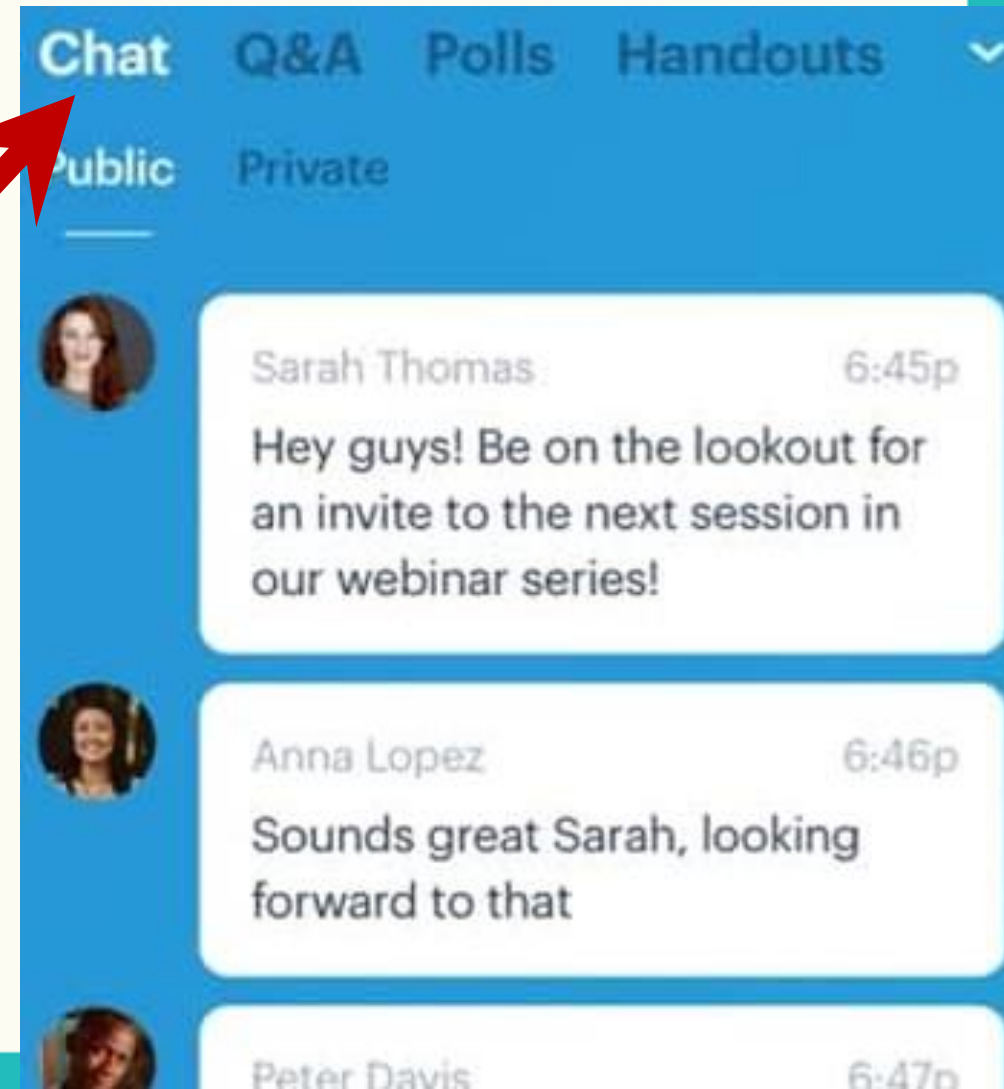


Multiple Choice Strategies for AP BIOLOGY

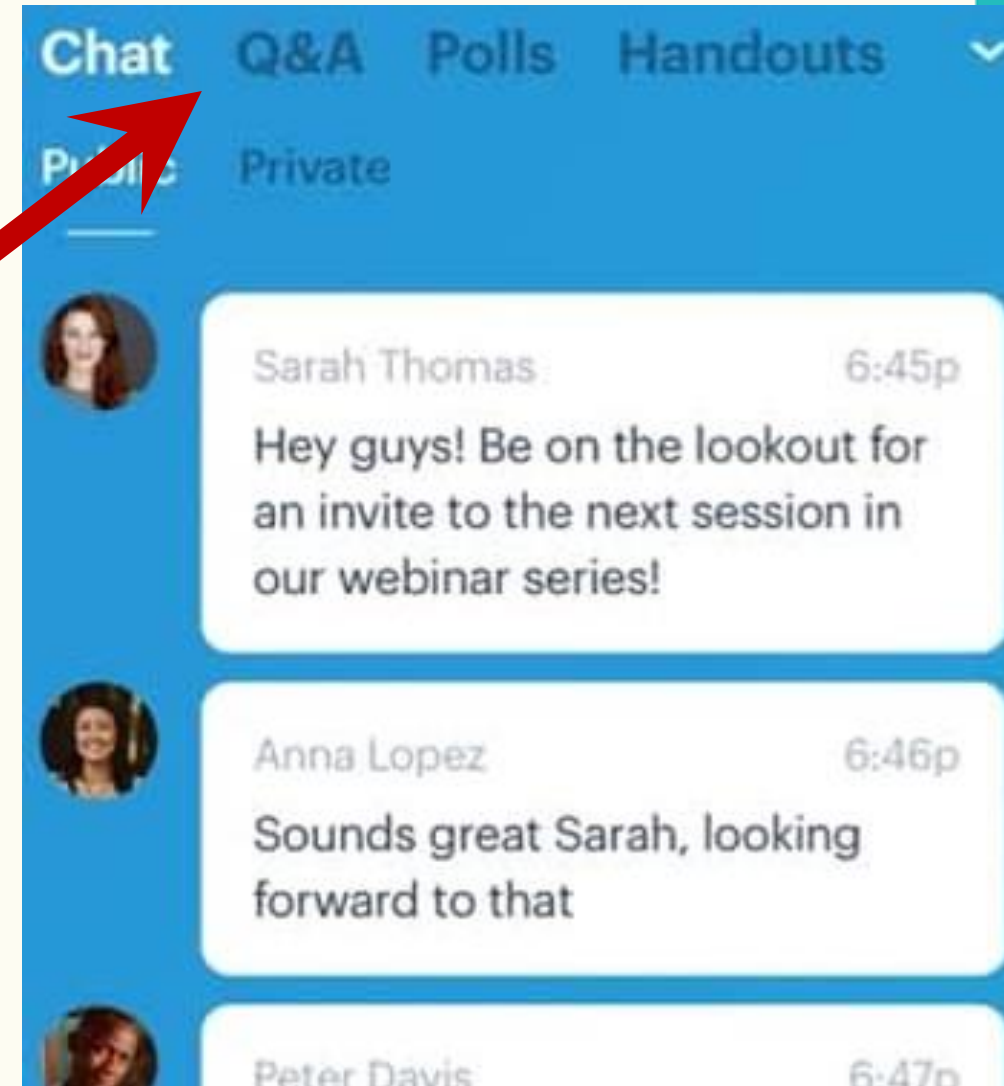


