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| <p>Class Notes</p> <p><u>Cell Growth and Division</u> <u>Part 1</u></p> <p>Questions/Main Idea:</p> | <p>Name: _____</p> <p>Period: _____</p> <p>Date: _____</p> <p style="text-align: center;">Notes:</p> |
| <p>Cell division is needed to...</p> | <ul style="list-style-type: none"> • Grow – most organisms grow by producing more cells • Repair wounds and damaged cells • Develop and change |
| <p>Why do cells divide? (aka, why are cells small?)</p> | <ul style="list-style-type: none"> • Two main reasons why cells can't grow indefinitely: <ul style="list-style-type: none"> – A larger cell places more demands on its DNA (more things to control and not enough DNA) – Surface-to-volume ratio decreases as size increases • Thus, before the cell becomes too large, it divides |
| <p>When do cells divide?</p> | <ul style="list-style-type: none"> • When cells come in contact with each other, they stop growing • When internal regulators (e.g., p53 gene, cyclin enzymes) signal the cell to start or stop dividing <ul style="list-style-type: none"> – e.g., they make sure the cell doesn't divide until chromosomes have doubled • When external regulators (growth factors) stimulate or inhibit growth and division |
| <p>What is the cell cycle?</p> | <ul style="list-style-type: none"> • The series of phases that cells go through as they grow and divide. • A continuous process, but we divide it into 3 stages: <ol style="list-style-type: none"> 1. Interphase 2. Mitosis 3. Cytokinesis |
| <p>Stage 1: Interphase</p> | <ul style="list-style-type: none"> • Cell life between divisions • The longest stage! • Nucleus is still present • Phases: <ul style="list-style-type: none"> – Gap 0 (G₀) – grows and functions – Gap 1 (G₁) – duplicates organelles and molecules needed for cell division – Synthesis (S) – duplicates DNA (in chromatin form) – Gap 2 (G₂) – checks for errors |
| <p>Stage 2: Mitosis</p> | <ul style="list-style-type: none"> • Duplication and division of the cell nucleus • Phases: <ol style="list-style-type: none"> 1. Prophase 2. Metaphase 3. Anaphase 4. Telophase |
| <p>Stage 3: Cytokinesis</p> | <ul style="list-style-type: none"> • Pinching off of the cytoplasm • (Often grouped as part of mitosis) <p><i>Mitosis + cytokinesis result in two identical daughter cells!</i></p> |
| <p>Summary: How to remember the cell cycle... IPMATC = I Passed My Alegbra Test with a "C"</p> | |
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