UCLA CCLE

Fall 2020 - LIFESCI7A-1 - MCEVOY / PIRES

Started on	Tuesday, 15 December 2020, 10:15 AM PST
State	Finished
Completed on	Tuesday, 15 December 2020, 1:14 PM PST
Time taken	2 hours 59 mins

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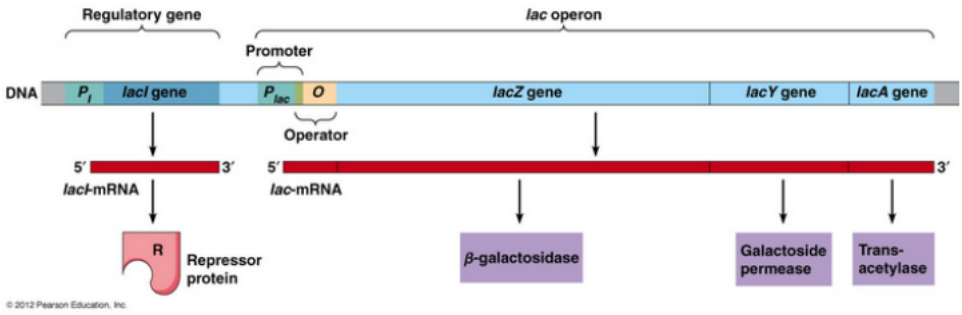
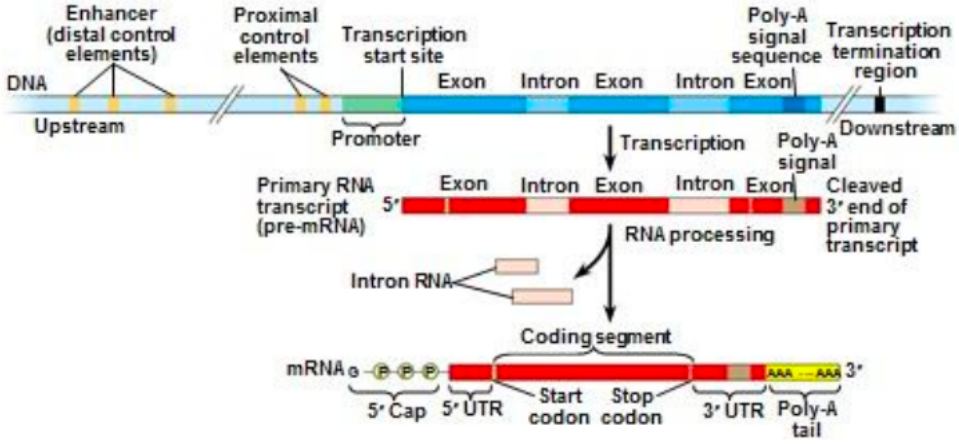
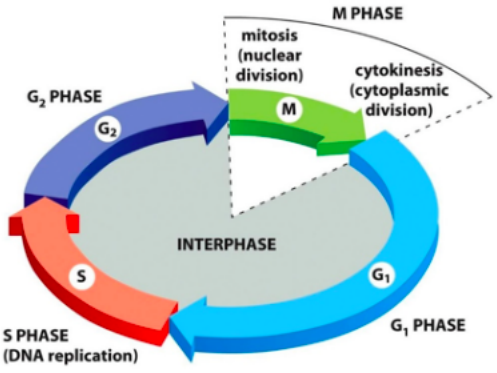
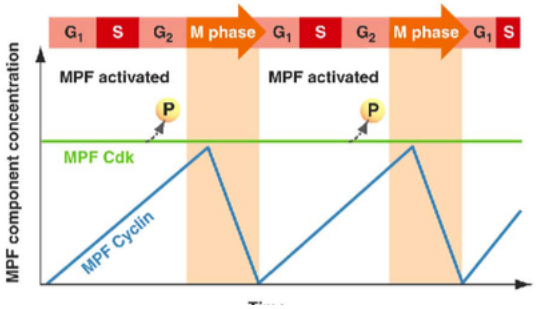
The following figures are for your reference during the exam.









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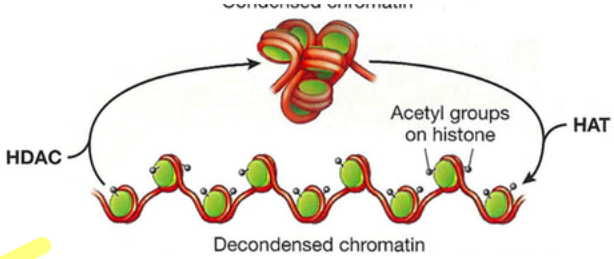

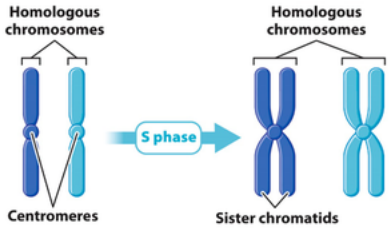

Solid answer key changes

Information

Bacteria contain many operons to control production of essential cellular components and metabolic proteins. You learned about the lac opero in class. A different bacterial operon controls the synthesis of the amino acid tryptophan, which is essential for bacterial survival. This operon i regulated by a repressor protein that can bind to an operator sequence to prevent transcription of the operon. Tryptophan binds to the repress to affect its activity: When enough tryptophan is present in the cell, tryptophan binds to the repressor and the operon stops being transcribed. For each of the following statements mark A for True or B for False.

Question **1**

Complete

Not graded

When tryptophan binds the repressor, the repressor binds the operator.

Select one:

- (•) True
- ( ) False

Question **2**

Complete

Not graded

When tryptophan binds the repressor it likely changes the tertiary structure of the repressor.

Select one:

- (•) True
- ( ) False

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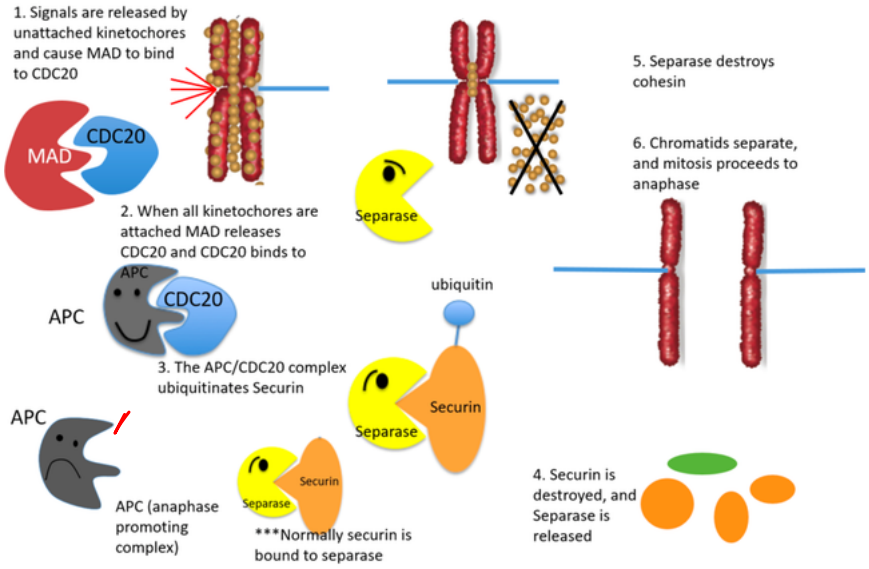
A cell is paused in metaphase because one chromatid has not attached to a spindle fiber. For each of the following statements mark A for True B for False.



Question 3
Complete
Not graded

group says true

Securin will be released from separase.

Select one:
- True
- False

actually false according to answer key

a spindle fiber has not attached thus securin will not be released

eventually it will be released

Question 4
Complete
Not graded

A loss of function mutation in MAD could result in premature entry into anaphase.

Select one:
- True
- False

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Complete

Not graded

#5

A loss of function mutation in APC could result in premature exit from metaphase.

Select one:

- True
- False

Question 6

Complete

Not graded

group says

APC is a proto-oncogene.

Anaphase promoting complex? Isn't everything a proto-oncogene until a mutation arises?

Select one:

- True
- False

APC is classified as a tumor-supressor

Question 7

Complete

Not graded

A loss of function mutation in the APC/CDC20 complex would result in increased destruction of cohesin.

