AP Biology Unit 4







Cell Communication & Cell Cycle

10-15% AP EXAM WEIGHTING

UNIT 4 HOMEWORK:

| Торіс | Description | Due Date | Notes | Left Side Processing |
|-------|-------------------------------------|----------|-------|-------------------------|
| 4.1 | Cell Communication | | | |
| 4.2 | Introduction to Signal Transduction | | | |
| 4.3 | Signal Transduction | | | |
| 4.4 | Changes in Signal Transduction | | | |
| 4.5 | Feedback | | | |
| 4.6 | Cell Cycle | | | |
| 4.7 | Regulation of Cell Cycle | | | |

ENDURING UNDERSTANDING

IST-3 Cells communicate by generating, transmitting, receiving, and responding to chemical signals.

ENE-3 Timing and coordination of biological mechanisms involved in growth, reproduction, and homeostasis depend on organisms responding to environmental cues.

IST-1 Heritable information provides for continuity of life.

| | 4.1 Cell C | ommunication | Name: |
|--------------|---------------|--|--------------------|
| | *Describe the | ne ways that cells can communicate with one another. | AP Biology Period: |
| too too too | long distance | es. | Date: |
| Questions: H | ow do cells | s in multicellular organisms communicate | with each other? |
| Terms/Conce | pts: cells, c | communication, cell-to-cell contact, chemical s | ignaling |
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| ~ | 4.2 Introduction to Signal Transduction | | Name: |
|---|--|--|--|
| int | *Describe th | e components of a signal transduction pathway. | AP Biology Period: |
| | in producing | a cellular response. | Date: |
| Questions: H | ow does a | signal transduction pathway work? How d | o cells respond to a stimulus? |
| Terms/Conce receptor prote secondary me | pts: signal in, ligand-bi ssenger (c <i>l</i> | transduction, cellular response, protein modifi inding domain, types of chemical messengers AMP), signal amplification, ligand-to-ligand gat | cation, phosphorylation cascade, ligand, , G protein-coupled receptor, cell targets, ed channels |
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| | 4.3 Signal | Transduction | Name: |
|--------------------------------|--------------------------------------|---|--|
| | *Describe the | e role of the environment in eliciting a cellular | AP Biology Period: |
| | *Describe the signal transd | e different types of cellular responses elicited by a luction pathway. | Date: |
| Questions: H | ow do cells | respond to their environment? | |
| Terms/Conce function, pheno | pts: environ type, prograr | ment, cellular response, signal transduction, types nmed cell death, apoptosis | of cellular responses, gene expression, cell |
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| hat | 4.4 Chang | ges in Signal Transduction Pathways | Name: |
|---------------------------------|---|---|---|
| Yell Your Cast | *Explain h | how a change in the structure of any | AP Biology Period: |
| D (seke) | signaling molecule affects the activity of the signaling pathway. | | Date: |
| Questions: H | ow can sig | naling pathways be altered? | |
| Terms/Conce mutations of pro | p ts: structur otein compor | re of signaling molecule, signaling pathway, cellula nents of signal pathway, downstream transduction, | r response, mutations of receptor protein, chemical activators/inhibitors |
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| Bhoot placeme way then | 4.5 Feedback | | Name: | | | |
|---------------------------------|---|---|---|--|--|--|
| The partners include insues | *Describe positive a | ve and/ or negative feedback mechanisms. | AP Biology Period: | | | |
| Bacod gacross reveal table. | *Explain how positive feedback affects homeostasis. | | Date: | | | |
| Questions: H | ow do living o | organisms maintain stable internal conditions? | | | | |
| Terms/Conce external enviror | pts: positive nment, physic | e feedback mechanism, negative feedback mechar ological processes, molecular level feedback, cellu | nism, homeostasis, internal environment, lar level feedback, set point, stimulus | | | |
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| | 4.6 Cell Cycle | | Name: |
|-----------------------------|--|---|---|
| . 20 | *Describe th | ne events that occur in the cell cycle. | AP Biology Period: |
| | *Explain how mitosis results in the transmission of chromosomes from one generation to the next. | | Date: |
| Questions: w | /hy do cells d | ivide? How are chromosomes transmitted between | generations of cells? |
| Terms/Conce genome, pare | p ts: cell cy nt cell, dau | cle, eukaryote, interphase, mitosis, cytokinesis ghter cells, prophase, metaphase, anaphase, t | s, G_0 , chromosomes, generation, telophase |
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| | 4.7 Regulation of Cell Cycle | | Name: |
|--------------------------------|---|--|---------------------------------|
| t tree an it | *Describe the role of checkpoints in regulating the cell cycle. *Describe the effects of disruptions to the cell cycle on the cell or organism. | | AP Biology Period: |
| Summer | | | Date: |
| Questions: Wabnormalities | /hat molecu during the c | les ensure that cell division occurs normally? | What happens when there are |
| Terms/Conce disruptions, ca | pts: checkp ancer, progra | points, cell cycle, internal controls, cylins, cycli ammed cell death (apoptosis) | n-dependent kinases, cell cycle |
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Unit 4 Personal Progress Check Reflection

<u>Directions</u>: Based on your results highlight your table in green/yellow/red, green being you did well on that section, yellow meaning you did "ok" and red meaning you did not do well.



• For those that are red, take a moment to reflect on what it is you need to REVIEW in order to IMPROVE on that topic. **Be specific**.

| TOPIC | SKILL | RESULT |
|--|---|--------|
| 4.1 Cell Communication | Explain biological concepts and/or processes | |
| 4.2 Introduction to Signal Transduction | Describe biological concepts and/or processes | |
| 4.3 Signal Transduction | Provide reasoning to justify a claim by connecting evidence to biological theories | |
| 4.4 Changes in Signal Transduction Pathways | Predict the causes or effects of a change in, or disruption to, one or more components in a biological system based on- a. Biological concepts or processes. b. A visual representation of a biological concept, process, or model. c. Data. | |
| 4.5 Feedback | Predict the causes or effects of a change in, or disruption to, one or more components in a biological system based on- a. Biological concepts or processes. b. A visual representation of a biological concept, process, or model. c. Data. | |
| 4.6 Cell Cycle | Describe data from a table or graph, including: a. Identifying specific data points b. Describing trends and/or patterns in the data c. Describing relationships between variables | |
| 4.6 Cell Cycle | Perform mathematical calculations, including: a. Mathematical equations in the curriculum b. Means c. Rates d. Ratios e. Percentages | |
| 4.7 Regulation of Cell Cycle | Predict the causes or effects of a change in, or disruption to, one or more components in a biological system based on- a. Biological concepts or processes. b. A visual representation of a biological concept, process, or model. c. Data. | |

Now, knowing what topics you need to review, tell me what your next THREE steps are to improve in that area. This could include: reviewing previous slides, using BioZone books, watching AP topic videos, etc - BUT BE SPECIFIC.

ACTION STEPS: