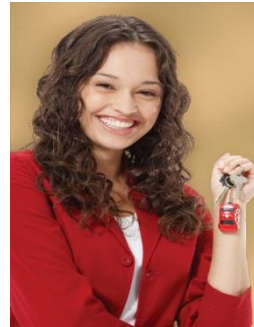
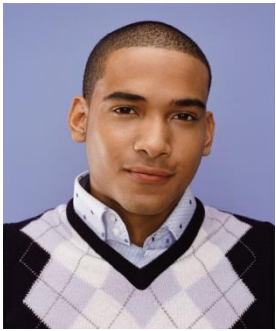


7.1 Chromosomes and Phenotype

KEY CONCEPT

The chromosomes on which genes are located can affect the expression of traits.



7.1 Chromosomes and Phenotype

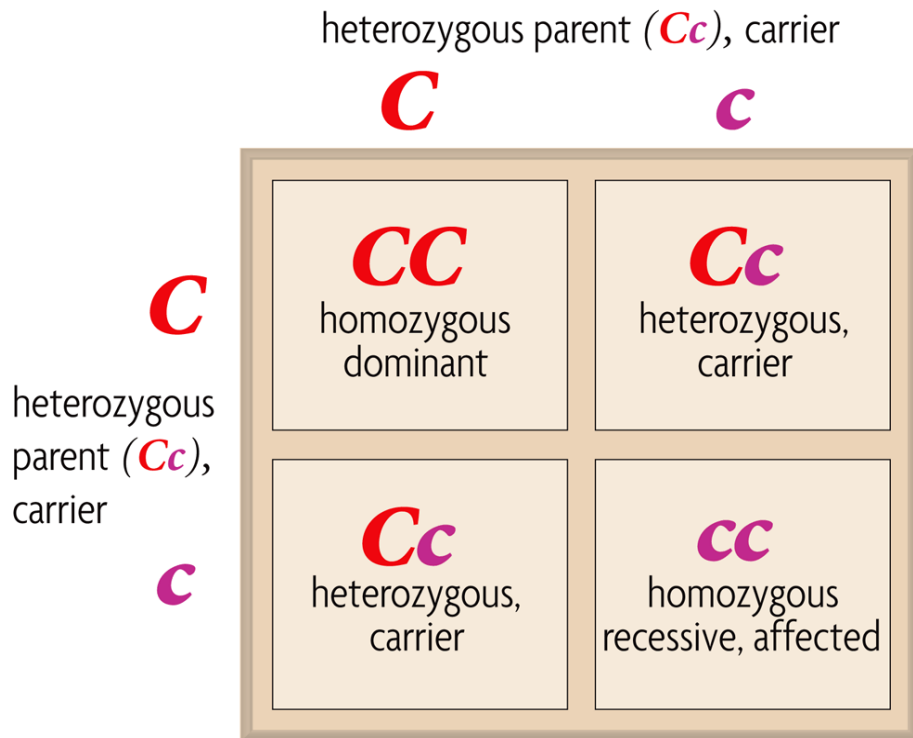
▶ Two copies of each autosomal gene affect phenotype.

- Autosomal chromosomes are chromosomes 1-22
- **Autosomes DO NOT** effect gender
- A human has 22 pairs, or 44 autosomes



7.1 Chromosomes and Phenotype

- People can be **carriers** for a disease
 - A heterozygote for a *recessive* disorder is a **carrier**.
 - Dominant allele disorders are uncommon.



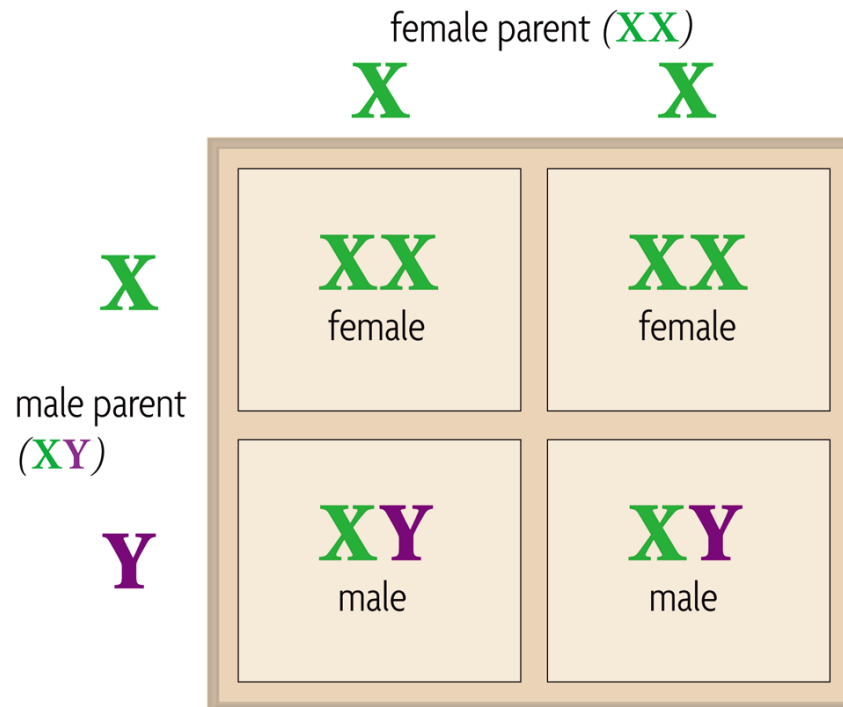
C = Normal allele (dominant)

