCTTAACAGTACATAGTACATAAAGCCATTTACCGTACA  360
              |||| ||||||||||||||||||||||||||||| ||||||||||||||||||||||||
Sbjct  16274  GATATCAACAAACCTACCCACCCTTAACAGTACATAGCACATAAAGCCATTTACCGTACA  16333

Query  361    TAGCACATTACAGTCAAATCCCTTCTCGCCCCCATGGATGACCCCCCTCAGATAGGGGTC  420
              |||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||||
Sbjct  16334  TAGCACATTACAGTCAAATCCCTTCTCGTCCCCATGGATGACCCCCCTCAGATAGGGGTC  16393

Query  421    CCTTGACCACCATCCTCCGT  440
              ||||||||||||||||||||
Sbjct  16394  CCTTGACCACCATCCTCCGT  16413
```

- a. A254G
- b. G16227A
- c. A16227G
- d. G254A

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:

Information

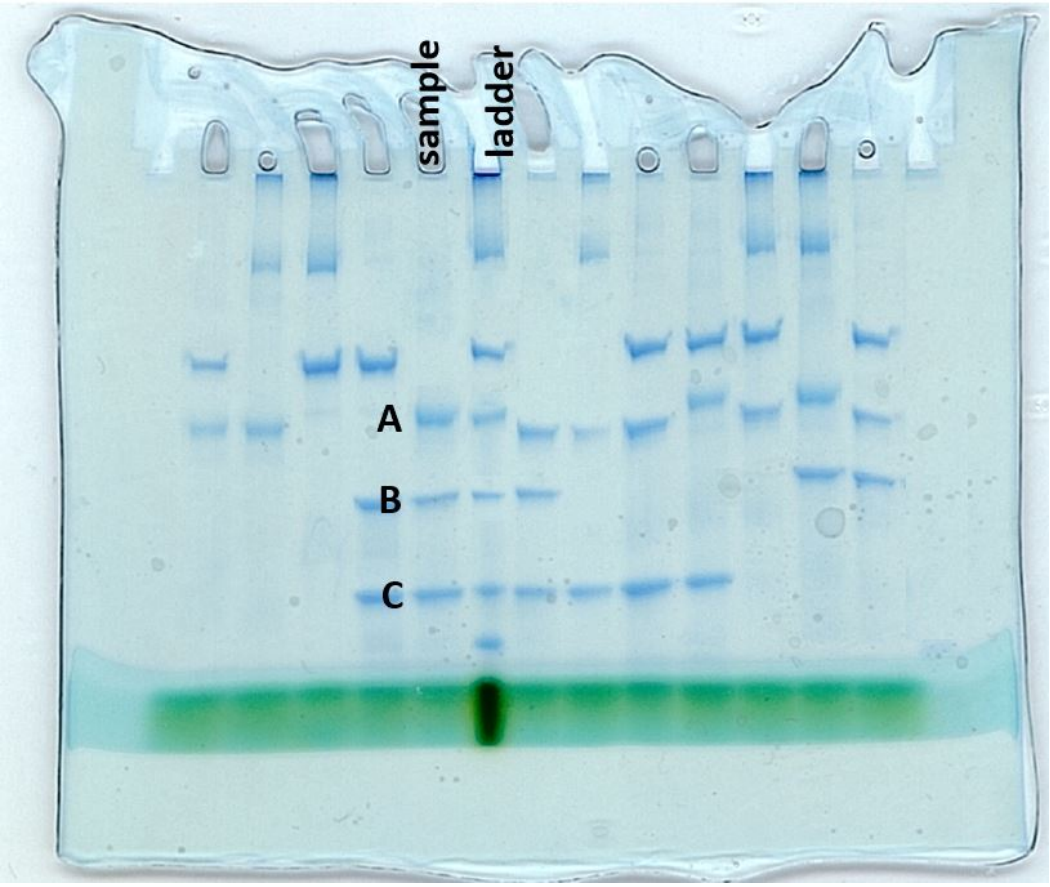
You ran a gel using SDS-PAGE.