with
Tiffany Jones
& Josh Kaspar

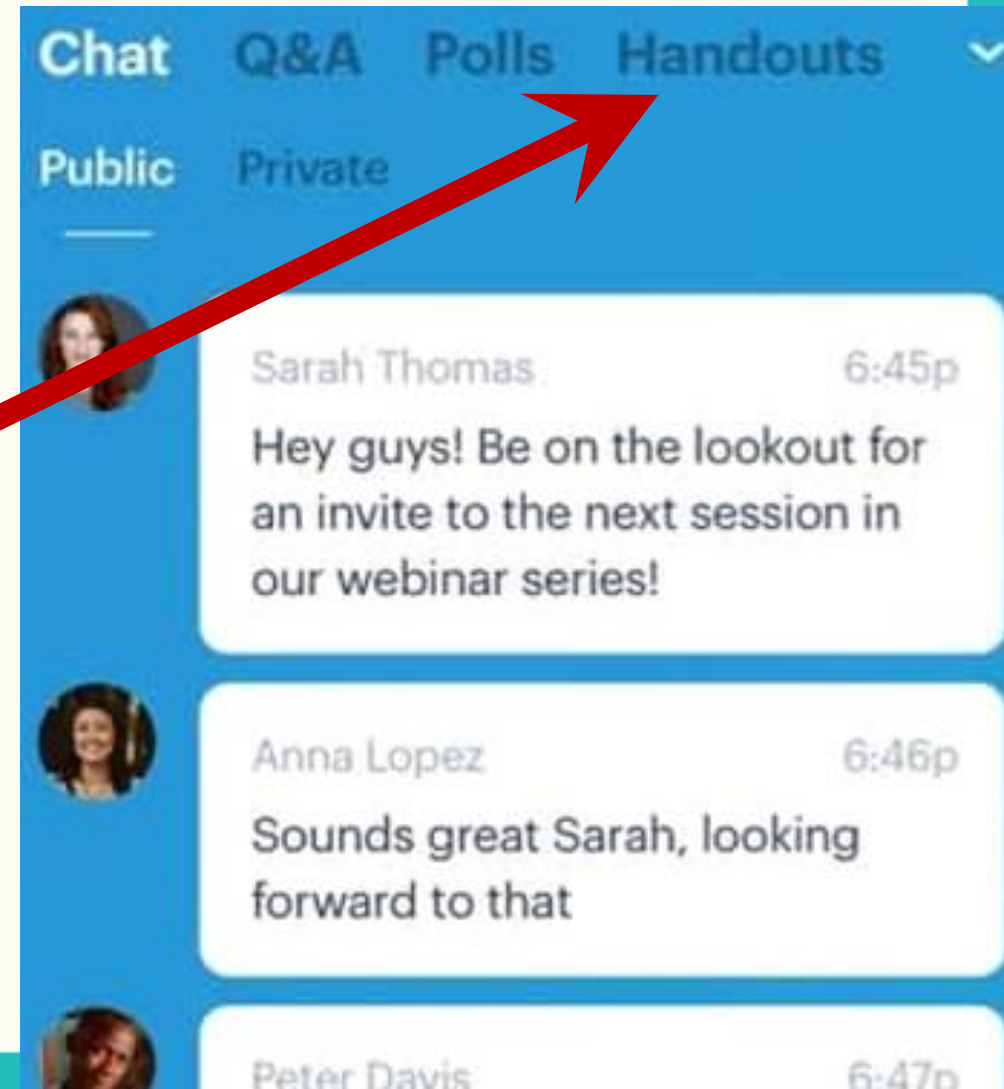
Don't be shy! Talk
to us in the **Chat**
section



