Chapter 15

Michael Brodskiy
Instructor: Mrs. Polivka

January 29, 2020

- The chromosome theory of inheritance states:
    1. Mendelian genes have specified loci (location) on chromosomes
    2. Chromosomes undergo segregation and independent assortment
- Genes that are close together on the same chromosome are linked and do not assort independently
    1. Unlinked genes are either on separate chromosomes or are far apart on the same chromosome and assort independently.
    2. Crossing over of homologous chromosomes was the mechanism of phenotypes different than the parents
- Recombinant Offspring
    1. Are those that show new combinations of the parental traits
- A linkage map
    1. An ordered list of the genetic loci along a particular chromosome
    2. Can be developed using recombination frequencies
- The farther apart genes are on a chromosome:
    1. The more likely they are to be separated during crossing over
    2. The higher their recombination frequencies will be
- The sex chromosomes:
    1. Have genes for many characters unrelated to sex
- A gene located on either sex chromosome:

1. Is called a sex-linked gene

- Some recessive alleles found on the X chromosome in humans cause certain types of disorders

    1. Color Blindness
    2. Hemophilia

- Alterations of chromosome number or structure cause some genetic disorders
- Large-scale chromosomal alterations

    1. Often lead to spontaneous abortions, or cause a variety of developmental disorders

- When nondisjunction occurs

    1. Pairs of homologous chromosomes do not separate normally during meiosis
    2. Gametes contain two copies or no copies of a particular chromosome.
    3. Examples:
        (a) Trisomy 21
        (b) XXX Syndrome

- Alterations of chromosome structure:

    1. A deletion removes a chromosomal segment
    2. A duplication repeats a segment
    3. An inversion reverses a segment within a chromosome
    4. A translocation moves a segment from one chromosome to another, nonhomologous one