Select one:

- True
- False

it would be a gain-of-Function to increase the destruction of cohesin bc it wouldn't be able to ubiquinate securin for the liberation of seperase to destroy cohesin

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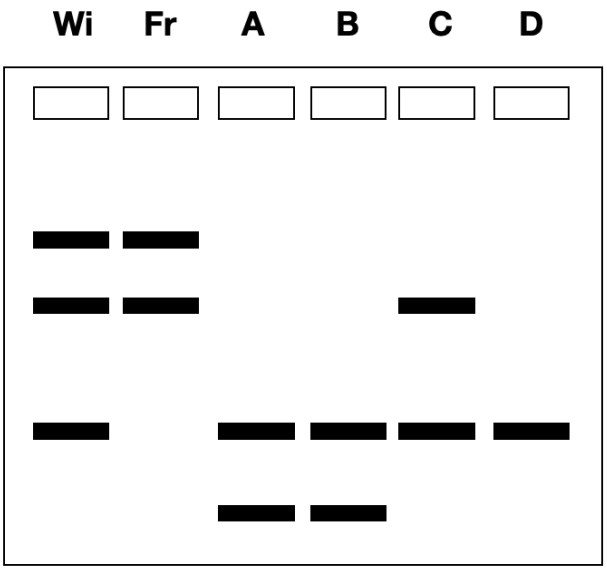
Your friend's car was broken into, and as a budding molecular biologist, you decide to use DNA evidence to help them find the culprit. First, yo collect DNA from the window of your friend's car and use PCR to amplify a specific variable number tandem repeat (VNTR) locus. Your results shown on the gel below in the lane labeled Wi. You figure that some of the DNA on the car window probably belongs to your friend, so you alsc collect a sample of their DNA and amplify the same VNTR locus (results labeled 'Fr' on the gel below). Finally, you collect DNA samples from fc suspects (A, B, C, and D), and use PCR to amplify the same VNTR locus. You run all of your samples on a DNA gel and obtain the results showı below. The DNA from the window may include bands from your friend (Fr) as well as those from the suspects (A, B, C, D).



Question 8
Complete
Not graded

There are four different alleles shown on this gel.

Select one:
- True
- False

Question 9
Complete
Not graded

All of the individuals analyzed for this VNTR are heterozygous.

Select one:
- True
- False

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Complete

Not graded

Based on this data, it is possible that suspect C could have been the person who broke into your friend's car.

Select one:

- True
- False

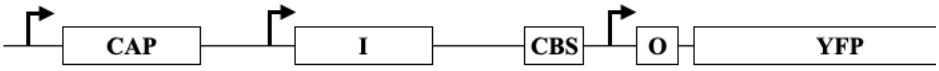
Information

A strain of *E. coli* is genetically engineered so that the gene for *lacZ* on the chromosomal copy of the lac operon has been replaced with a ge that encodes blue fluorescent protein (BFP). The same strain has also been engineered to include a plasmid with a copy of the *lac* operon. In this copy of the *lac* operon, the gene for *lacZ* has been replaced with a gene that encodes yellow fluorescent protein (YFP). A diagram showi the *lac* operon elements included in the chromosome and plasmid DNA is included below for reference. Underneath this diagram is a table showing the color a bacterium would appear if it expressed different amounts of blue and/or yellow fluorescent protein. Use the answer choices to explain what color the bacteria will appear in each scenario described below. Note that the haplotypes of the chromosome and plasmid DNA may change from one question to the next.

CAP = Catabolite Activator Protein. I = LacI. CBS = CAP binding site. O= LacO. Arrows represent promoters.

Chromosome:

Plasmid:



	No Yellow	Low Yellow	High Yellow
No Blue	Colorless	Dull yellow	Bright yellow
Low Blue	Dull blue	Dull green	Lime
High Blue	Bright blue	Teal	Bright green

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Complete

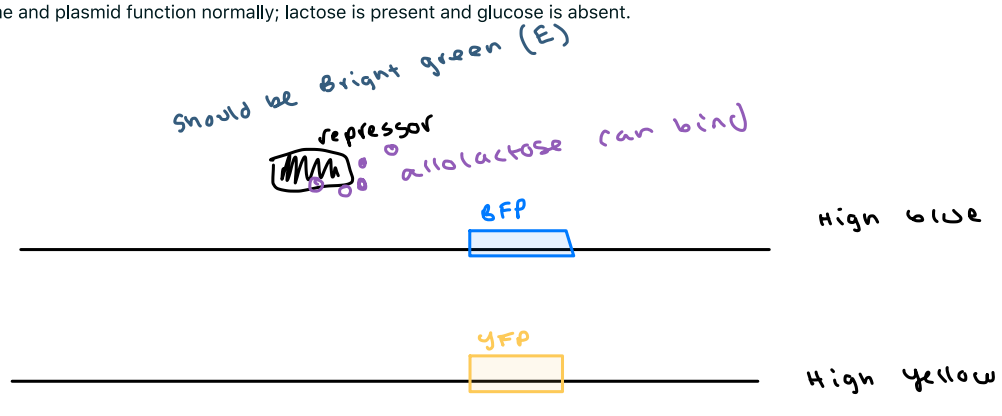
Not graded

✗ 11

All components of the chromosome and plasmid function normally; lactose is present and glucose is absent.

Select one:

- a. Dull green
- b. Dull blue
- c. Bright yellow
- d. Teal
- e. Bright green
- f. Dull yellow
- g. Colorless
- h. Lime
- i. Bright blue



Question 12

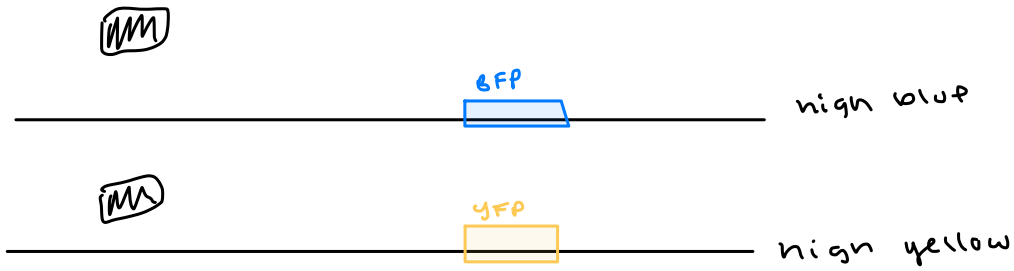
Complete

Not graded

Both copies of *lacI* are mutated such that they produce nonfunctional repressor; lactose and glucose are both absent.

Select one:

- a. Bright green
- b. Colorless
- c. Dull blue
- d. Bright yellow
- e. Bright blue
- f. Lime
- g. Teal
- h. Dull yellow
- i. Dull green



if both plasmid + chromosome have a non functional repressor → transcription should occur w/o anything

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Complete

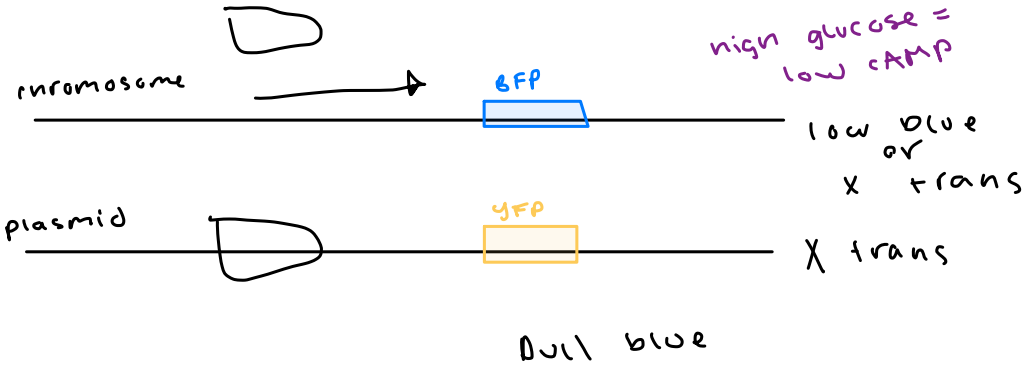
Not graded

Question 13

The chromosomal copy of *lacI* is mutated such that it produces a nonfunctional repressor; lactose is absent and glucose is present at high leve in the cell.

Select one:

- a. Colorless
- b. Bright yellow
- c. Bright green
- d. Lime
- e. Teal
- f. Dull green
- g. Dull blue
- h. Dull yellow
- i. Bright blue



Question 14

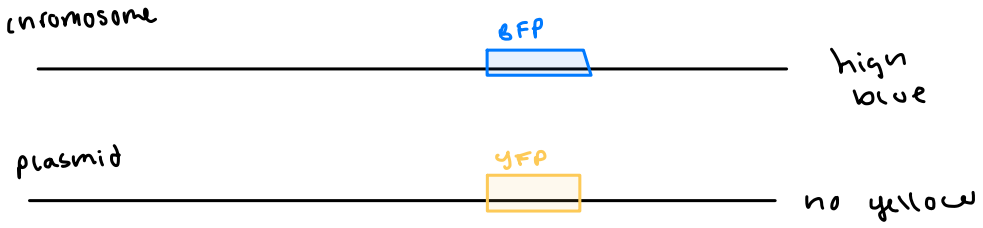
Complete

Not graded

The chromosomal copy of *lacO* is mutated such that the repressor cannot bind; lactose and glucose are both absent.

