Chromosomes & Cell Division

I. DNA – Deoxyribonucleic Acid

A. Long, thin molecule that stores genetic info

B. Found in nucleus

C. "Book" of your life

II. Chromosome Structure

A. **CHROMOSOME** = Very compact structures of coiled DNA & proteins

B. **"Chapters"**

C. Contains 2 halves known as **CHROMATIDS**

i. Chromatids joined together by structure known as **CENTROMERE**

ii. Diagram:

D. Before cell division, DNA is not coiled, but instead loosely bound
   i. Known as **CHROMATIN**.

III. Chromosome Numbers
   A. Each species has a specific # of chromosomes
   B. Human = 46, Gorilla = 48, Dog = 78, Lettuce = 18, Chimp = 48, etc.

IV. Chromosome Categorization
   A. SEX CHROMOSOMES
      i. Determine the sex of an organism
         a) In Humans, known as "X" & "Y"
         b) Males = XY, Females = XX

   B. AUTOSOMES
      i. All other chromosomes

   C. Every cell has 2 copies of each autosome
      i. One copy from each parent

   D. KARYOTYPES
      i. Photograph of chromosomes shown paired from largest to smallest

V. Diploid vs Haploid

A. <u>DIPLOID</u>

i. Cells with 2 sets of matching chromosomes

ii. All human cells except for sex cells

iii. Abbreviated as "2n"

a) 2n # for humans = 46

- 22 pairs of autosomes, 1 pair of sex chromosomes

B. <u>HAPLOID</u>

i. Cells containing only 1 set of chromosomes

ii. Sex Cells = sperm & egg

iii. Abbreviated as "1n"

a) 1n # for humans = 23

- 22 autosomes , 1 sex chromosome