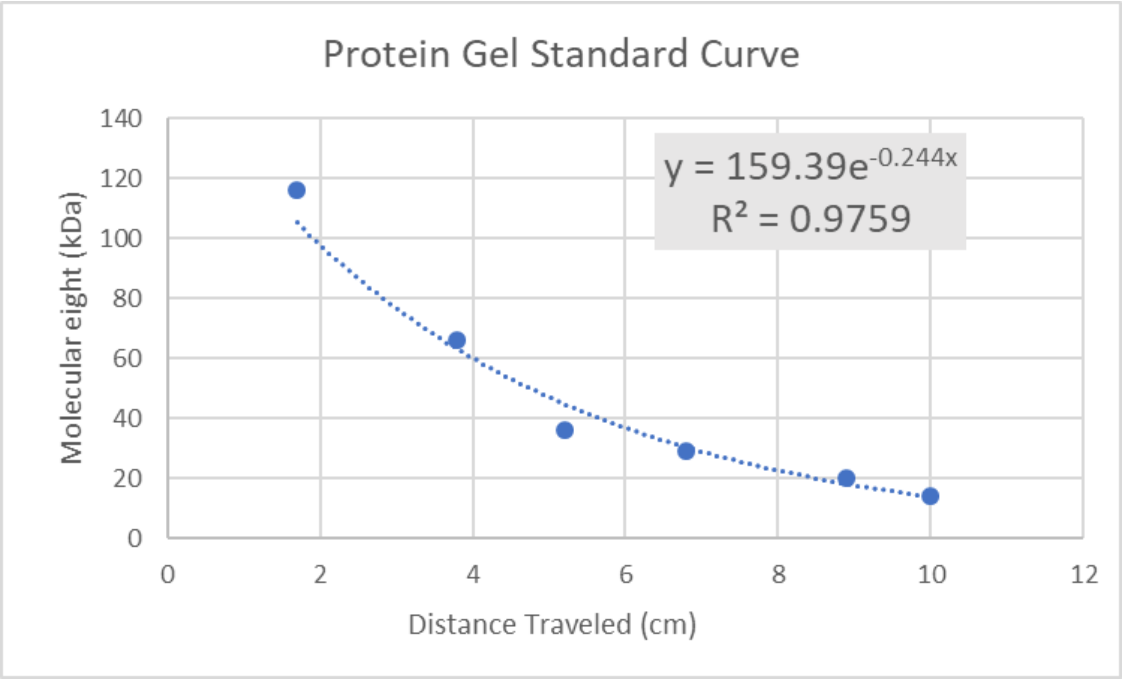
Total molecular mass of your unknown protein (determined via gel filtration): 122 kDa

Standard curve equation based on your protein ladder: 159.39e^-0.244x

Number of bands in your unknown protein sample: 3

Distance each band traveled on your gel:
A measured at 5.3 cm
B measured at 6.9 cm
C measured at 8.9 cm





With this information, answer the questions below:

Question **47**

Complete

Points out of 1.00

What is the molecular weight of subunit A?

- a. 12 kDa
- b. 18 kDa
- c. 30 kDa
- d. 34 kDa
- e. 44 kDa
- f. 48 kDa

Question **48**

Complete

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: Plug in 5.3 for X

Question **49**

Complete

Points out of 1.00

What is the molecular weight of subunit B?

- a. 12 kDa
- b. 18 kDa
- c. 30 kDa
- d. 34 kDa
- e. 44 kDa
- f. 48 kDa

Question **50**

Complete

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: Plug in 6.9 for X

Question **51**

Complete

Points out of 1.00

What is the molecular weight of subunit C?

- a. 12 kDa
- b. 18 kDa
- c. 30 kDa
- d. 34 kDa
- e. 44 kDa
- f. 48 kDa

Question **52**

Complete

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: Plug in 8.9 for X

Question **53**

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 **54**

Complete

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: 1 of each = 92 kDa --> 2*30 = 60 --> 122 kDa

Question **55**

Complete

Points out of 1.00

Which of the following is correct about agarose gel electrophoresis:

- a. It has a lower resolving power than polyacrylamide gels.
- b. Agarose gels must be loaded vertically.
- c. It is used only to separate DNA fragments.
- d. To separate DNA fragments by agarose gel electrophoresis, one must load near the anode.
- e. It is a potent neurotoxin and should be handled with care.

Question **56**

Not answered

Not graded

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Answer:

Question **57**

Complete

Points out of 1.00

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

a. The inner fences of a boxplot are equal to 2x the Inner Quartile Range (IQR).

b. The interquartile range (IQR) is the area of the box plot that contains a half of the data points.

c. All data points beyond the outer fence are considered suspected outliers.

d. The maximum value in a dataset is always considered a confirmed outlier.

Question **58**

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 **59**

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 classical music on goldfish metabolism. You measure the metabolic rate of 25 pairs of goldfish before and after being exposed to classical music.

