

# Biol 2170 chapter 11 learning curve



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T/F: Evidence exists (especially in dinoflagellates) that mitosis actually evolved from binary fission. For example, in certain eukaryotic cells during mitosis, DNA is attached to the membrane of the nucleus (much like a circular chromosome of a bacterium is attached to the plasma membrane).

What is the function of the centromere? to attach the DNA to the plasma membrane to attach the chromosome to the spindle to attach the sister chromatids to each other to organize the microtubules to form a spindle to attach the sister chromatids to each other

When do sister chromatids separate in meiosis? anaphase I metaphase II anaphase II telophase I anaphase II

Which of the following statements regarding the cell cycle are true? It has three cell cycle checkpoints. It is regulated by cyclins and CDKs. Different levels of cyclins are observed at different cell cycle stages. It can be "paused" by the action of p53. All of the answer options are true. All of the answer options are true.

T/F: Some types of leukemia are the result of constitutively active (i. e., "always on") growth factor receptors. true

What is the role of the protein FtsZ? It forms a ring at the site of constriction. It is involved in the attachment of DNA to the plasma membrane. It is responsible for the replication of DNA. It forms the new cell wall between daughter cells. It forms a ring at the site of constriction.

How many chromosome pairs are there in a human genome? 22, 23, 46, 64, 23

Synapsis is best described as: the alignment of non-sister chromatids at the metaphase plate. the exchange of genetic information between sister chromatids. the alignment of homologous chromosomes in prophase I. the exchange of genetic information between non-sister chromatids. the alignment of homologous chromosomes in prophase I.

Which of the following statements regarding the S cyclin-CDK complex are true? It is responsible for the degradation of nuclear

membranes. It is regulated solely by the action of p53. It is responsible for the phosphorylation of nuclear proteins. It regulates the expression of histone proteins. It assures that DNA is not replicated multiple times. It assures that DNA is not replicated multiple times. Which of the following could be considered a proto-oncogene? a gene encoding a G-protein a gene encoding a cell-surface receptor a gene encoding a protein kinase a gene encoding a growth factor All of the answer options are correct. All of the answer options are correct. The division of the cell's cytoplasm in a eukaryotic cell is known as: cytokinesis. cell fission. mitosis. cytokinesis and mitosis are both correct. cytokinesis In which phase of mitosis do chromosomes line up at the middle of the cell? anaphase metaphase prophase telophase metaphase Which of the following is not a characteristic of meiotic cell division? Cell division results in the production of gametes. Daughter cells are genetically identical. Cell division results in the formation of four daughter cells. Cell division requires two rounds of nuclear division. Daughter cells are genetically identical. Recall the experiments of Rous and colleagues. If he had found that filtered cancer cell extract could not cause cancer when injected into healthy animals, what could he have deduced? Cancer may be caused by bacteria. An intact cancer cell is necessary to cause cancer. A large protein may cause cancer. All of the answer options are correct. All of the answer options are correct. What cellular process(es) is/are responsible for the increase in protein content associated with the gap phases of the cell cycle? gene expression glycolysis protein synthesis both gene expression and protein synthesis both gene expression and protein synthesis What is the function of histone proteins? to organize DNA in eukaryotic chromosomes to connect

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chromosomes to the mitotic spindle to organize the microtubules that make up the spindle to attach sister chromatids together to organize DNA in eukaryotic chromosomes Another name for non-sister chromatids is: chiasmata. bivalents. homologous chromosomes. diploids. homologous chromosomes A graduate student is planning an experiment. She wants to evaluate the expression of PDGF-related genes in her cell population of interest. As a control, she hopes to confirm the expression of genes that are always present in cells. For her controls, she should evaluate the expression of: laminin. PDGF. G-proteins. CDKs. Notch. CDKs What type of gene is c-src (cellular-src)? oncogene tumor suppressor proto-oncogene growth factor proto-oncogene What would happen to the daughter cells if the G1 phase of the parent cell is shortened? The cells would be smaller than normal. The cells would be missing chromosomes. The cells would not undergo cytokinesis. The cells would be larger than normal. The cells would be smaller than normal. In which phase of mitosis does the nuclear envelope reform? prophase telophase metaphase anaphase telophase How must spindle microtubules attach to chromosomes during anaphase of meiosis I? Microtubules attach using their minus (slow growing) ends. Microtubules attach to the chiasma. Microtubules only attach to one kinetochore per homologous pair. Microtubules attach at the centrosomes. Microtubules only attach to one kinetochore per homologous pair. Muscle cells are multinucleate, meaning that multiple nuclei are present in the cytoplasm of a large cell. Predict what is different about the cell cycle in a muscle cell. The G1 and G2 phases are extended. Cytokinesis does not occur. S phase happens twice. M phase is inhibited. Cytokinesis does not occur. Which of the following is not a step in the process of binary fission? DNA