c = Cystic fibrosis allele (recessive)

7.1 Chromosomes and Phenotype

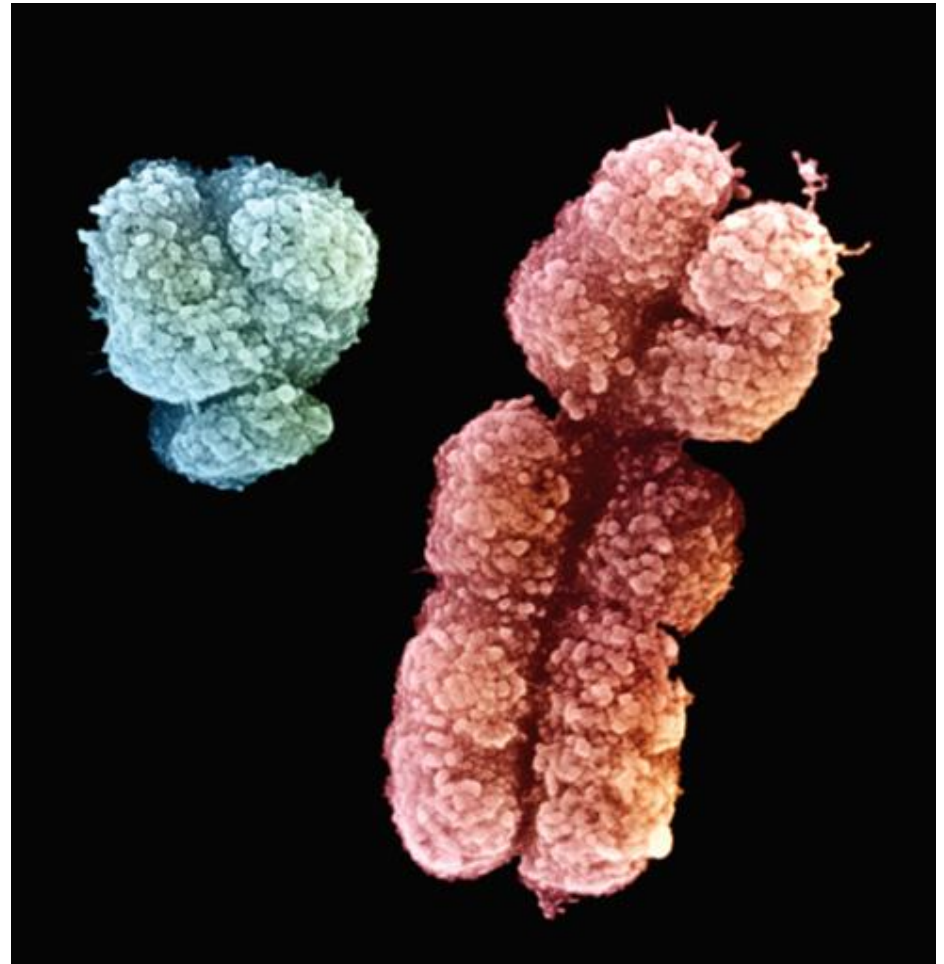
▶ Males and females differ in sex-linked traits.

- Genes on sex chromosomes are called **sex-linked genes**.
 - Y chromosome genes in mammals are responsible for male characteristics.
 - X chromosome genes are important in mammals.



