

What are the three events that occur during prophase?

Duplicate chromosomes consist of _____ which are linked at the _____ by _____ proteins.

The mitotic spindle can be divided into 3 types of microtubules. What are these microtubules, and how are these types distinguished?

What is the difference between anaphase A and anaphase B? Describe the differences in terms of chromosome separation and in terms of mechanisms.

When do centrosomes typically duplicate?

Cytokinesis in animals involves which cytoskeletal filament and with which motor proteins.

How is lamin degraded? Name a kinase directly involved in its degradation.

What is the role of P53 in the cell cycle?

How is the caspase cascade activated? What is its role once it is activated?

Name the three classes of cell surface receptors. Describe the function of each.

G-protein linked receptors activate G proteins by reducing the strength of GDP binding. This results in rapid dissociation of bound GDP, which is then replaced by GTP, which is present in the cytosol in much higher concentrations than GDP. What consequences would result from a mutation in the alpha subunit of a G protein that caused its affinity for GDP to be reduced without significantly changing its affinity for GTP? Compare the effects of this mutation with the effects of Cholera toxin (cannot hydrolyze GTP).

What are the defining features of stem cells, what are their significance?

What is the difference between plant and mammal stem cells?

What effect does Ca^{++} have on calmodulin? What effect does calmodulin have on CaM kinases?

What does a mutation in a Ras signaling pathway cause?

Name the two types of cloning for stem cells.

Describe the structure and biogenesis of a plasmodesma.

Where are stem cells found in a human.