Select one:

- a. Dull blue
- b. Bright yellow
- c. Bright green
- d. Dull yellow
- e. Dull green
- f. Lime
- g. Bright blue
- h. Colorless
- i. Teal



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Complete

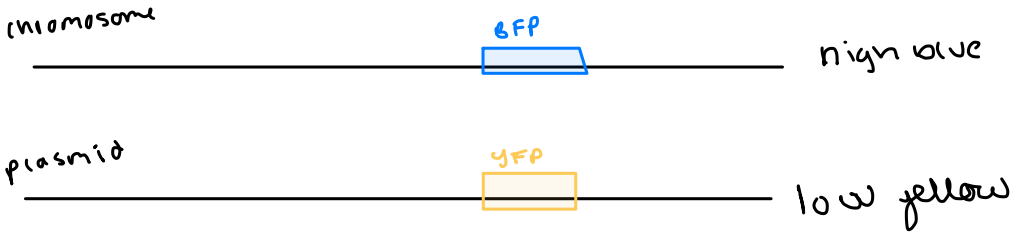
Not graded

#15

The chromosomal copy of *lacO* is mutated such that the repressor cannot bind and the plasmid copy of CAP is nonfunctional; lactose is preser and glucose is absent.

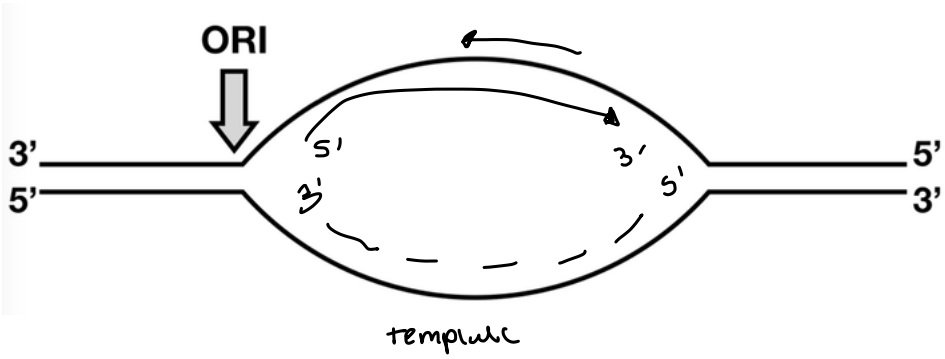
Select one:

- a. Teal
- b. Dull yellow
- c. Dull green
- d. Bright green
- e. Dull blue
- f. Bright yellow
- g. Bright blue
- h. Colorless
- i. Lime



Information

The diagram below represents the replication bubble that has formed at a unidirectional origin of replication. Unidirectional replication only proceeds in one direction along the chromosome. The arrow shows where replication first began (ORI). Use the diagram to answer the questio below.



Question 16

Complete

Not graded

The lagging strand is the daughter strand that has its _____ end pointed toward the origin of replication and is therefore synthesized _____.

Select one:

- a. 3′; in a series of segments (Okazaki fragments)
- b. 5′; in a series of segments (Okazaki fragments)
- c. 3′; continuously
- d. 5′; continuously

Origin of Replication on the left

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Complete

Not graded

Where does lagging strand synthesis occur in this replication bubble?

Select one:

- a. Bottom strand only
- b. Top strand only
- c. Both strands

Question 18

Complete

Not graded

Helicase will be found on which side(s) of this replication bubble?

Select one:

- a. Both sides
- b. The left side
- c. The right side

Question 19

Complete

Not graded

After DNA replication occurs, you expected to see two whole daughter strands, but instead you notice that there are many DNA fragments. Which part of the DNA machinery could be mutated in your cells to produce this result?

Select one:

- a. Helicase
- b. Ligase
- c. DNA polymerase
- d. RNA polymerase

Question 20

Complete

Not graded

What would happen if the replication machinery encountered a missense mutation in a gene?

Select one:

- a. Replication would stop on both strands
- b. Replication would stop on one strand only
- c. Replication would proceed normally

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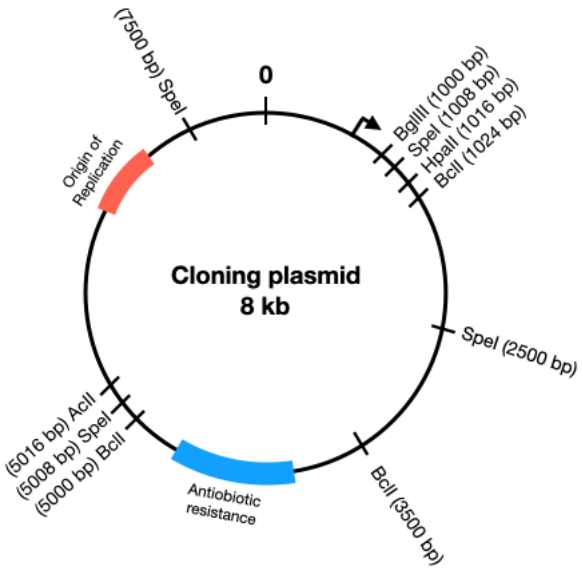
The diagram below shows the location of several restriction enzyme cut sites in a plasmid you are using to create recombinant DNA. The bacterial promoter is indicated by an arrow, and an antibiotic resistance marker and origin of replication are indicated on the plasmid. The sequence of each cut site is also provided, where / indicates the location where the enzyme cleaves the DNA backbone.



Enzyme name	Cut site
BglIII	5' A/GATCT 3'
AclI	5' AA/CGTT 3'
HpaII	5' C/CGG 3'
SpeI	5' A/CTAGT 3'
BclI	5' T/GATCA 3'

Question **21**

Complete

Not graded

Suppose you cut your plasmid with BglII but the DNA you wish to insert into the plasmid has no BglII cut sites. Which of the following enzymes could you use to cut the DNA so that it has compatible sticky ends with the plasmid cut with BglII?

Select one:

- a. AclI
- b. HpaII
- c. SpeI
- d. BclI
- e. None of the above

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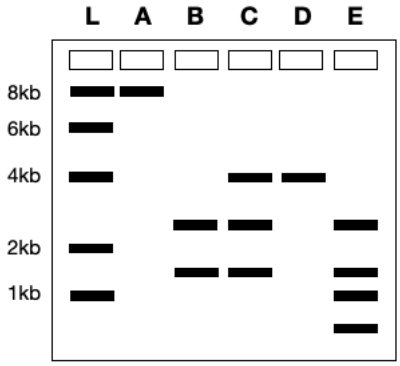
Refer to the Plasmid shown above. You cut the plasmid with different restriction enzymes and then run the results on a gel. The leftmost lane marked L contains a DNA ladder to indicate where different sizes of DNA would show up on the gel. For each experiment described below, determine which gel lane [A-E] represents the results you would expect to see. Each answer choice may be used more than once or not at all. Note that for this problem, it is not possible to determine the relative amount of DNA in each band on the gel; you should consider each band a either present or absent in your results.



Question 22

Complete

Not graded

Cut with SpeI

Select one:

- a. None of these
- b. Lane B
- c. Lane A
- d. Lane E
- e. Lane C
- f. Lane D

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Complete

Not graded

#23

Cut with AclI

Select one:

- a. Lane A
- b. None of these
- c. Lane C
- d. Lane B
- e. Lane E
- f. Lane D

Question **24**

Complete

Not graded

Cut with HpaII and AclI.

