

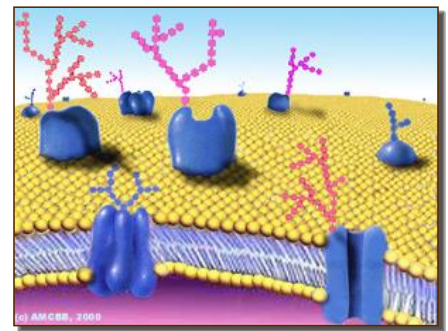
# More Than Mendel

Mendel worked with a simple system

Incomplete dominance = Heterozygote shows an \_\_\_\_\_ phenotype.

Co-dominance = 2 alleles affect the phenotype \_\_\_\_\_

- not \_\_\_\_\_ phenotype
- human \_\_\_\_\_ groups
- \_\_\_\_\_ alleles
  - \_\_\_\_\_
  - $I^A$  &  $I^B$  alleles are \_\_\_\_\_
    - glycoprotein \_\_\_\_\_ on RBC
    - $I^A I^B$  = \_\_\_\_\_
  - $i$  allele \_\_\_\_\_ to both



Phenotype	Genotype(s)	Antigens on RBC	Antibodies in blood serum	Donation status

Pleiotropy =

- Most genes are pleiotropic
  - dwarfism (achondroplasia)
  - gigantism (acromegaly)

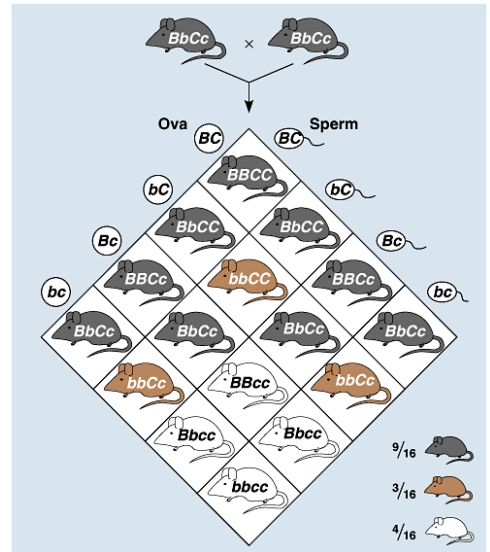
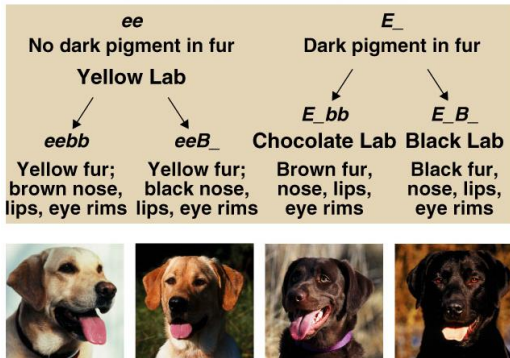
Inheritance patterns of Achondroplasia



Epistasis = One \_\_\_\_\_ completely masks another \_\_\_\_\_

Coat color in mice = 2 separate genes

- C,c: pigment (C) or no pigment (c)
- B,b: more pigment (black=B) or less (brown=b)
- cc = albino, no matter B allele
- \_\_\_\_\_ becomes \_\_\_\_\_



Polygenetic Traits = Some phenotypes determined by additive effects of \_\_\_\_\_ on a single character.

- phenotypes on a continuum
- Example human traits

Albinism

Sex-Linked Traits =

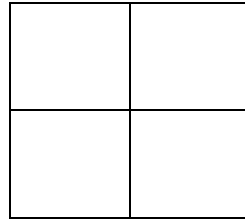
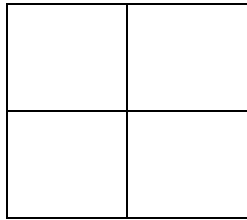
- as opposed to \_\_\_\_\_ chromosomes
- first discovered by \_\_\_\_\_ at Columbia U.
- *Drosophila* breeding
  - good genetic subject

Sex genetics

In humans & other mammals, there are 2 sex chromosomes: \_\_\_\_\_

- 2 X chromosomes
  - develop as a \_\_\_\_\_: XX
  - gene \_\_\_\_\_, like autosomal chromosomes
- an X & Y chromosome
  - develop as a \_\_\_\_\_: XY
  - no redundancy

Back to the flies



### Genes on Sexy Chromosomes

Y chromosome

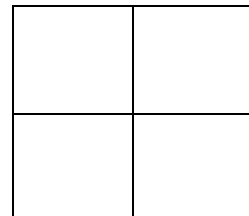
- few genes other than SRY
  - \_\_\_\_\_
  - master regulator for \_\_\_\_\_
  - turns on genes for production of male hormones
    - many effects = \_\_\_\_\_

X chromosome

- other genes/traits beyond sex determination
  - mutations:

“Sex-linked” =

Hemophilia



X-inactivation

Female mammals inherit \_\_\_\_\_ X chromosomes

One X becomes inactivated during embryonic development

- condenses into compact object = \_\_\_\_\_
- which X becomes Barr body is random
  - patchwork trait = “mosaic”

Male Pattern Baldness = Sex influenced trait

- autosomal trait influenced by sex hormones → age effect as well = onset after 30 years old
- dominant in males & recessive in females → B<sub>-</sub> = bald in males; bb = bald in females

Environmental Effects

Phenotype is controlled by both \_\_\_\_\_ & \_\_\_\_\_