b. You are comparing response time on the MIT between 4292 people who describe themselves as "very much in love" and 3447 people who describe themselves as "not at all in love".

c. You are comparing resting heart rate between 23 people who eat a pescatarian diet and 187 people who eat an omnivorous diet.

d. You are comparing total lung capacity between 249 people who currently play a wind instrument and 198 people who have played a wind instrument in the past.

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.

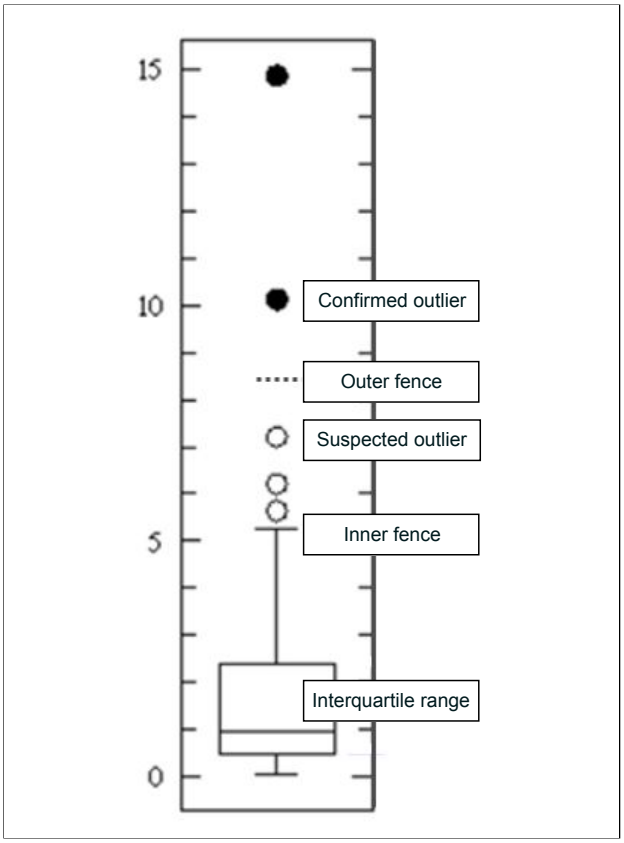
Answer:

Question **61**

Complete

Points out of 1.00

Drag and drop the correct labels onto the image below.



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:

Question **63**

Complete

Points out of 1.00

What is the tidal volume?

a. It is represented by the mathematical equation TV = VC + IRV + ERV + RV
b. It is represented by the mathematical equation TV = IRV + ERV
c. It is the amount of air your lungs hold while breathing normally
d. It is the maximum amount of air your lungs can take in and/or hold during a deep breath

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:

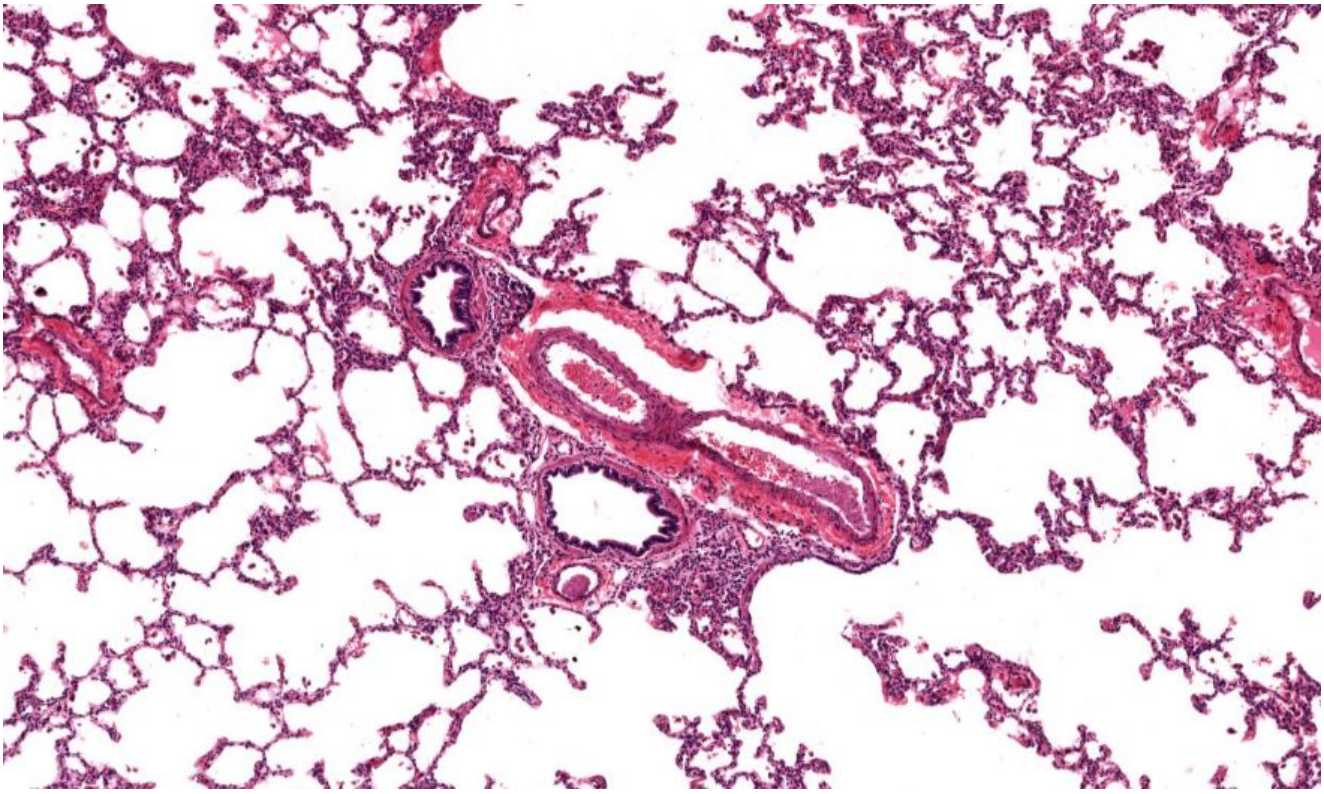
Question **65**

Complete

Points out of 1.00

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

For a larger view of the screenshot, click here.



a. This shows red blood cells based on the lack of structure.

b. This tissue is lung based on the large air pockets and presence of alveoli.

c. This tissue is bone based on the holes for blood vessels.

d. This is neural tissue based on the long interconnecting dendrites and axons.

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

You are working with different tissues in lab, unfortunately you forgot to label them and your friend wants to borrow your slide containing liver tissue. Based on your knowledge of the liver and these descriptions of different slides which is most likely to be liver tissue?

- a. A slide with densely packed cells and canals for blood flow.
- b. A slide with many red blood cells and a few white blood cells of various types.
- c. A slide with densely packed white blood cells.
- d. A slide with multinucleate striated cells, parallel with one another.
- e. A slide with many neurons, connected together in an elaborate web.

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:

Question **69**

Complete

Points out of 1.00