Select one:

- a. Lane B
- b. Lane A
- c. Lane E
- d. Lane D
- e. None of these
- f. Lane C

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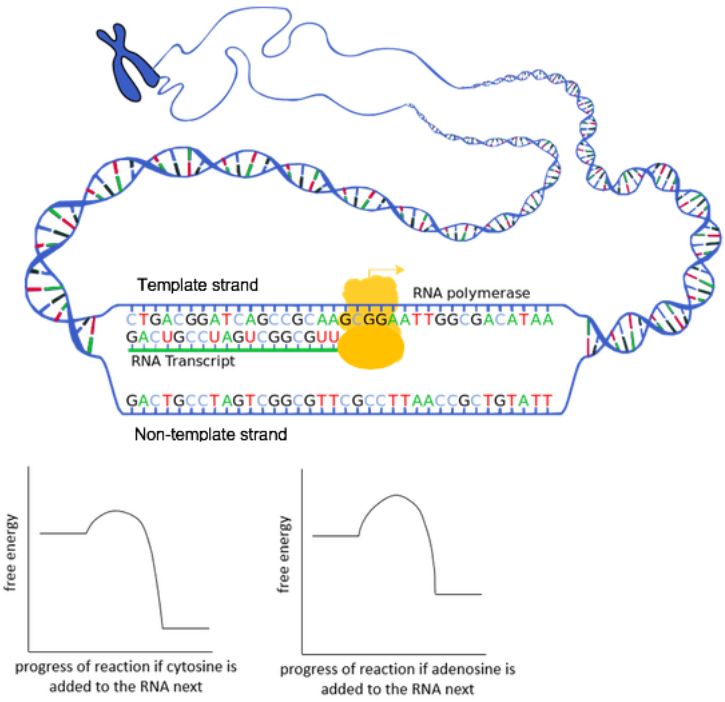
This diagram shows RNA polymerase synthesizing an RNA transcript. At the point shown in the diagram, RNA polymerase is about to add a ribonucleotide complementary to a guanine nucleotide in the DNA template.

Two hypothetical free energy diagrams for this reaction are also shown (you may need to scroll down). You may assume the y-axes of the two diagrams are the same scale. Use the following answer choices [A, B, or C] to answer the questions.



Question **25**

Complete

Not graded

The rate at which RNA polymerase catalyzes the addition of adenosine into the RNA is _____ the rate at which RNA polymerase catalyzes the addition of cytosine into the RNA.

Select one:

- a. Greater than
- b. The same as
- c. Less than

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Complete

Not graded

26

The amount of free energy released when adenosine is added to the RNA is _____ the amount of free energy released when cytosine is adde to the RNA.

Select one:

- a. Less than
- b. Greater than
- c. The same as

Question 27

Complete

Not graded

The change in free energy (ΔG) for adding adenosine to the RNA when RNA polymerase is present is _____ the ΔG for adding adenosine to tl RNA when RNA polymerase is not present.

Select one:

- a. Less than
- b. Greater than
- c. The same as

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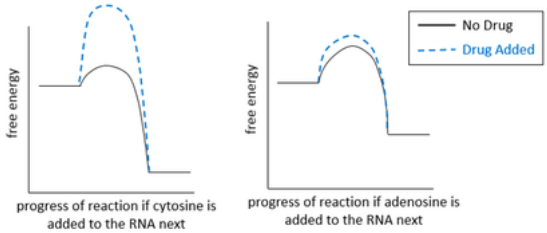
This diagram shows RNA polymerase synthesizing an RNA transcript. At the point shown in the diagram, RNA polymerase is about to add a ribonucleotide complementary to a guanine nucleotide in the DNA template.

Now you add a drug to the reaction. This drug interacts with RNA polymerase and changes its activity as shown in the diagrams. You may assume the y-axes of the two diagrams are the same scale.



Question **28**

Complete

Not graded

The drug could be decreasing the activity of RNA polymerase.

Select one:

- True
- False

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Complete

Not graded

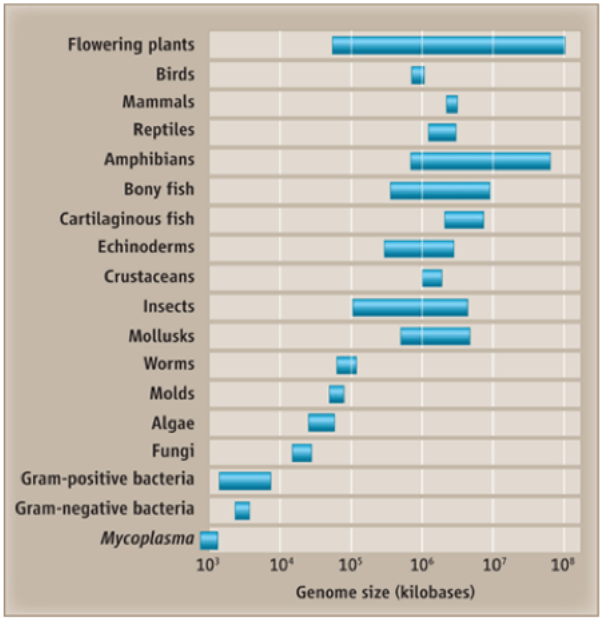
The drug could make RNA polymerase more likely to produce errors during transcription of this gene.

Select one:

- True
- False

Information

The diagram below shows genome size ranges for several taxonomic groups. Use this diagram to answer the following questions.



Question **30**

Complete

Not graded

On average, crustaceans have larger genomes than birds.

Select one:

- a. Refuted by the data
- b. More information is needed
- c. Supported by the data

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Complete

Not graded

31

On average, algae have fewer genes than crustaceans.

Select one:

- a. Supported by the data
- b. Refuted by the data
- c. More information is needed

Question 32

Complete

Not graded

Gram-positive bacteria have a wider range of genome sizes than mammals.

Select one:

- a. Neither supported nor refuted (more information is needed)
- b. Rejected by the data
- c. Supported by the data

Information

Several scenarios are described in the questions below. For each scenario, determine whether or not the change described would contribute t uncontrolled cell division (i.e., cancer). Answer choices [A or B] may be used more than once or not at all.

Question 33

Complete

Not graded

A mutant CDK that is active in the absence of its cyclin binding partner.

Select one:

- a. This would not contribute to uncontrolled cell division
- b. This would contribute to uncontrolled cell division

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Complete

Not graded

#34

A defective cyclin that cannot bind to its CDK.

Select one:

- a. This would not contribute to uncontrolled cell division
- b. This would contribute to uncontrolled cell division

Question 35

Complete

Not graded

A loss of function mutation in an enzyme that is normally needed for microtubule synthesis/polymerization.

Select one:

- a. This would not contribute to uncontrolled cell division
- b. This would contribute to uncontrolled cell division

Information

You are planning to use PCR to amplify several regions of a piece of DNA. The sequence of your template DNA is provided below along with th sequences of all of your available primers (P1-P4). Determine where each primer binds to the template sequence and then answer the questio below.

complementary to primer 4

```
5’ AGTTGGCCATGAGATGATTTGACAGCTGCCGATAACCGGATAG 3’
3’ TCAACCGGTACTCTACTAAACTGTCGACGGCTATTGGCCTATC 5’

Primer P1:  5’ TTGGCC 3’
Primer P2:  5’ GTCAAA 3’
Primer P3:  5’ AACCGG 3’
Primer P4:  5’ CCGGTT 3’
```

Question 36

Complete

Not graded

Primer P1 can bind to the top strand of the DNA molecule shown above.

Select one:

- True
- False

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Complete

Not graded

#37

X Primer P4 can bind to the DNA molecule at more than one location.

Select one:

- True
- False

Question 38

Complete

Not graded

Refer to the template and primers P1-P4 above. Which primer pair would you use to successfully amplify a double-stranded PCR fragment (of any size) from this template?

Select one:

- a. More than one of these primer sets
- b. P2 and P3
- c. P2 and P4
- d. P3 and P4
- e. P1 and P2
- f. P1 and P4

Question 39

Complete

Not graded

Refer to the sequences for primers P1-P4 above. Which primer has the lowest melting temperature?

Select one:

- a. Primer P2
- b. Primer P1
- c. Need more information
- d. Primer P3
- e. Primer P4

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Complete

Not graded

#40

You have selected your two primers and added all of the PCR components to a test tube. Use the answer choices [A-C] to explain what will happen as the polymerase chain reaction proceeds. Answers may be used more than once or not at all.

The concentration of deoxynucleoside triphosphates (dNTPs) _____ as the reaction proceeds.

fac

Select one:

- a. Increases
- b. Stays the same
- c. Decreases

Question **41**

Complete

Not graded

You have selected your two primers and added all of the PCR components to a test tube. Use the answer choices to explain what will happen a the polymerase chain reaction proceeds. Answers may be used more than once or not at all.

The concentration of Taq DNA polymerase _____ as the reaction proceeds.