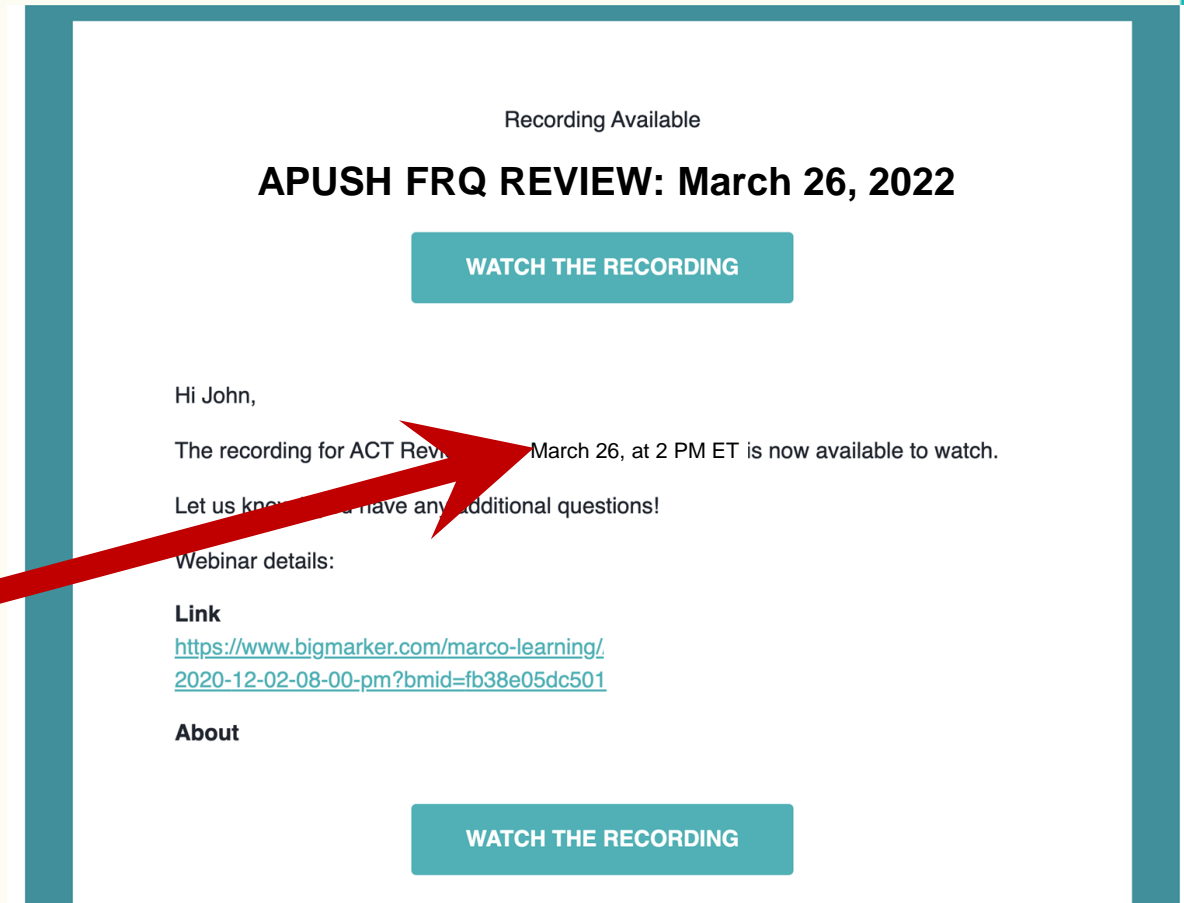
Post your questions in the **Q&A Section** and upvote your favorite questions.



Download your handouts and links in the **Handouts** tab.



All sessions
will be
recorded and
sent to you
via email.



Recording Available

APUSH FRQ REVIEW: March 26, 2022

[WATCH THE RECORDING](#)

Hi John,

The recording for ACT Rev. March 26, at 2 PM ET is now available to watch.

Let us know if you have any additional questions!

Webinar details:

Link
<https://www.bigmarker.com/marco-learning/2020-12-02-08-00-pm?bmid=fb38e05dc501>

About

[WATCH THE RECORDING](#)

A red arrow points from the text 'will be recorded' in the main text to the 'WATCH THE RECORDING' button in the email screenshot.

Welcome – Who Are You?

Mrs. Tiffany Jones

- 11 years of AP Biology
- Georgia
- AP Reader
- B.S. in Biology
- Ed.S. in Instructional Tech



Welcome – Who Are You?

Mr. Joshua Kaspar

- 10 Years of AP Biology
- Florida
- B.A. in Science
Education – Biology
- AP teacher trainer and
mentor



AP Biology students are
penguins because they
are Dressed for Success!

You are now an
AP Bio Penguin!



Exam Format

AP Bio Exam: May 10th at 12pm
Countdown: 101 days...

Time: 90 minutes

- Section I: Multiple Choice
- 60 Questions
- 50% of Exam Weighting

Time: 90 minutes

- Section II: Free Response
- 6 Questions (2 long, 4 short)
- 50% of Exam Weighting



Based on the 2020 Practice Exam Scoring Guidelines
You need approximately 54 of the available 120 points for
a 3 on the exam

Exam Format

Topic Breakdown

Units	Exam Weighting	#Qs
Unit 1: Chemistry of Life	8 – 11 % (5 – 7)	5.7
Unit 2: Cell Structure and Function	10 – 13% (6 – 8)	6.7
Unit 3: Cellular Energetics	12 – 18% (7 – 10)	9.3
Unit 4: Cell Communication and Cell Cycle	10 – 15% (6 – 9)	6.7

Exam Format

Topic Breakdown

Units	Exam Weighting	#Qs
Unit 5: Heredity	8 – 11% (5 – 7)	6
Unit 6: Gene Expression and Regulation	12 – 16% (7 – 10)	8
Unit 7: Natural Selection	13 – 20% (8 – 12)	9.3
Unit 8 Ecology	10 – 15% (6 – 9)	8.3

Multiple Choice Questions

Types of Questions

- Independent Questions

Insulin is a protein hormone that is secreted in response to elevated blood glucose levels. When insulin binds to its receptors on liver cells, the activated receptors stimulate phosphorylation cascades that cause the translocation of glucose transporters to the plasma membrane.