Which of the following is **not** true about compound microscopes and the dissecting microscope?

- a. The compound microscope has an inverted image whereas the dissecting microscope has the same orientation as the specimen.
- b. The highest magnification with the compound microscope can magnify to a higher power than a dissecting microscope during the histology lab.
- c. The compound microscope has discrete powers of magnification while the dissecting microscope has a continuous range of magnification.
- d. The compound microscope reflects light off the sample, whereas the dissecting microscope shines light through the sample.
- e. The compound microscope is used to observe thin slices of specimen while the dissecting microscope. does not necessarily need the samples to be thinly sliced in order to be viewed.

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

Which structure and function relationship does not make sense?

a. The skin tissue has large areas of empty space to allow efficient movement of fat tissue.
b. The web-like structure of neurons are dendrites and axons that function to transport electrical charge across the length of the neuron.
c. The open spaces in the lungs allows for efficient gas exchange.
d. The beating cilia on the inside layer of the trachea functions to prevent unwanted material from entering the lungs.
e. The holes observed on bone samples function to hold capillaries for nutrient transport.

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

Using the Sanger method for sequencing, _____ synthesis stops when _____ is reached.

a. RNA; any primer that begins with a purine base
b. DNA; a dideoxyribose base
c. DNA; a deoxyribonucleic acid
d. RNA; a deoxyribose base
e. RNA; any pyrimidine or purine base

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:

Question **75**

Complete

Points out of 1.00

Which of the following correctly describes a difference between Sanger sequencing and PCR?

a. Sanger sequencing does not involve the use of primer, while PCR does.
b. Sanger sequencing is in vitro DNA synthesis, while PCR is in vivo DNA synthesis.
c. Sanger sequencing is anabolic (synthesizing) process, while PCR is a catabolic (breaking down) process.
d. Sanger sequencing requires DNA polymerase, while PCR requires RNA polymerase.
e. DNA synthesis is terminated in Sanger sequencing by the addition of ddNTPs, while each newly synthesized PCR strand is terminated at the end of the template strand.

