











- 1  **Chapter 2**  
Chromosomes & Cellular Reproduction
- 2 
  - ▶ Chromosomes
    - ▶ Acquired from parents = offspring have 2 copies of each
    - ▶ Separating the DNA equally?
- 3  **Basic Cell Types**
  - ▶ Prokaryotes
    - ▶ DNA not membrane bound
    - ▶ Circular
    - ▶ plasmids
  - ▶ Eukaryotes
    - ▶ Membrane bound DNA
    - ▶ Linear
    - ▶ Histones
    - ▶ chromatin
- 4 
  - ▶ Viruses
    - ▶ Non-living
    - ▶ Genes resemble host
- 5  **Cell Reproduction**
  - ▶ Copy, separate, divide
  - ▶ Prokaryotic
    - ▶ One origin of replication
  - ▶ Eukaryotic
    - ▶ More complex process
- 6  **Eukaryotic chromosomes**
  - ▶ Homologous pairs
  - ▶ Diploid
  - ▶ Haploid
  - ▶ Structure
    - ▶ Centromere
      - ▶ Kinetochore
      - ▶ Spindle microtubules
      - ▶ Location varies
    - ▶ Pair of telomeres
      - ▶ Protection, aging, cancer
    - ▶ Origins of replication
      - ▶ Sister chromatids
- 7  **Cell Cycle**
  - ▶ Stages from one division to next
  - ▶ Checkpoints – regulate cell cycle
  - ▶ Phases
    - ▶ Interphase
      - G1/G0
      - S
      - G2
    - ▶ M phase
      - ▶ Cytokinesis
- 8  **Mitosis**
- 9 
- 10  **Chromosome Movement**

- ▶ Tubulin
- ▶ Kinetochores
- ▶ Motor proteins
- ▶
- ▶
- 11 
  - ▶ Number of chromosomes
    - ▶ Functional centromeres
  - ▶ Number DNA molecules
    - ▶ chromatids
  - ▶
- 12  **2.3 Genetic Variation**
  - ▶ Meiosis
  - ▶ Random fertilization
  - ▶
- 13  **Meiosis**
  - 1  ▶ Interphase
  - ▶ Meiosis I
    - ▶ Prophase I
      - ▶ 5 substages
        - Synapsis
        - Crossing over
          - tetrad
    - ▶ Metaphase I
    - ▶ Anaphase I
    - ▶ Telophase I
  - ▶ Cytokinesis
    - ▶ Reduction division
      - ▶
  - 2  ▶ Interkinesis
  - ▶ Meiosis II
    - ▶ Prophase II
    - ▶ Metaphase II
    - ▶ Anaphase II
    - ▶ Telophase II
  - ▶ Cytokinesis
    - ▶ Result = 4 haploid cells
- 14  **Meiosis**
- 15 
  - ▶ Meiosis I
    - ▶ Recombination
      - ▶ Crossover (Prophase I)
    - ▶ Random alignment
      - ▶ Metaphase & anaphase I
- 16 
  - ▶ Overview
- 17 
  - ▶ Animals
- 18 
  - ▶ Plants
- 19

- ▶ Venn diagram
  - ▶ 15 pts
  - ▶ Due next class period
  - ▶
- ▶ Next class period
  - ▶ Quiz (mitosis & meiosis)
    - ▶ Recognize diagrams of stages
    - ▶ Name stages
    - ▶ Describe major events for each stage
    - ▶