Based on the information provided, which of the following best describes the role of insulin in this liver cell signal transduction pathway?

- (A) It acts as a ligand.
- (B) It acts as a receptor.
- (C) It acts as a secondary messenger.
- (D) It acts as a protein kinase.



Based on the 2020 Practice Exam

31 – 38 Independent Questions
22 – 29 Set Questions

Multiple Choice Questions

Types of Questions

- Independent Questions
- Set Questions



Based on the 2020 Practice Exam

31 – 38 Independent Questions
22 – 29 Set Questions

40. Plates that have only ampicillin-resistant bacteria growing include which of the following?

- (A) I only
- (B) III only
- (C) IV only
- (D) I and II

41. Which of the following best explains why there is no growth on plate II?

- (A) The initial *E. coli* culture was not ampicillin-resistant.
- (B) The transformation procedure killed the bacteria.
- (C) Nutrient agar inhibits *E. coli* growth.
- (D) The bacteria on the plate were transformed.

42. Plates I and III were included in the experimental design in order to

- (A) demonstrate that the *E. coli* cultures were viable
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- (D) I and III

Strategy for Multiple Choice

Underline important words as you read the question

“Jot down” notes that could help you with the question



Insulin is a protein hormone that is secreted in response to elevated blood glucose levels. When insulin binds to its receptors on liver cells, the activated receptors stimulate phosphorylation cascades that cause the translocation of glucose transporters to the plasma membrane.

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Protein hormones are extracellular signaling molecules

Step 2 in Signal Transduction Pathway (Transduction)

Step 1 in Signal Transduction Pathway (Reception)

Step 3 in Signal Transduction Pathway (Response)

protein hormone to insulin response blood
ls. When insulin binds to receptors on liver cells, the activated
stimulate phosphorylation cascades that cause the translocation of
glucose transporters to the plasma membrane.

Based on the information provided, which of the following best describes the role of insulin in this liver cell signal transduction pathway?



(A) It acts as a ligand.

Signaling molecule that binds to a receptor

(B) It acts as a receptor.

Protein that binds to a ligand/signaling molecule to initiate transduction

(C) It acts as a secondary messenger.

Small intracellular molecule in transduction

(D) It acts as a protein kinase.


Relay molecule in transduction

Strategy for Multiple Choice

Cover up the answer choices
and develop your own
answer then check if it's an
option



2. Humans have a diploid number (“ $2n$ ”) of 46. Which of the following statements best predicts the consequence if meiosis did not occur during gametogenesis?

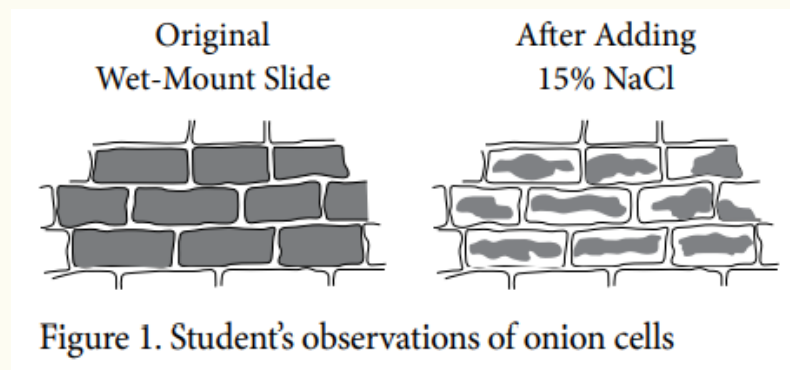
2. Humans have a diploid number (“ $2n$ ”) of 46. Which of the following statements best predicts the consequence if meiosis did not occur during gametogenesis?
- (A) The gametes would get larger from one generation to the next.
 -  (B) The chromosome number would double with each generation.
 - (C) The chromosome number would be halved with each generation.
 - (D) The chromosome number would triple with each generation.

Strategy for Multiple Choice

Use the figures or diagrams
to help you answer the
questions



10. A student used a microscope to observe a wet-mount slide of red onion epidermal cells that were suspended in a 1% NaCl solution. The student then added a 15% NaCl solution to the slide and observed the changes that occurred. The student's observations are represented in Figure 1.



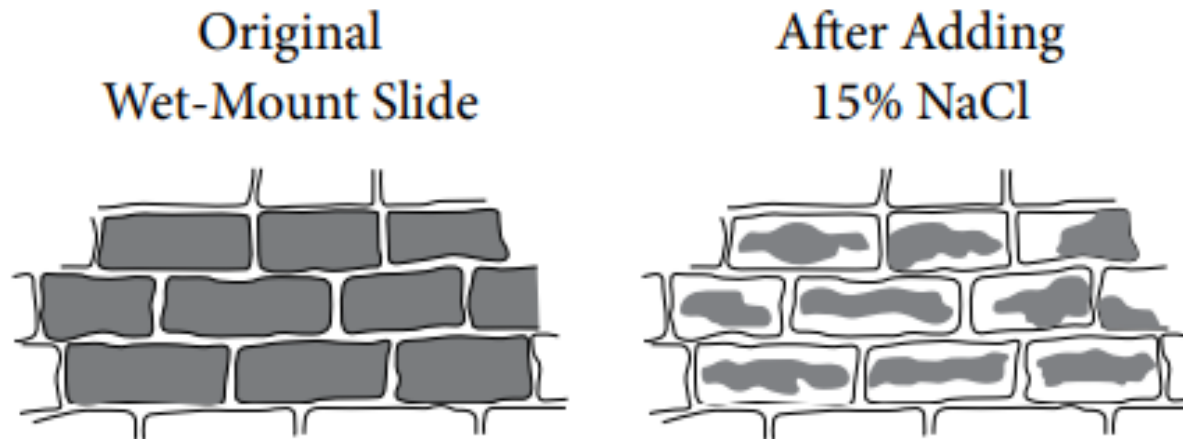
Which of the following most directly explains the changes in the cells?

