

Cell Cycle & Cell Division

A. Systems of Cell Division

1. Prokaryotes typically have a single chromosome
2. Eukaryotic cells divide by mitosis or meiosis

B. Interphase and the Control of Cell Division

1. The subphases of interphase have different functions
2. Cyclins and other proteins signal events in the cell cycle
3. Mitotic inducers can stimulate cells to divide

C. Eukaryotic Chromosomes

1. Chromatin consists of DNA and proteins
2. Chromatin proteins organize the DNA in chromosomes

D. Mitosis: Distributing Exact Copies of Genetic Information

1. The spindle forms during prophase
2. A prophase chromosome consists of two chromatids
3. Chromosome movements are highly organized
4. Nuclei re-form at the end of mitosis

E. Cytokinesis: The Division of Cytoplasm

F. Mitosis: Asexual Reproduction and Genetic Constancy

G. Meiosis: Sexual Reproduction and Diversity

1. The number, shapes, and sizes of the metaphase chromosome constitute the karyotype

H. Meiosis: A Pair of Nuclear Divisions

1. The first meiotic division reduces the chromosome number
2. The second meiotic division is similar to, and different from, mitosis
3. Meiosis leads to genetic diversity

I. Meiotic Errors: Source of Chromosomal Disorders

1. Polyploids can have difficulty in cell division

J. Cell Death