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:

Information

Use the figure below to answer the following questions.

For a larger view of the screenshot, click here.

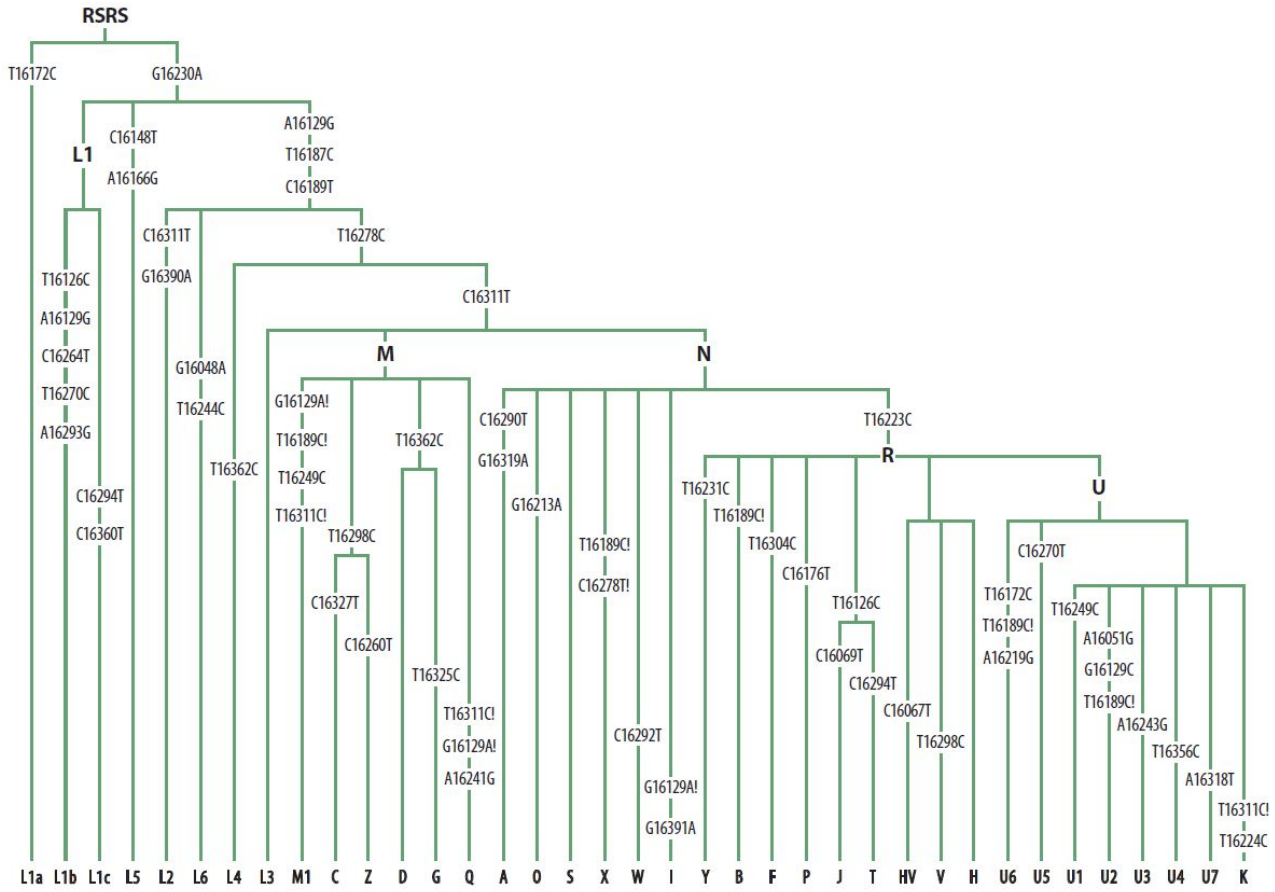


Figure I.3. mtDNA lineages. This map indicates existing mutations for each haplogroup as we move down the tree from the starting point at "RSRS." This map lists all mutations in the hypervariable region, which can help identify DNA having these mutations as belonging to a certain haplogroup. (Illustration by Ty Inhofor).

Question **77**

Complete

Points out of 1.00

Which of the following mutations is only found in Haplogroup F?

a. T16223C

b. G16230A

c. T16304C

d. A16129G

e. C16311T

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

Based on the phylogenetic tree above, which of the following haplogroups evolved first?

a. V

b. R

c. A

d. N

e. U

Question **80**

Complete

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: N is highest up (V, R, A, U all descend from it)

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