Polymerase is heat resistant

Select one:

- a. Stays the same
- b. Increases
- c. Decreases

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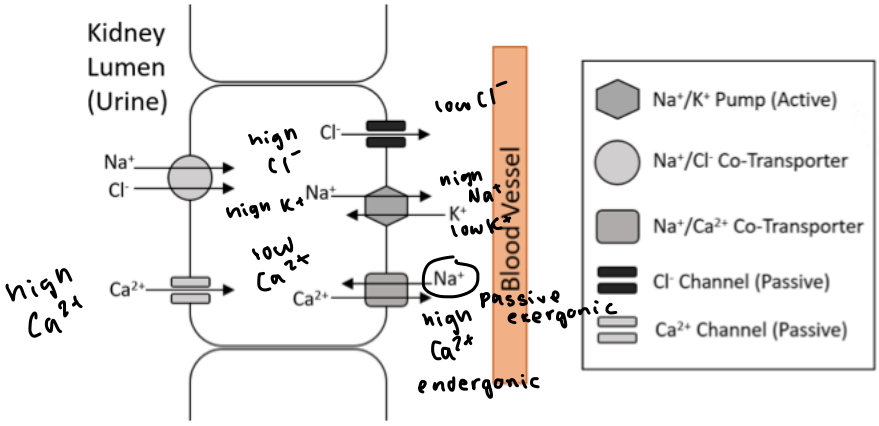
Special cells in your kidneys are constantly transporting molecules across their membranes to adjust the ionic composition of your urine. A diagram of one of these kidney cells is shown below. The Co-Transporters are examples of secondary active transport and the Na^+/K^+ Pump is primary active transporter. Use this diagram to answer the following questions.



Question **42**

Complete

Not graded

Movement of Ca^{2+} out of the cell through the Na^+/Ca^{2+} channel is an exergonic process.

passive = exergonic
active = endergonic

Select one:

- True
- False

Question **43**

Complete

Not graded

The concentration of Cl- is lower inside the cell than outside the cell.

Select one:

- True
- False

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Complete

Not graded

* 44

If the Na+/K+ Pump stopped working, the concentration of Ca2+ outside the cell would eventually decrease.

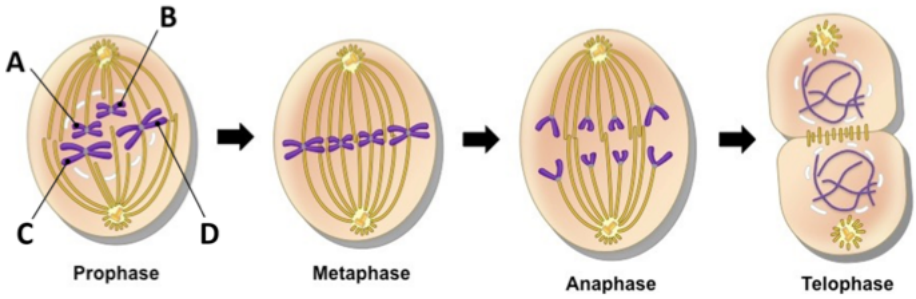
Select one:

True

False

Information

You are studying a diploid cell that has a total of 4 chromosomes (labeled A-D in the diagram below). This cell's genome contains several prote coding genes including a gene called LS7. The diagram below shows this cell undergoing the process of cell division (M phase).



Question **45**

Complete

Not graded

X

Chromosomes A and D are homologous chromosomes.

Select one:

True

False

Question **46**

Complete

Not graded

X

During metaphase this cell contains four sister chromatids.

Select one:

True

False

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Complete

Not graded

#47

X

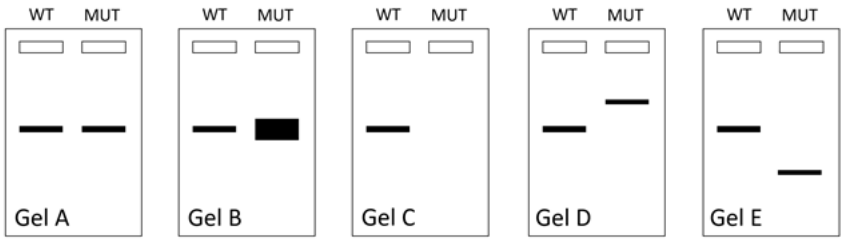
During anaphase this cell contains two copies of the LS7 gene.

Select one:

- True
- False

Information

You are studying a human gene found on Chromosome 9. Each of the questions below describes a different mutation that could affect the structure and/or expression of this gene. Determine which RNA gel below [A, B, C, D, or E] you would be most likely to observe as a consequer of each mutation. On each gel, "WT" is the mature mRNA produced by normal wild type cells and "MUT" is the mature mRNA produced by mutated cells. Answers may be used more than once or not at all.



Question **48**

Complete

Not graded

Gel that would result from a mutation that decreases methylation of a CpG island in the promoter of this gene.

X

Select one:

- a. A
- b. B
- c. C
- d. D
- e. E

less meth = produce more copies

UCLA CCLE

Complete

Not graded

B49

Gel that would result from a nonsense mutation in this gene.

Select one:

- a. C
- b. A
- c. E
- d. B
- e. D

Darren said A

not a protein gel

a nonsense mutation changes the sequence but not the length of mRNA

Question **50**

Complete

Not graded

Gel that would result from a frameshift mutation in this gene.

Select one:

- a. C
- b. E
- c. A
- d. D
- e. B

A because its a gel for mRNA not for protein

*accepted A, D, or E

Question **51**

Complete

Not graded

Gel that would result from a mutation that inactivates the histone deacetylases (HDACs) that regulate expression of this gene.

Select one:

- a. B
- b. D
- c. A
- d. E
- e. C

UCLA CCLE

Complete

Not graded

#52

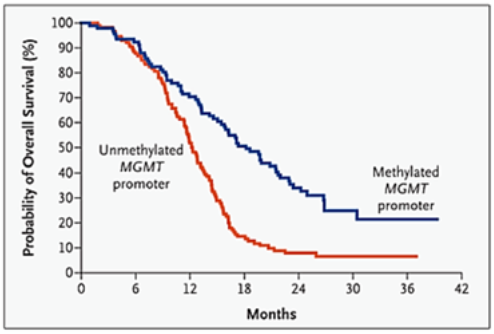
Athletes eat large meals containing carbohydrate and fat when they are in training but their body weight (mass) remains nearly constant. Whic of the following statements correctly describes what happens to most of the mass consumed?

Select one:

- a. It is converted to energy.
- b. It is released as carbon dioxide and water.
- c. It is converted into adenosine triphosphate (ATP).

Information

A group of doctors discovered that the expression of a gene called MGMT can change how some cancer patients respond to treatment. The graph below shows the probability of overall survival for a group of cancer patients who either have methylated DNA at the MGMT promoter or unmethylated DNA at the MGMT promoter. Use the graph below and your knowledge of gene expression to answer the following questions.



Question **53**

Complete

Not graded

Patients with methylated MGMT promoter have approximately a 50% chance of surviving 18 months.

Select one:

- True
- False

UCLA CCLE

Complete

Not graded

#54

Histone proteins found near the unmethylated MGMT promoter are likely to be acetylated.

Select one:

- True
- False

Question **55**

Complete

Not graded

Patients are less likely to survive longer if their cells express MGMT.

Select one:

- True
- False

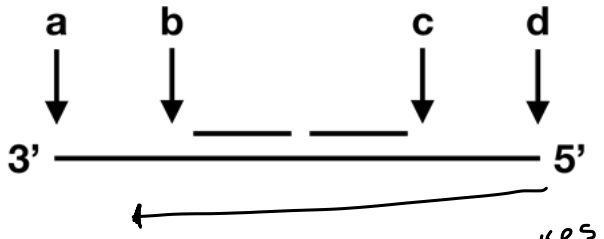
Question **56**

Complete

Not graded

X

Shown below is a long template strand of DNA where lagging strand DNA synthesis is occurring. The short horizontal lines represent two Okaz fragments that have already been made. In the context of the replication fork, select the letter that indicates where primase will synthesize the next RNA primer.



