

CHAPTER 6 and 12- BIODIVERSITY- September 4, 2014

- A. Paradigms in biology
 - a. All organisms are composed of cells
 - b. There is a universal genetic code shared by all organisms and its code transmits information between generations
- B. Research methods: cell fractionism
 - a. The disruption of a cell and separation of its parts by centrifugation (size and density) at successively higher speeds
- C. DNA
 - a. Deoxyribonucleic acid
 - b. Chromosomes (dna + proteins)
 - c. Nucleosome
 - d. Nucleic acid
 - e. Nucleotide
- D. Function of cell division
 - a. Reproduction (single celled organisms)
 - b. Growth and development (multi-cellular organisms)
 - c. Renewal and repair
 - d. Chromosome duplication and distribution during cell division
- E. Mitosis
 - a. The division of nucleus producing two daughter nuclei, each with a chromosome complement identical to that of the original nucleus
 - b. 46 chromosomes 23 pair
 - c. 92 chromatids (chromosome replicates)
 - d. Diploid: 2N (N being number of chromosomes in one pair)
 - e. Haploid: half the genetic material (23)
- F. Cell cycle phases- mitosis division
 - a. S phase (synthesis)- DNA IS REPLICATED
 - b. G₂- growth INTERPHASE
 - c. G₁- growth
 - d. Prophase- chromosomes have condensed, become visible
 - e. Prometaphase- nuclear envelope fragments, align in center portion of cell
 - f. Metaphase- centrosome at spindle pole
 - g. Anaphase- daughter chromosomes separate
 - h. Telophase- final phase, division of rest of cell
 - i. Cytokinesis- nuclear envelope develops
 - j. KPCOFGS
- G. Example questions
 - a. A cell containing 92 chromatids at the start of mitosis would, at its completion, produce cells containing how many chromosomes
 - i. 46
- H. Density-
 - a. Dependent inhibition and anchorage dependence of cell division
- I. Binary fission

- a. Bacterial cell division
- b. Chromosome replication
- c. Replication continues, one copy of the original is now on each end of the cell
- d. Replication finishes, plasma membrane grows in
- e. Two daughter cells are the end result