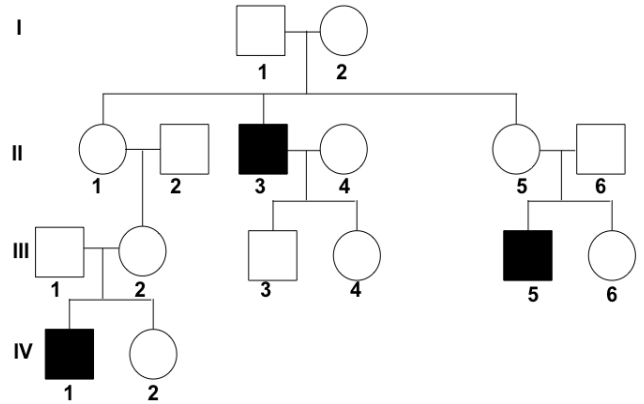


5.3 Tracking Patterns of Inheritance

P. 197-199

Pedigree: a diagram of an individual's ancestors used in human genetics to analyze the Mendelian inheritance of a certain trait; also used for selectively breeding of plants and animals.

Autosomal inheritance: inheritance of alleles located on autosomal (non-sex) chromosomes.



Next Lesson:

Sex-linked Inheritance: describes an allele that is found on one of the sex chromosomes, X or Y, and when passed on to offspring is expressed.

- **X-linked:** phenotypic expression of an allele that is found on the X chromosome.
- **Y-linked:** phenotypic expression of an allele that is found on the Y chromosome.

Pedigrees

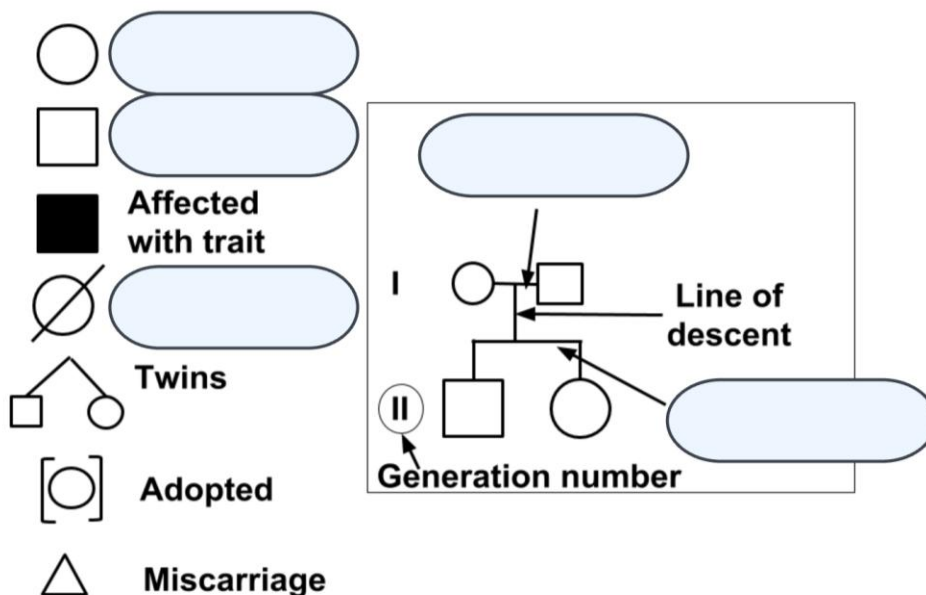
Tracking “_____” can be done using traits other than blood type.

- **A pedigree:** type of _____ that uses symbols to show the inheritance patterns of traits in a family over many generations.
- Used to track breast cancer, Huntington disease, cystic fibrosis, etc.
- Used in selective breeding of plants and animals.

Reading a Pedigree Chart

- Generations identified with _____ numerals
- Birth order is left to right (oldest to youngest). Arabic numbers for _____ in a generation
- Affected individual is shaded in; unaffected is un-shaded.

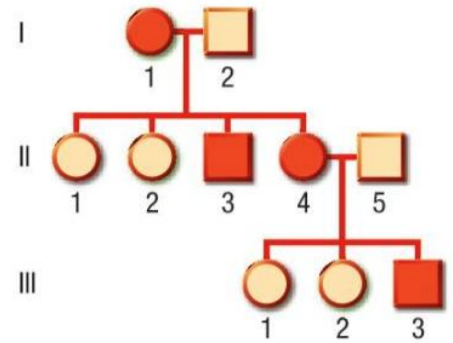
More Symbols (Fill in blanks)



Reading a Pedigree Chart

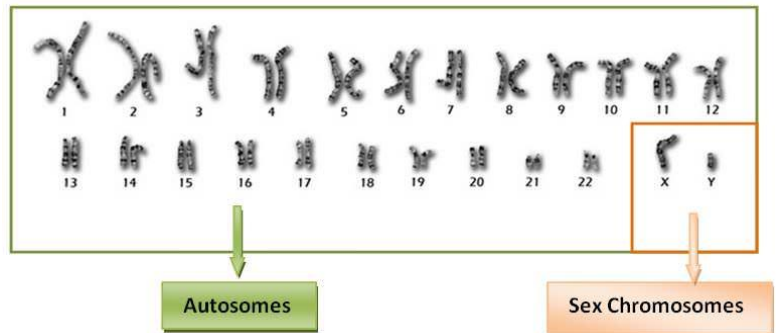
- This pedigree shows the presence of freckles in a family.
 - Freckles (F) allele is dominant
 - No freckles (f) is recessive
- What is the relationship between (II-4) and (II-5)?

- Who would be considered the grandmother in this pedigree?

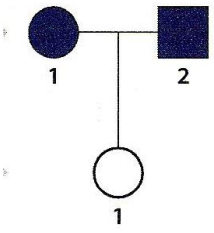
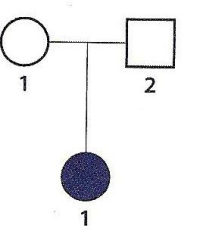


Autosomal Inheritance

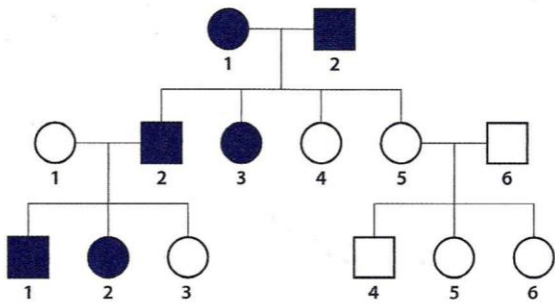
- Autosomal Inheritance:** Inheritance of traits whose genes are found on the *autosomes (chromosomes 1 to 22 in humans)



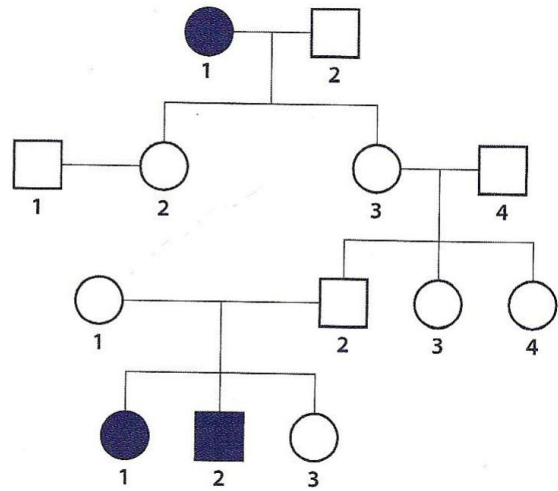
- Autosomal _____ inheritance requires only one copy of the allele for trait for expression
- Autosomal **recessive** inheritance requires _____ copies of the allele for trait to be present for expression (individuals are carriers if heterozygous)
- You can determine if a trait is autosomal dominant or recessive just by looking at a pedigree chart!

