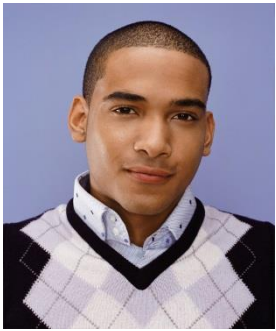


# 7.2 Complex Patterns of Inheritance

## KEY CONCEPT

Phenotype is affected by many different factors.



## 7.2 Complex Patterns of Inheritance

### ▶ Phenotype can depend on interactions of alleles.

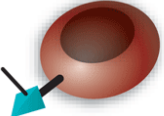
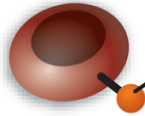
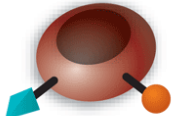
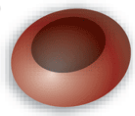
- In incomplete dominance, neither allele is completely dominant nor completely recessive.
  - Heterozygous phenotype is intermediate between the two homozygous phenotypes
  - Homozygous parental phenotypes not seen in  $F_1$  offspring



## 7.2 Complex Patterns of Inheritance

- Codominant alleles will both be completely expressed.

- Codominant alleles are neither dominant nor recessive.
- The ABO blood types result from codominant alleles.

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 	$ii$

- Many genes have more than two alleles.

# 7.2 Complex Patterns of Inheritance

▶ Many genes may interact to produce one trait.

- Polygenic traits are produced by two or more genes.



Order of dominance:  
brown > green > blue.

GENE NAME	DOMINANT ALLELE	RECESSIVE ALLELE
BEY1	brown	blue
BEY2	brown	blue
GEY	green	blue

## 7.2 Complex Patterns of Inheritance

- An epistatic gene can interfere with other genes.



## 7.2 Complex Patterns of Inheritance

### ▶ The environment interacts with genotype.

- Phenotype is a combination of genotype and environment.
- The sex of sea turtles depends on both genes and the environment
- Height is an example of a phenotype strongly affected by the environment.