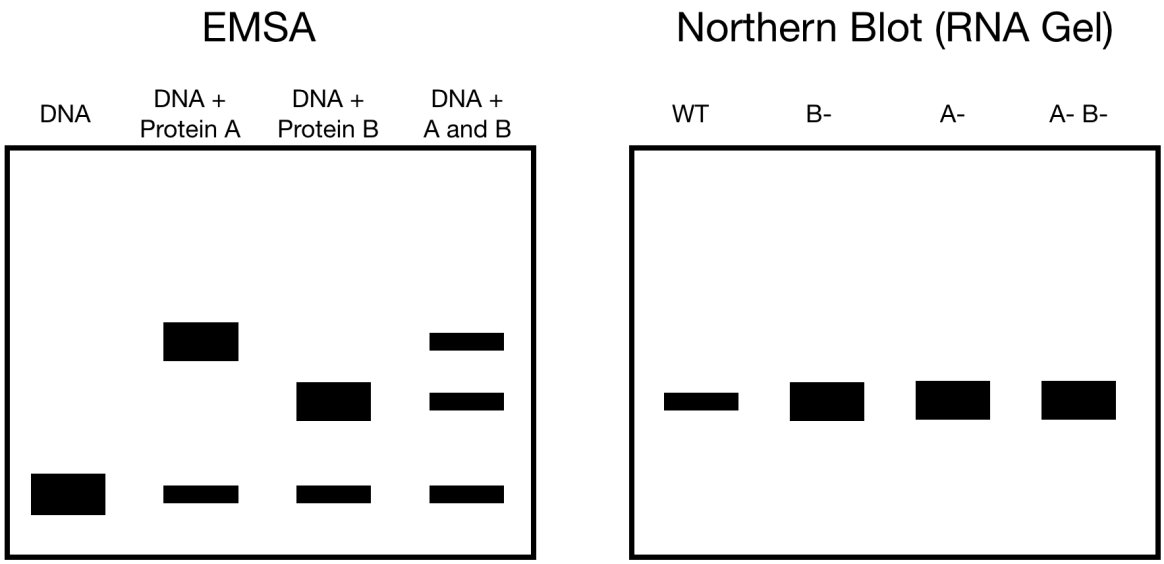
Primase makes it at the 3' end, to be synthesized

Select one:

- a. Position a
- b. Position b
- c. Position c
- d. Position d

UCLA CCLE

You are studying two proteins (Protein A and Protein B) that you think are involved in regulating your favorite gene. You collect the gel shift (EMSA) and Northern Blot (RNA Gel) data shown below. For the EMSA experiment you use DNA from the promoter region of your favorite gene For the Northern Blot (RNA Gel) you use a probe that hybridizes with your favorite gene. Use these experimental results to answer the followin questions. On the Northern Blot (RNA Gel), each lane indicates the WT cell or a mutation made in one or both of the proteins you are studying that makes them nonfunctional.



Question **57**
Complete
Not graded

Both Proteins A and B inhibit transcription.

Select one:
- True
- False

more expressed when there is more of a mutation

Question **58**
Complete
Not graded

Protein B could be a HAT.

Select one:
- True
- False

Protein B is probably an HDAC because it's more expressed on the northern blot gel

UCLA CCLE

Complete

Not graded

#59

Protein A and Protein B do not both bind the same piece of DNA.

Select one:

accepted either

True

False

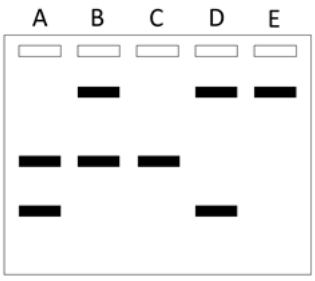
Information

The gel below shows the VNTR results from a PCR of a single region in humans. The sequences of three alleles for this region (A1, A2, and A3) are shown below.

A1 5' – GCCATATTTACGTACGTACGTACGTACGTACGTACGTGGCCTAATG – 3'

A2 5' – TTTACGTACGTACGTACGTACGTACGTACGTACGTACGTACGTGGC – 3'

A3 5' – TATTGCCATATTTACGTACGTACGTACGTACGTACGTGGCCTAATGTTGA – 3'



Question **60**

Complete

Not graded

How many tandem repeats are present in allele A2?

Select one:

a. 3

b. 4

c. 5

d. 6

e. None of the above

UCLA CCLE

Complete

Not graded

Which gel lane would be consistent with results for an individual heterozygous for A1/A2.

Select one:

- a. B
- b. C
- c. E
- d. A
- e. D

Question 62

Complete

Not graded

Which gel lane would be consistent with results for an individual homozygous for A1?

Select one:

- a. B
- b. E
- c. C
- d. A
- e. D

Information

Twice this quarter you explored the human genome browser. A representation of the gene model for a gene (Gene X) as viewed in the genome browser is shown below. The chromosome can be assumed to extend to the left and the right beyond the ends of the diagram. Different regior of the gene model are indicated by arrows and labeled with letters. Use the answer choices [A-F] and the diagram to answer the following questions. Answer choices may be used more than once or not at all.

UCLA CCLE

Complete

Not graded

X G3

How many introns does Gene X contain?

- a. 5
- b. 2
- c. 4
- d. 7
- e. 6

Question 64

Complete

Not graded

Where would you expect to find the promoter for Gene X?

- a. B
- b. D
- c. F
- d. E
- e. C
- f. A

Question 65

Complete

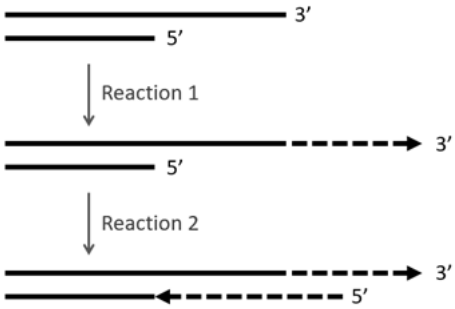
Not graded

Where would you find the stop codon for Gene X?

- a. B
- b. D
- c. C
- d. A
- e. E
- f. F

UCLA CCLE

Telomeres are at the end of linear chromosomes, and have a characteristic repeat sequence (5′-TTAGGG-3′). The schematic at right represent the process by which telomerase helps extend the end of a linear chromosome. Indicate whether the following statements are True or False.



Question **66**

Complete

Not graded

Telomerase extends the template for the lagging strand.

Select one:

- True
- False

Question **67**

Complete

Not graded

X

T/F: If a chromosome has telomeres, no overhangs will be present on the leading or lagging strand after a round of DNA replication.

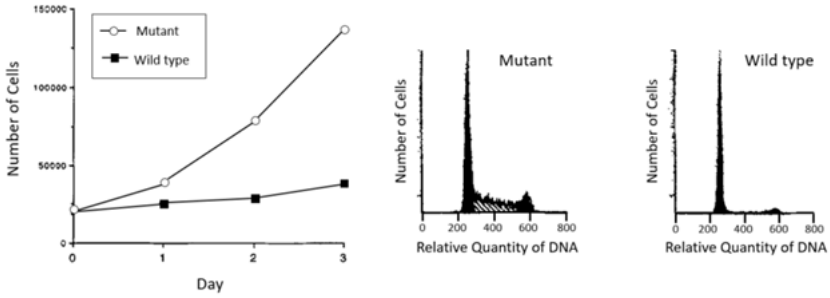
Select one:

- True
- False

some overhang

UCLA CCLE

You are studying a protein that you believe plays a role in DNA repair and cell cycle regulation. You have cells in the lab that contain either a wil type (normal) version of the protein or an extraordinarily active (mutant) version of the protein. You conduct the following experiment: you exp both the normal and mutant cells to gamma rays, which causes severe DNA damage, and then measure the growth and DNA content of the ce You obtain the results shown in the graphs below. Use these results to answer the following questions.



Question **68**

Complete

Not graded

Mutant cells divide less rapidly than wild type cells.

Select one:

- True
- False

Question **69**

Complete

Not graded

Mutant cells are less likely than wild type cells to be found in G2 phase.

Select one:

- True
- False

go back to clicker question

Question **70**

Complete

Not graded

Mutant cells are more likely than wild type cells to develop new mutations.

Select one:

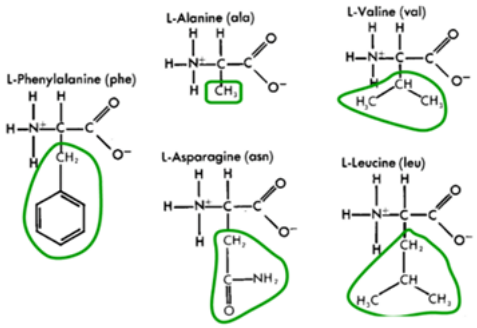
- True
- False

UCLA CCLE

Complete

Not graded

Which one of the following amino acid R groups is most likely to participate in hydrogen bonding with water?



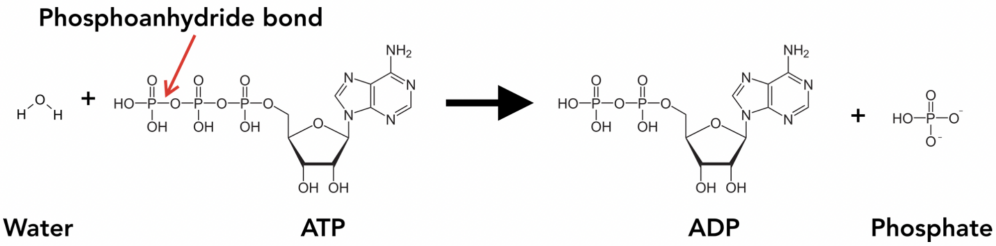
#71

Select one:

- a. Alanine
- b. Asparagine
- c. Leucine
- d. Phenylalanine
- e. Valine

Information

The following diagram shows the ATP hydrolysis reaction. During ATP hydrolysis, the phosphoanhydride bond shown is broken, resulting in the production of ADP and inorganic phosphate.