- (A) The degradation of DNA in the nuclei of the cells
- (B) The lysis of chloroplasts in the cells
- (C) The movement of water from the central vacuoles of the cells into the solution
- (D) The movement of NaCl from the solution into the cytoplasm of the cells

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1% NaCl:
Hypotonic Sol'n

15% NaCl:
Hypertonic Sol'n



Water moves
from hypotonic
solution to a
hypertonic
solution

Figure 1. Student's observations of onion cells

Water moves from hypotonic solution to a hypertonic solution

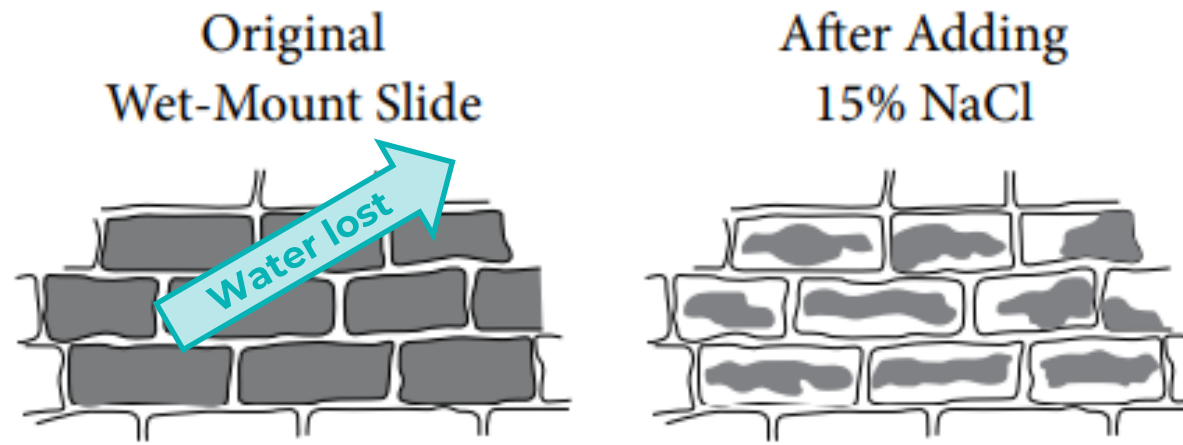



Figure 1. Student's observations of onion cells

Which of the following most directly explains the changes in the cells?

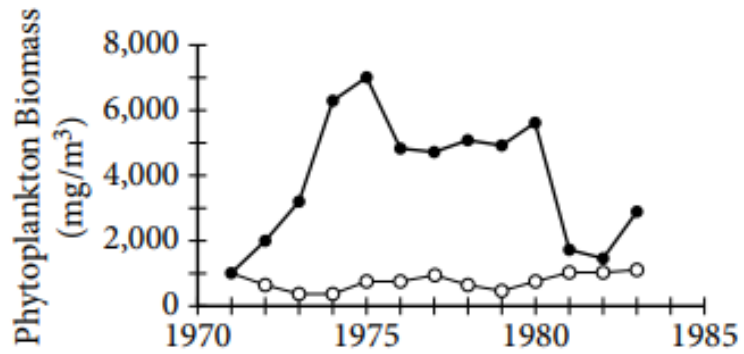
- (A) The degradation of DNA in the nuclei of the cells
- (B) The lysis of chloroplasts in the cells
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- (D) The movement of NaCl from the solution into the cytoplasm of the cells

Strategy for Multiple Choice

Write on the graphs and
show your work.



Questions 4-7 refer to the following material.



