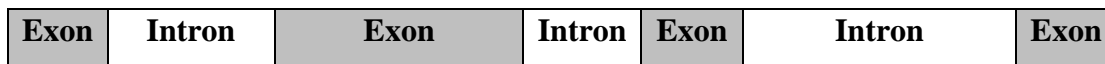


Genetics Part I

- **Genetics** is the study of heredity
 - **Heredity** is the passing of characteristics from parents to their children
- Scientists call these characteristics a **trait**
 - The best traits to study can be easily observed
 - Ex: eye color, curly hair, dimples etc.
- Traits are controlled by **genes** which are a piece of the DNA that has instructions for the cell
- DNA
 - DNA is organized into long pieces called **chromosomes**
 - Each organism has a specific number of chromosomes
 - Beavers have 40 chromosomes
 - Dogs have 78 chromosomes
 - Mosquitos have 6 chromosomes
 - Humans have 46 chromosomes
 - Each chromosomes carries different genes
 - **Exons**-the part of the DNA that is a gene
 - **Introns**-the part of the DNA that is in between the genes
 - So chromosomes look a little bit like this:



- Before the cell can use the DNA, it has to edit the chromosome
 - Cells use mRNA (messenger RNA) to edit the chromosome
 - RNA is very similar to DNA, but is only 1 strand
 - The mRNA carries the edited chromosome to the ribosome



- The ribosome makes the protein that is responsible for the trait
- So information in the cell follows this path:
 - DNA -> RNA -> Protein