You have two hypotheses about this reaction:

(1) The hydrolysis of ATP has a positive standard free energy change (ΔG^0)

(2) The hydrolysis of ATP has a negative standard free energy change (ΔG^0)

To try and distinguish between your hypotheses, you make some observations about this reaction. For questions 29-32, determine whether ea observation is consistent with hypothesis 1 only, hypothesis 2 only, or both hypothesis 1 and hypothesis 2.

UCLA CCLE

Complete

Not graded

#72

Observation 1: The hydrolysis of ATP can occur spontaneously in a cell.

It can occur spontaneously even if it's endergonic

Select one:

- a. This observation is consistent with hypothesis 1 only.
- b. This observation is consistent with hypothesis 2 only.
- c. This observation is consistent with both hypothesis 1 and hypothesis 2.

Question **73**

Complete

Not graded

Observation 2: Energy is released during the formation of new bonds in ADP and inorganic phosphate.

Select one:

- a. This observation is consistent with hypothesis 1 only.
- b. This observation is consistent with both hypothesis 1 and hypothesis 2.
- c. This observation is consistent with hypothesis 2 only.

Question **74**

Complete

Not graded

Observation 3: The standard enthalpy change (ΔH^0) for ATP hydrolysis is negative.

Select one:

- a. This observation is consistent with both hypothesis 1 and hypothesis 2.
- b. This observation is consistent with hypothesis 2 only.
- c. This observation is consistent with hypothesis 1 only.

We don't know the ΔS

Question **75**

Complete

Not graded

Observation 4: The standard entropy change (ΔS^0) for ATP hydrolysis is +22, and the standard enthalpy change (ΔH^0) for ATP hydrolysis is -1

Select one:

- a. This observation is consistent with hypothesis 2 only.
- b. This observation is consistent with both hypothesis 1 and hypothesis 2.
- c. This observation is consistent with hypothesis 1 only.

UCLA CCLE

Complete

Not graded

#76

Which of the above observations allows you to distinguish between your two hypotheses?

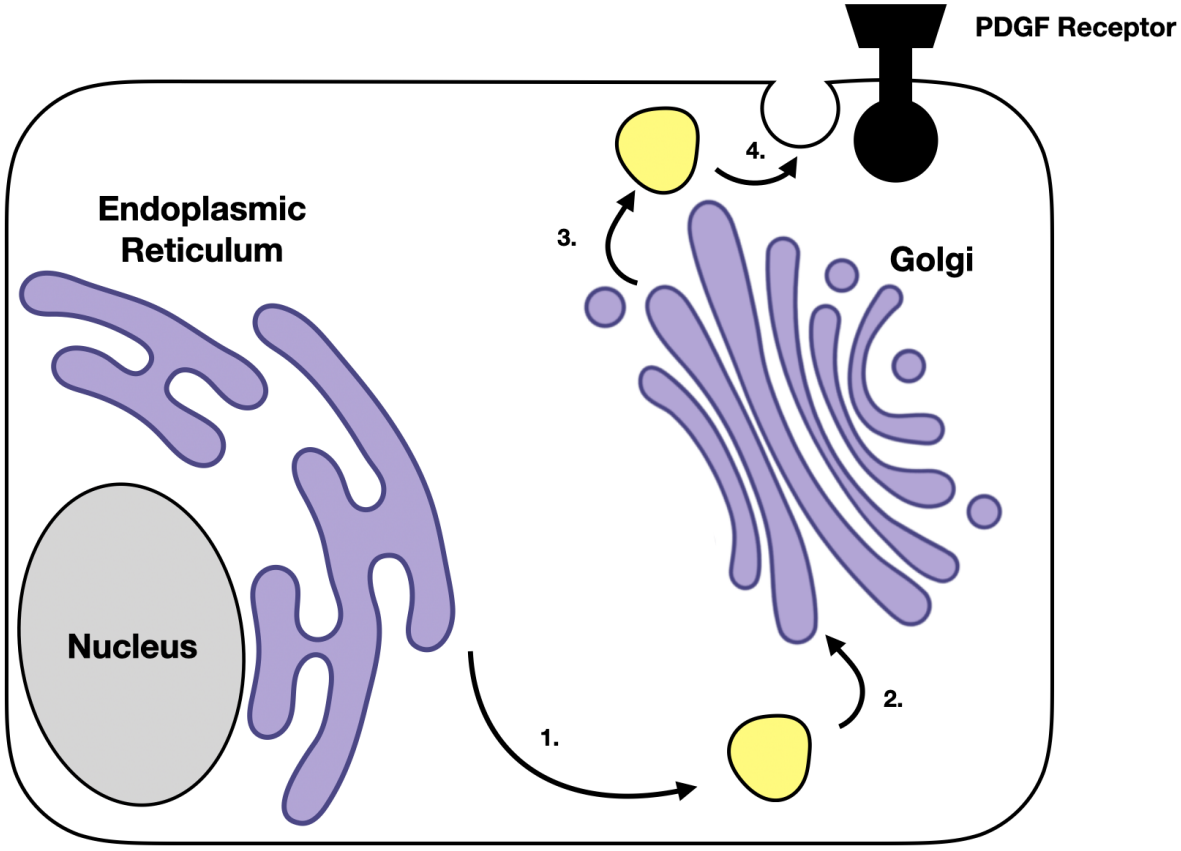
Select one:

- a. None of these
- b. Observation 3
- c. Observation 2
- d. Observation 4
- e. Observation 1

you need to know the ΔS And ΔH

Information

Platelet-derived growth factor (PDGF) is a small molecule signal that binds to the surface of cells and subsequently promotes cell growth and division. To respond to the PDGF signal, cells must express a PDGF receptor on their cell surface in a specific orientation. The diagram below shows the process of protein trafficking in the endomembrane system. The PDGF receptor is shown on the cell surface, with its receptor domain facing outward and its signaling domain facing inward. Use this information to answer the following questions.



UCLA CCLE

Complete

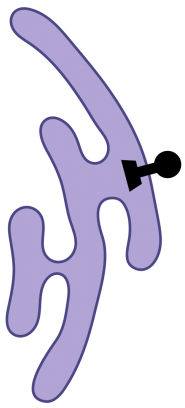
Not graded

#77

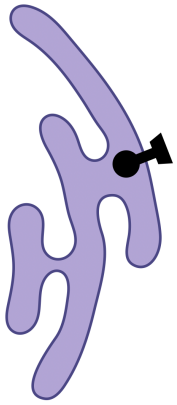
Which of the following images correctly depicts the configuration of the PDGF Receptor protein in relation to the endoplasmic reticulum follow translation?

X

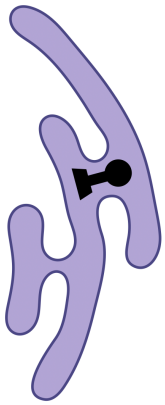
A.



B.



C.



Select one:

- Image C
- Image A
- Image B
- None of these

Question **78**

Complete

Not graded

X

T/F: A ribosome initially became bound to the mRNA encoding PDGF Receptor in the cytosol.

Select one:

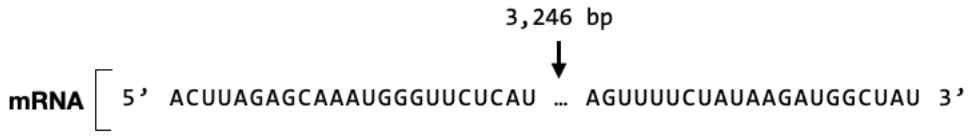
- a. False
- b. True

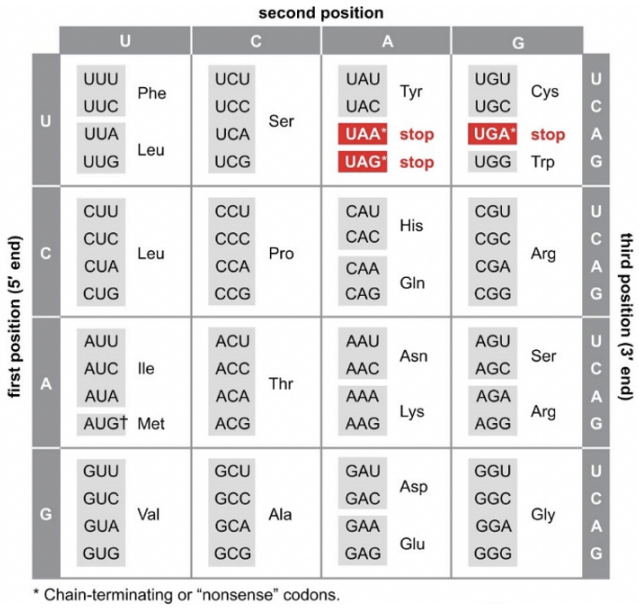
UCLA CCLE

Complete

Not graded

The sequence for the mature PDGF Receptor mRNA is shown below. The three dots in the middle of the sequence indicate that there are an additional 3,246 base pairs in the middle of this RNA sequence that are not shown here, which can be assumed to not contain any stop codo Based on this image, how many total amino acids would you find in the PDGF Receptor protein?