○ Treated w
● Treated w

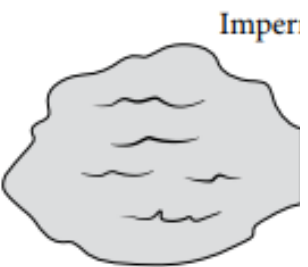
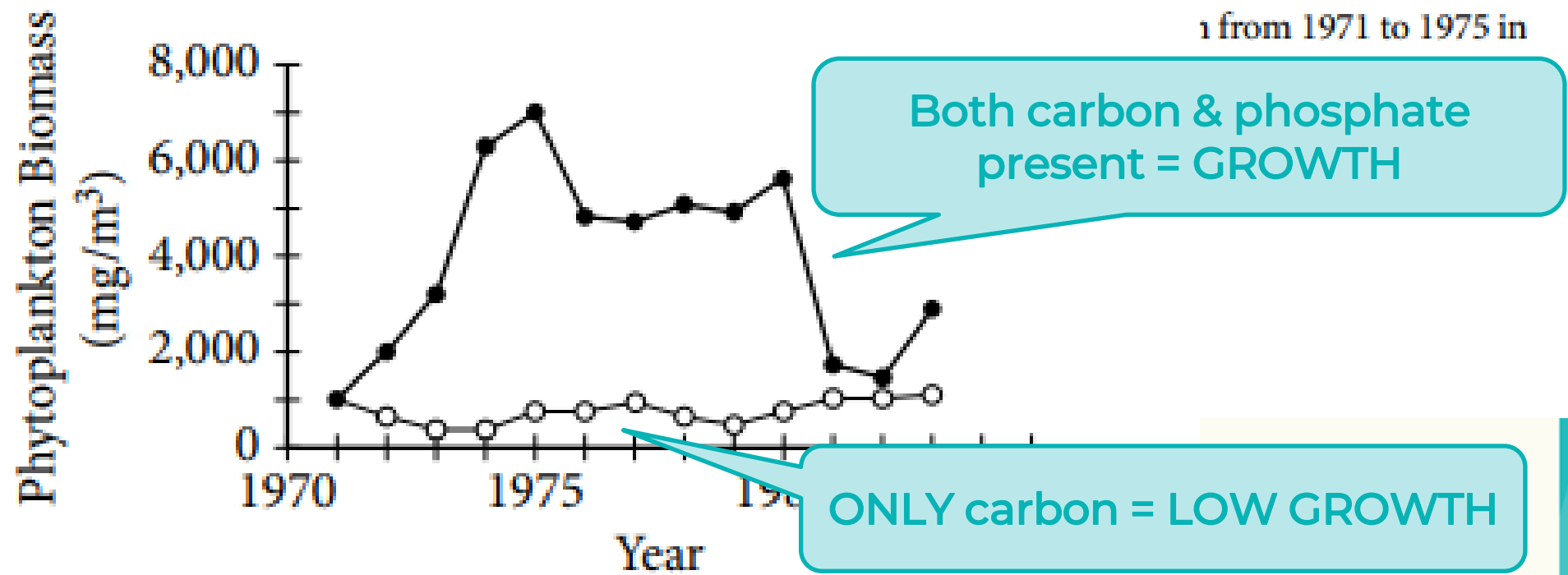


Figure 1. Phytoplankton in a small lake that is divided by a vertical curtain.

In the early 1970s, researchers hypothesized that carbon was a limiting factor in many aquatic ecosystems. To test this hypothesis, they divided a small lake in two roughly equal halves with an impermeable curtain.

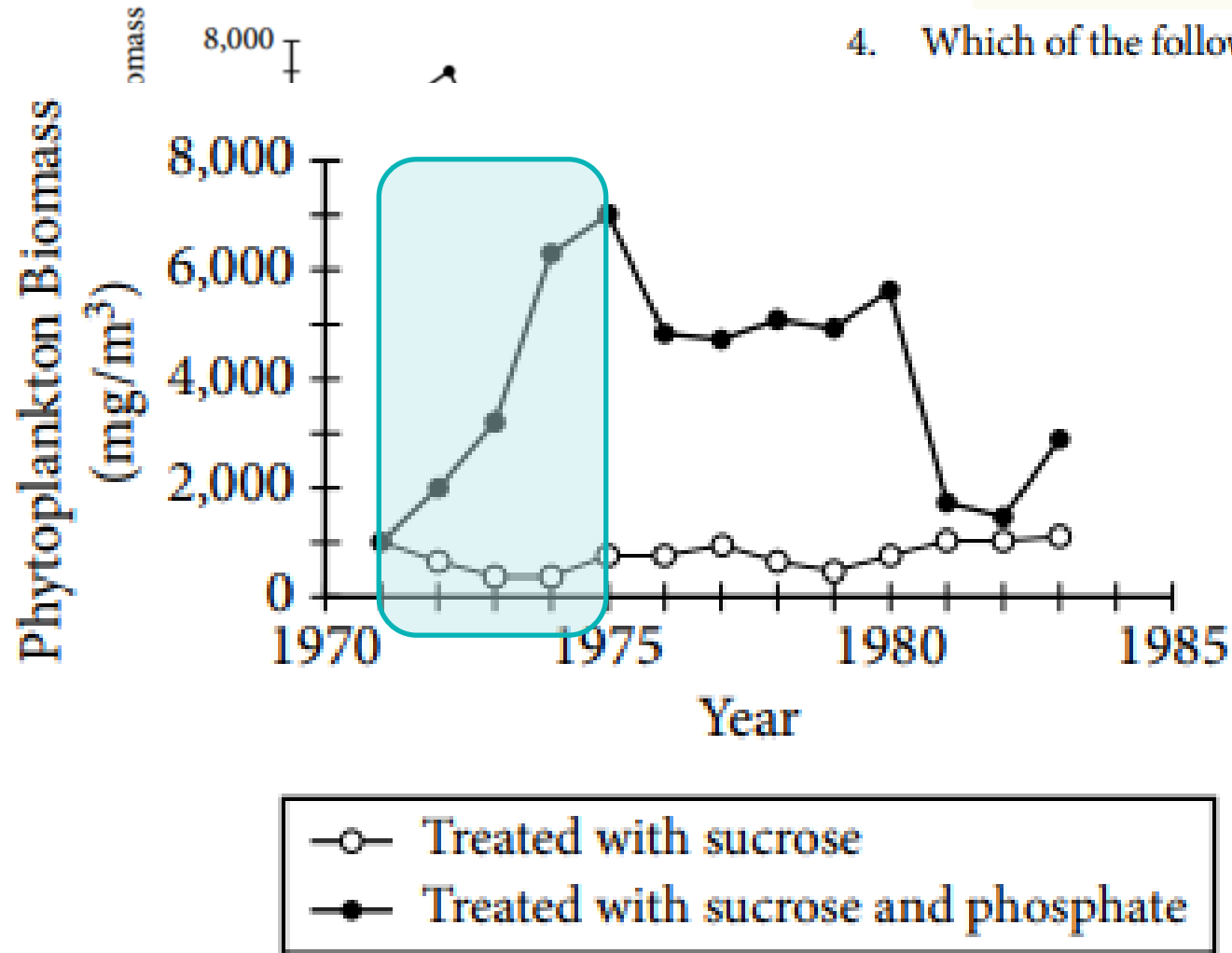
4. Which of the following claims is best supported by the data?

