Chapter 18. Patterns of Chromosome Inheritance

Chromosomes and the Cell Cycle.

What is the function of the cell cycle?

In the cell cycle, a cell’s genetic material (located on its chromosomes) is duplicated and evenly distributed between two daughter cells. [Figure 18.3]

The process of mitosis – microscopically visible stages of the cell cycle. [Figure 18.4]

Parts of a chromosome.
Karyotypes – pictures of an organism’s chromosomes. [Figure 18.1]

How can karyotypes be useful?

Meiosis is the process by which the diploid number (2N) of chromosome number is cut in half to the haploid number (1N).

Chromosomes come in pairs – during meiosis the pairs are separated independently of one another. (What does this mean?)

A summary of the process of meiosis. [Figure 18.8]
What is gametogenesis?

Fertilization—the fusion of a sperm with an egg—restores the diploid number of chromosomes and allows for new combinations of hereditary traits.

Chromosome Inheritance – Normal versus abnormal.

Changes in chromosome number.
- Nondisjunction – an abnormality during meiosis results in a gamete having a chromosome excess or deficiency.

Fertilization involving an abnormal gamete almost always produces an abnormal individual.
- Tisomy – An extra chromosome – usually fatal.
- Monosomy – A deficiency of one chromosome – almost always fatal.


The Inheritance of Sex:

Sex chromosomes:
- X = Female sex chromosome.
- Y = Male sex chromosome.

What are Barr bodies?

Nondisjunction involving sex chromosomes.
- XO – Turner syndrome
- XXY – Klinefelter syndrome
- XXX or XXXX – Poly-X females
- XYY – Jacobs syndrome
Structural changes in chromosomes. [Figure 18.16]