#79

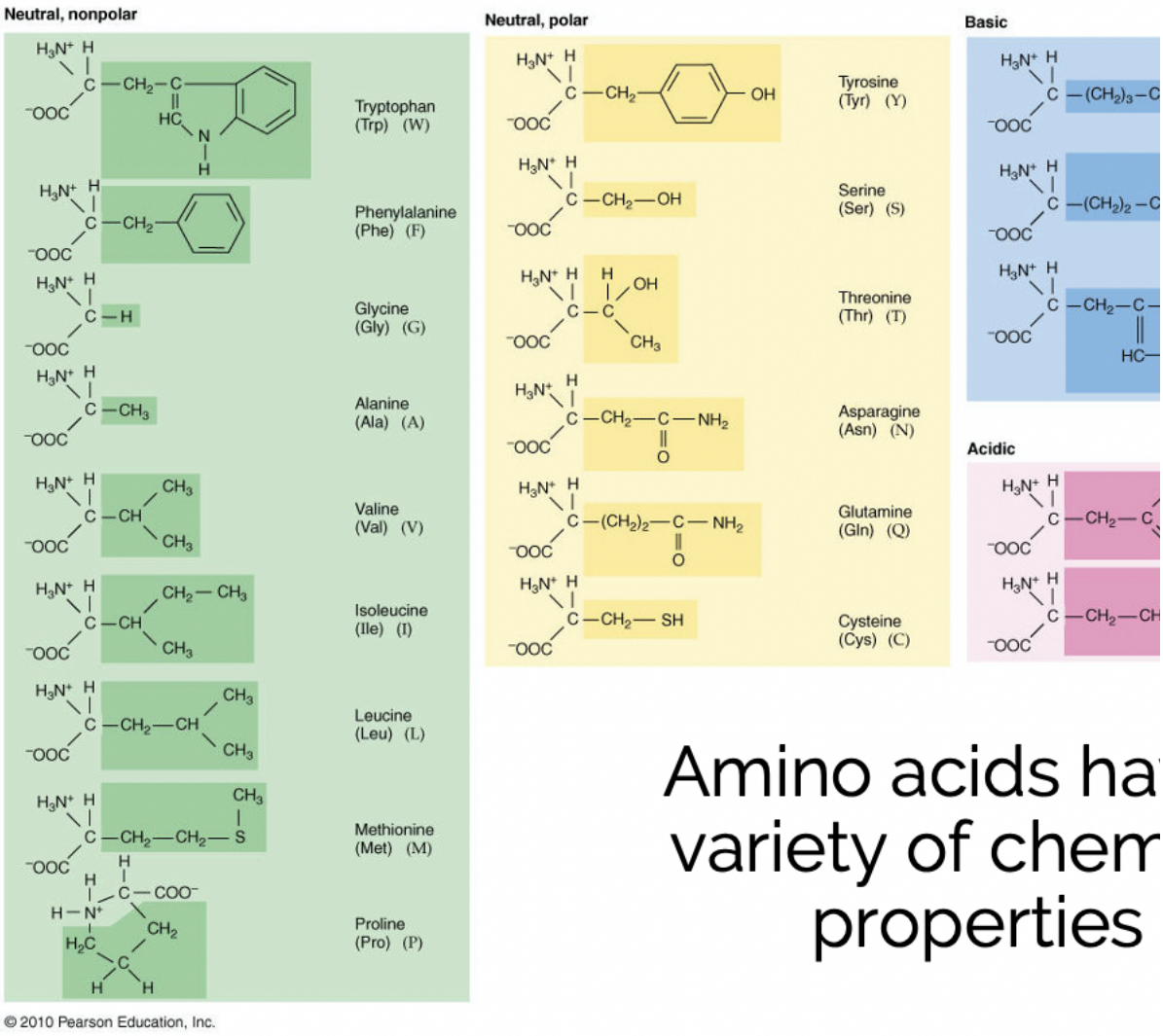
- a. None of these
- b. 1,089
- c. 1,080
- d. 1,081
- e. 1,088
- f. 1,095

UCLA CCLE

Complete

Not graded

Which of the following changes to a codon would you expect to be MOST damaging to the resulting protein?

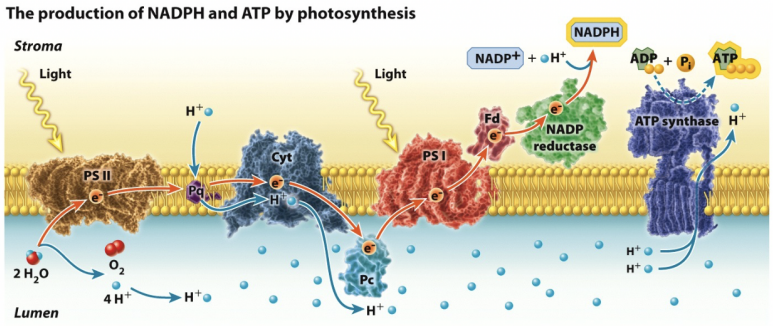


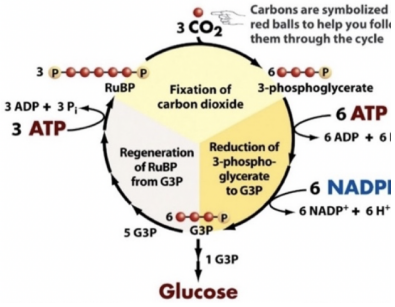
Select one:

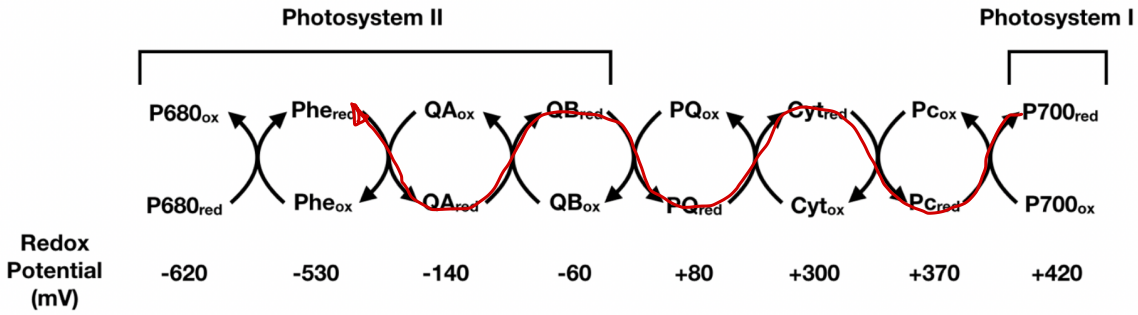
- a. CAG -> AAC
- b. GGU -> GGG
- c. UCA -> AGU
- d. AGC -> AGG

UCLA CCLE

The figures below show the light harvesting reactions of photosynthesis and the Calvin Cycle. Beneath the figures is a partial diagram of the redox reactions involved in the light harvesting reactions of photosynthesis, going from photosystem II to photosystem I. Note that photosyste is made up of multiple smaller components indicated on the redox reaction diagram.







Question **81**

Complete

Not graded

X

Adding a particular drug changes the redox potential of P700 from +420 to +310. Which of the following would you expect to observe in plant cells treated with this drug?

- a. ATP would continue to be produced. X main stop
- b. Pc would accumulate in its oxidized form.
- c. More than one of the above
- d. Phe would accumulate in its reduced form.
- e. Levels of 3-phosphoglycerate would ~~decrease~~ increase

needs ATP

◀ LS 7A F20 Midterm 2 Answer ...

Jump to...

Final Exam Group Phase Team...