- (A) Carbon was a limiting factor for phytoplankton in the lake.
- (B) Phosphate was a limiting factor for phytoplankton in the lake.
- (C) Both carbon and phosphate were limiting factors for phytoplankton in the lake.
- (D) Neither carbon nor phosphate was a limiting factor for phytoplankton in the lake.



○ Treated with sucrose
● Treated with sucrose and phosphate

Questions 4–7 refer to the following material.



4. Which of the following claims is best supported by the data?

(A) Sucrose was a limiting factor for phytoplankton in the lake.

(B) Phosphate was a limiting factor for phytoplankton in the lake.

(C) Sucrose and phosphate were limiting factors for phytoplankton in the lake.

(D) Phosphate was a limiting factor for phytoplankton in the lake.

5. The change in the phytoplankton population from 1971 to 1975 in the lake treated with sucrose and phosphate is closest to which of the following?

(A) 125 (mg/m³)/year

(B) 1,000 (mg/m³)/year

(C) 1,500 (mg/m³)/year

(D) 6,000 (mg/m³)/year

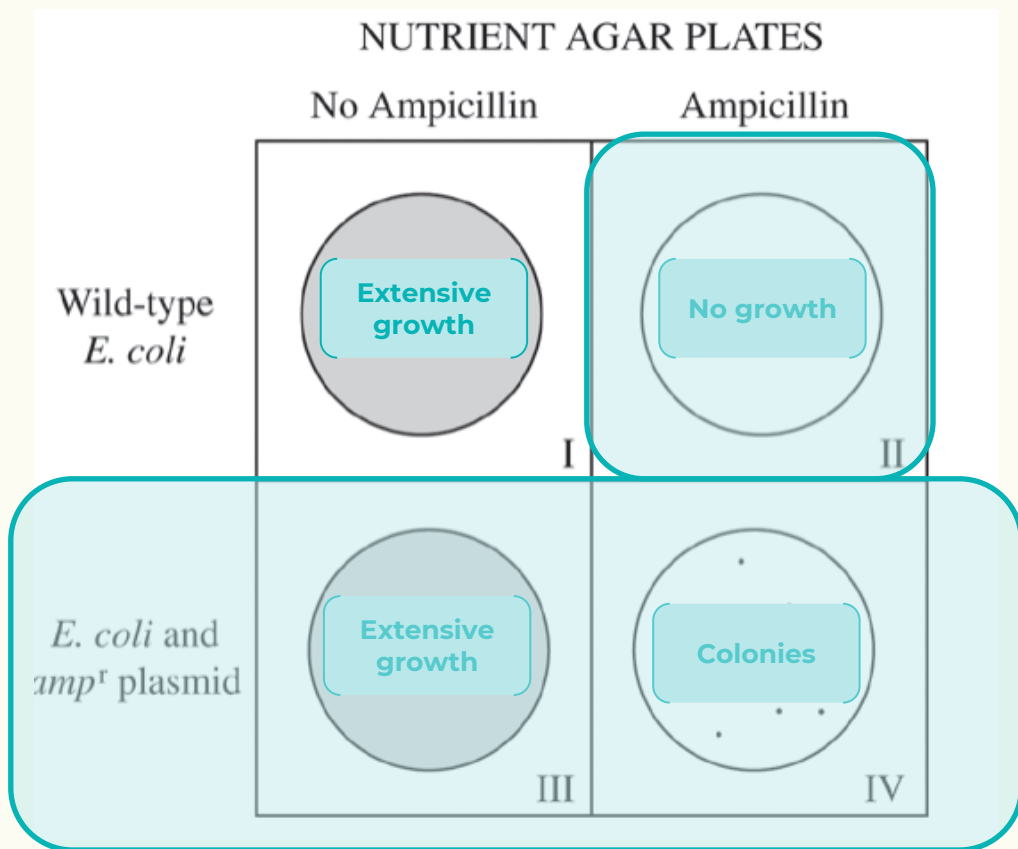
6. A rectangular lake in two roughly equal halves with an impermeable curtain that was fastened and

Strategy for Multiple Choice


Write on the graphs and
show your work.




In a transformation experiment, a sample of *E. coli* bacteria was mixed with a plasmid containing the gene for resistance to the antibiotic ampicillin (amp^r). Plasmid was not added to a second sample. Samples were plated on nutrient agar plates, some of which were supplemented with the antibiotic ampicillin. The results of *E. coli* growth are summarized below. The shaded area represents extensive growth of bacteria; dots represent individual colonies of bacteria.