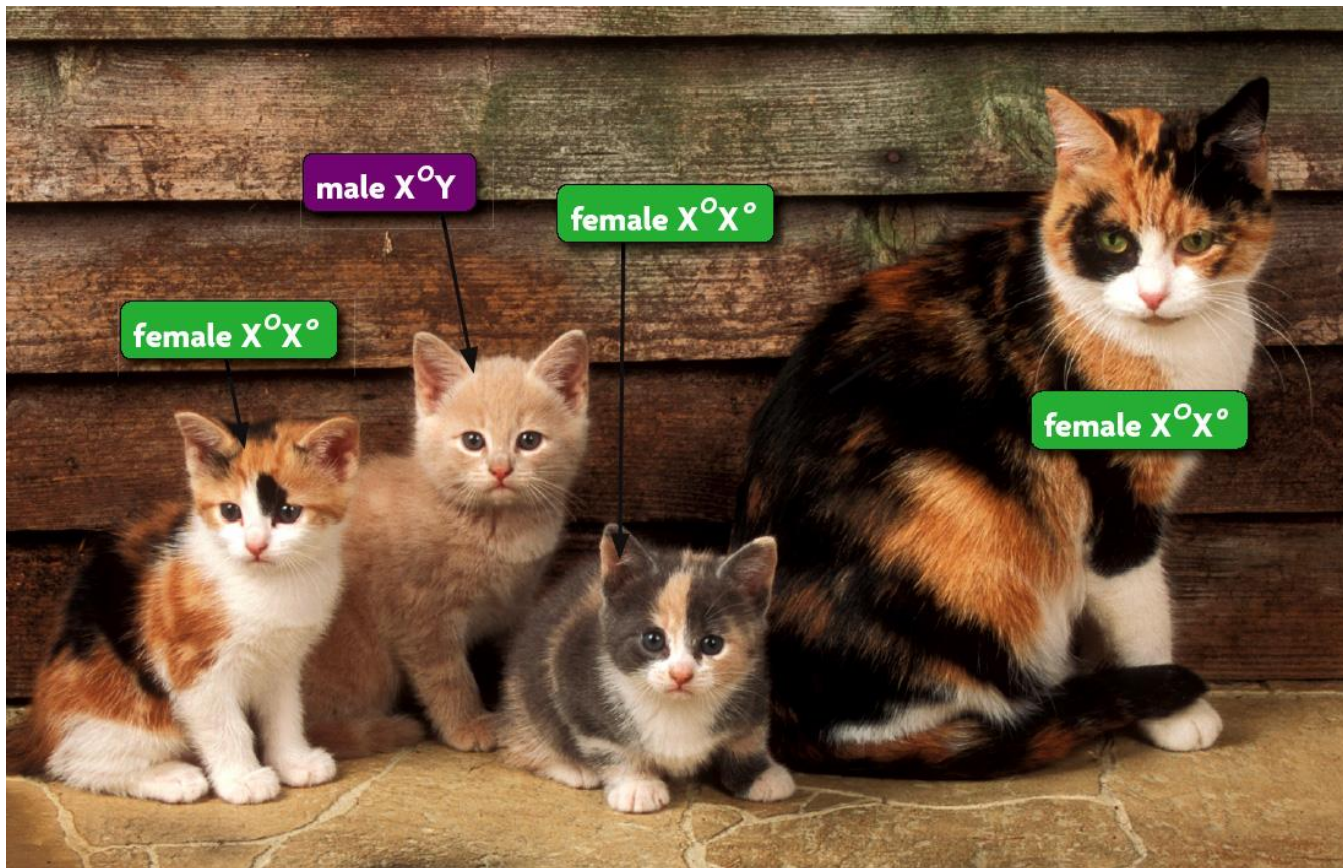
7.1 Chromosomes and Phenotype

- Male mammals have an XY genotype.
 - **All** of a male's sex-linked genes are expressed.



7.1 Chromosomes and Phenotype

- Female mammals have an XX genotype.
 - Expression of sex-linked genes is similar to autosomal genes in females since they have two copies.



7.1 Chromosomes and Phenotype

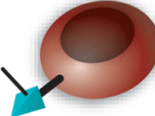
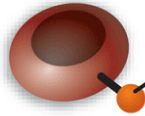
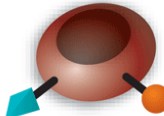
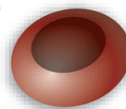
▶ Phenotype can depend on interactions of alleles.

- In **incomplete dominance**, neither allele is completely dominant nor completely recessive.
 - Heterozygous phenotype shows a blending between the two homozygous phenotypes



7.1 Chromosomes and Phenotype

- **Codominant** alleles will both be completely expressed.
 - Codominant alleles are represented equally and separately in a heterozygote.

PHENOTYPE (BLOOD TYPE)		GENOTYPES
A	antigen A 	$I^A I^A$ or $I^A i$
B	 antigen B	$I^B I^B$ or $I^B i$
AB	both antigens 	$I^A I^B$
O	no antigens 	ii