replicates formation of a new cell wall rearrangement of the microtubule cytoskeleton elongation of the cell rearrangement of the microtubule cytoskeleton The prokaryotic protein FtsZ is evolutionarily related to eukaryotic tubulin. What does this mean? The gene sequence for FtsZ is similar to tubulin. The amino acid sequence for FtsZ is similar to tubulin. The overall protein structure of FtsZ is similar to tubulin. All of these choices are correct. All of these choices are correct. At what step in meiosis do the daughter cells become haploid? anaphase II anaphase I metaphase II prophase II anaphase I A phragmoplast functions to: anchor microtubules to sister chromatids. stimulate the growth of the microtubule spindle. form a new cell wall. breakdown the nuclear envelope. form a new cell wall Predict what would happen if crossing over occurred as part of mitosis. There would be no effect since sister chromatids separate in anaphase. Daughter cells could contain two copies of the same allele. Daughter cells would not be genetically identical. Daughter cells would not be genetically identical, and they could contain two copies of the same allele. Daughter cells would not be genetically identical, and they could contain two copies of the same allele. In which phase of mitosis do sister chromatids separate?

prophase metaphase anaphase telophase anaphase What would happen if crossing over occurred between sister chromatids? Genetic diversity would decrease due to the loss of gene combinations. Genetic diversity would increase due to the addition of gene combinations. Nothing, sister chromatids are identical. Gene rearrangement would lead to changes in gene expression. Nothing, sister chromatids are identical. How does meiosis generate genetic diversity? synapsis random alignment at metaphase I both crossing over and random alignment at metaphase I crossing over both

crossing over and random alignment at metaphase I How must spindle

microtubules attach to chromosomes during anaphase of meiosis I?

Microtubules attach to the chiasma. Microtubules only attach to one kinetochore per homologous pair. Microtubules attach at the centrosomes.

Microtubules attach using their minus (slow growing) ends. Microtubules only attach to one kinetochore per homologous pair. Which of the following

statements is true regarding binary fission? Proteins only anchor the original circular genome to the plasma membrane; the copy produced by

DNA replication is free-floating. In binary fission, cell division is typically

asymmetrical, with one daughter cell appearing much smaller than the

other. Tubulin, rather than FtsZ, is responsible for cell division during binary

fission. DNA replication during binary fission is a bidirectional process,

occurring in opposite directions. None of the above answers are correct. DNA

replication during binary fission is a bidirectional process, occurring in

opposite directions. A cell that is not actively dividing is in what phase of the

cell cycle? G<sub>1</sub>G<sub>0</sub>G<sub>1</sub>'G nullG<sub>0</sub> Why would a compound that interferes with

bacterial cell wall synthesis be useful for the treatment of an infection? It

would prevent the cells from becoming larger. It would prevent replication of

DNA. It would limit the spread of the infection. It would prevent replication of

DNA, and it would limit the spread of the infection. It would limit the spread

of the infection. Why don't plant cells use a contractile ring to divide their

daughter cells? Plant cells don't have an actin cytoskeleton. Plant cells don't

form daughter cells. A contractile ring can't "pinch" a cell wall. Plant cells

don't have plasma membranes. A contractile ring can't "pinch" a cell wall.

Imagine that a researcher is studying a population of cells with two major

phases. The first phase is relatively short (it lasts approximately one hour),

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whereas the second stage is much longer (lasting approximately 12 hours) and is characterized by an increase in the DNA content of cells. This second stage is most likely: G<sub>0</sub>. mitosis. cytokinesis. interphase. interphase When in the cell cycle would you find sister chromatids? G<sub>1</sub>S G<sub>2</sub>S and G<sub>2</sub>. S and G<sub>2</sub>