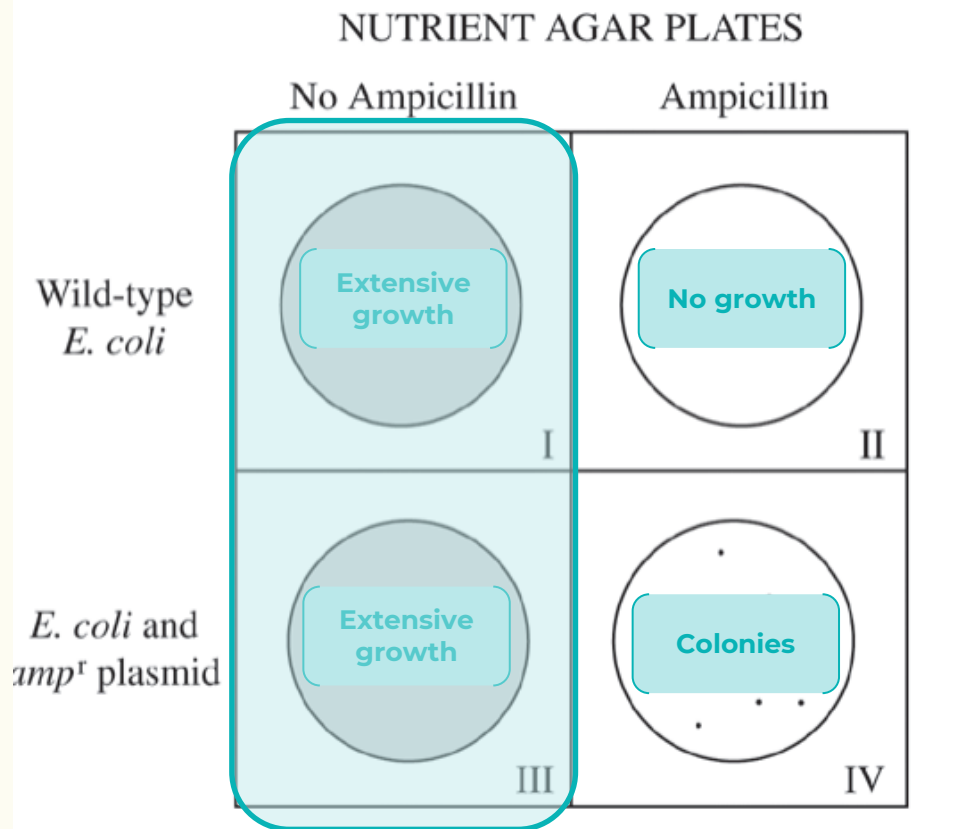
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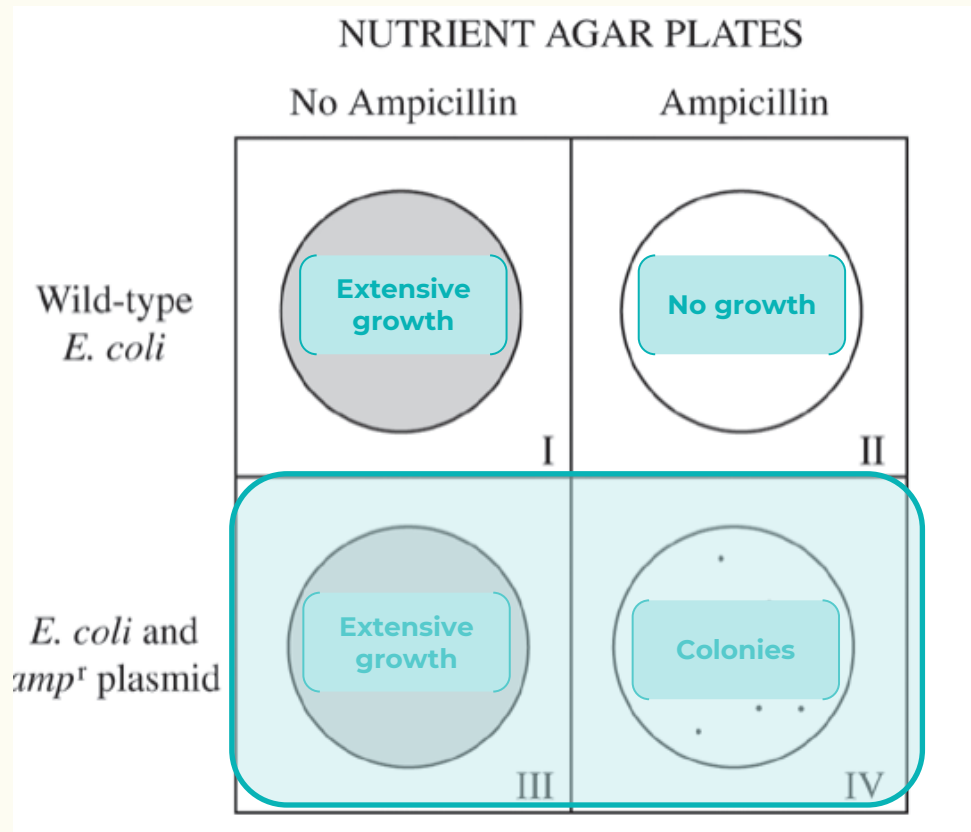


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Extra Practice Problems

- AP Classroom – Progress Performance Checks (ask your teacher)
- Quizizz Review Games (content reviews)
- 2013 Released Practice Exam
- AP Bio Penguins Review Guide – Section Reviews



Perfect Practice Makes Perfect!
You have approximately 1.5 minutes per question
on the AP Exam (so every 10 minutes = 15 questions)

AP Review Sessions:

2/11: Big Idea #1

2/18: Big Idea #2

3/11: Big Idea #3

3/18: Big Idea #4

4/15: 2022 FRQ 1 & 2

4/29: 2022 FRQ #3 - 6



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**Marco Learning
AP Bio Insta-Review**

See you Saturday 2/11 at 4pm

We will do:

Big Idea: Evolution

-  Unit 2 Cell Structure & Function
 -  Unit 5: Heredity
 -  Unit 7: Natural Selection
 -  Unit 8: Ecology



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