

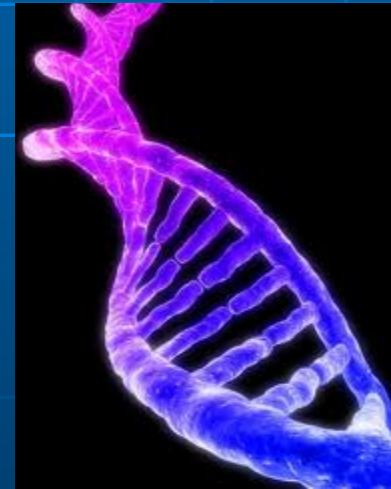
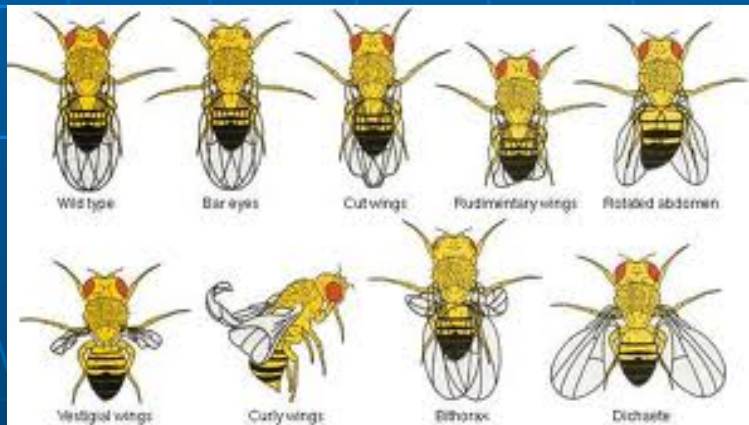
# Chapter 16-1: Genes & Variation

## Essential Questions:

- What are the main sources of genetic variation in a population?
- What determines the number of phenotypes for a given trait?

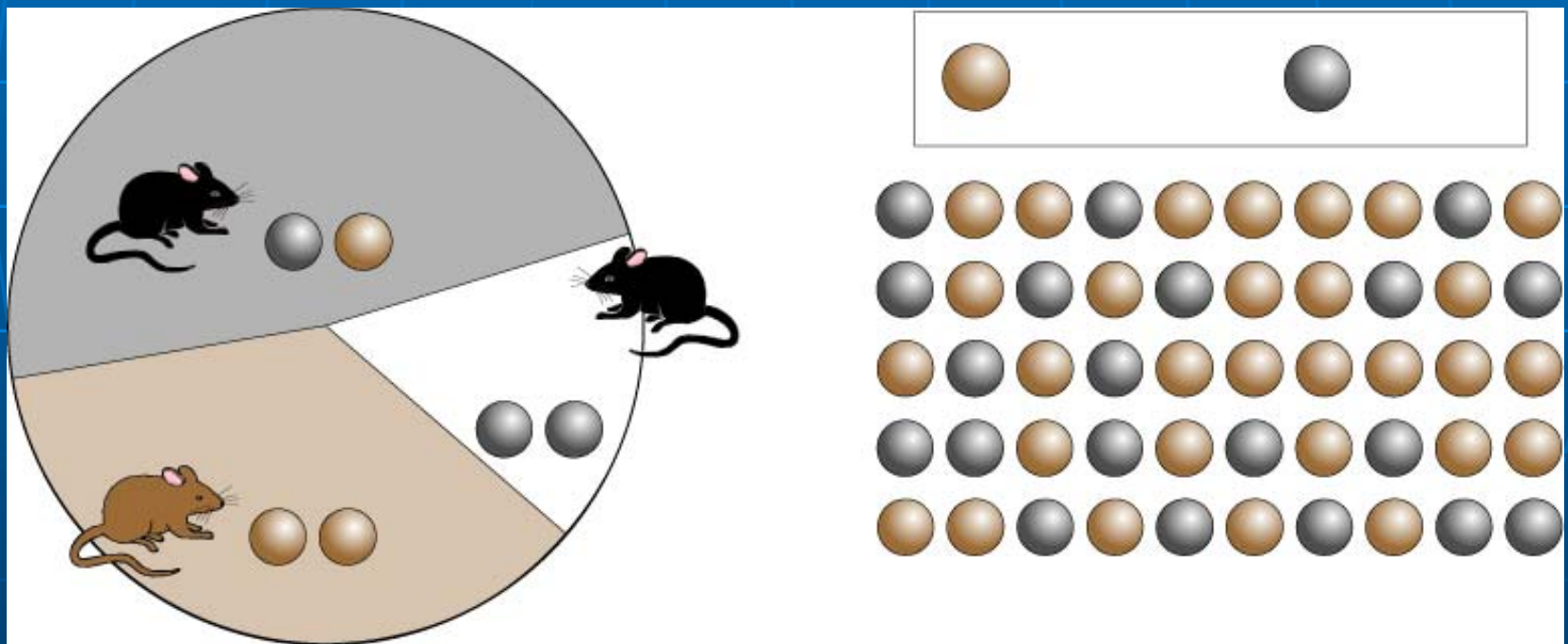
## ■ Darwin's ideas revisited

- D. didn't understand *how* heredity worked
- Today genetics & molecular biology help us understand how *variation* appears & how nat. selection acts on variation



## ■ Gene pools

- 2 or more *alleles* for each heritable trait
- *Relative frequency* of allele is % in gene pool (for 1 allele)



## ■ Sources of genetic variation

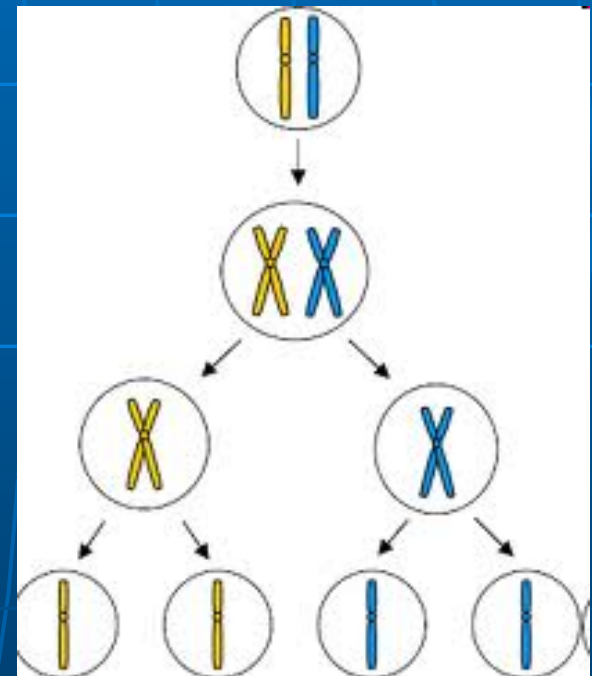
- Mutations – change in DNA sequence – don't always affect phenotype
- Gene shuffling – during meiosis (gamete production)



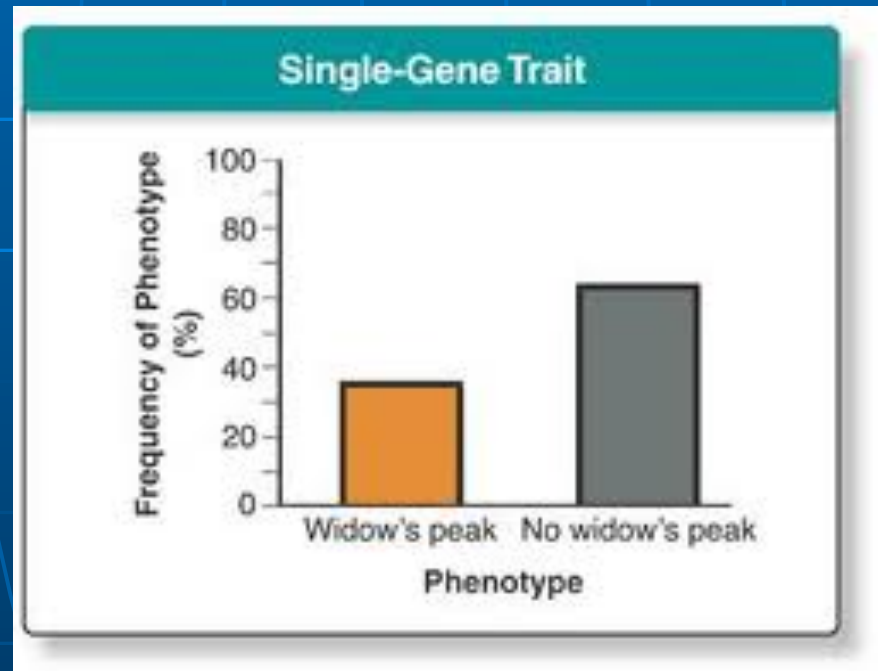
**GRUESOME GENETIC MUTATIONS**

Occasionally, they can be kinda cute.

motifake.com



- Single-gene & polygenic traits
  - Number of phenotypes produced for a given trait depends on how many genes control the trait
    - Single-gene traits (w/ 2 alleles)
      - 2 phenotypes only





- Polygenic traits: 2 or more genes control many possible phenotypes
- Variation of the phenotype can be expressed on a “bell curve” graph