Autosomal Dominant Inheritance	Autosomal Recessive Inheritance																								
 <table border="1" data-bbox="438 1302 763 1512"> <tr> <td></td> <td colspan="2" style="text-align: center;">I-1</td> </tr> <tr> <td></td> <td style="text-align: center;">A</td> <td style="text-align: center;">a</td> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">AA</td> <td style="text-align: center;">Aa</td> </tr> <tr> <td style="text-align: center;">a</td> <td style="text-align: center;">Aa</td> <td style="text-align: center;">aa</td> </tr> </table> <div data-bbox="535 1554 755 1690" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Key</p> <p>AA = affected Aa = affected aa = unaffected</p> </div>		I-1			A	a	A	AA	Aa	a	Aa	aa	 <table border="1" data-bbox="1088 1323 1412 1533"> <tr> <td></td> <td colspan="2" style="text-align: center;">I-1</td> </tr> <tr> <td></td> <td style="text-align: center;">A</td> <td style="text-align: center;">a</td> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">AA</td> <td style="text-align: center;">Aa</td> </tr> <tr> <td style="text-align: center;">a</td> <td style="text-align: center;">Aa</td> <td style="text-align: center;">aa</td> </tr> </table> <div data-bbox="1144 1554 1364 1690" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Key</p> <p>aa = affected Aa = unaffected (carrier) AA = unaffected</p> </div>		I-1			A	a	A	AA	Aa	a	Aa	aa
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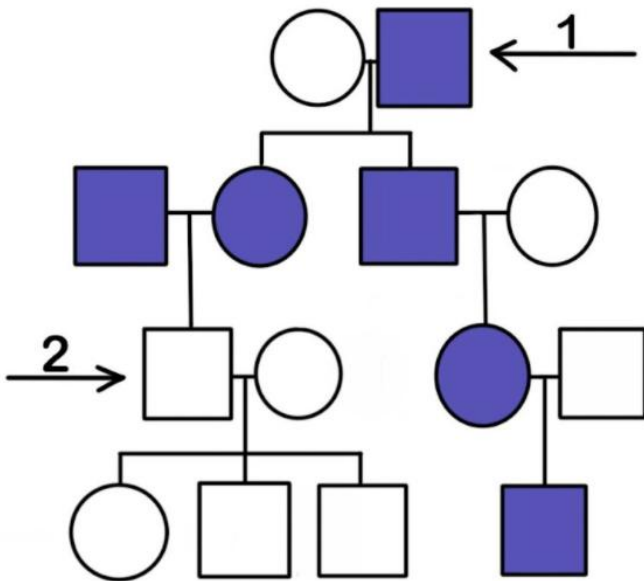
Huntington's (LABEL GENOTYPES)



Cystic Fibrosis (LABEL GENOTYPES)

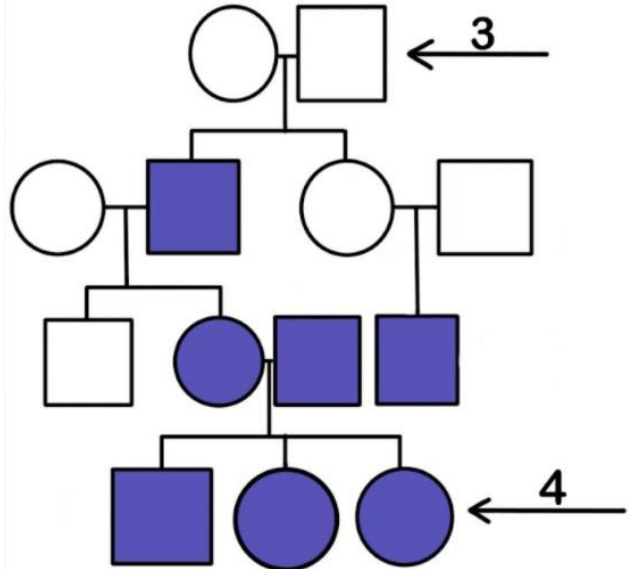


Notes to help you determine whether a disease is Autosomal Dominant or Autosomal Recessive



Autosomal Dominant

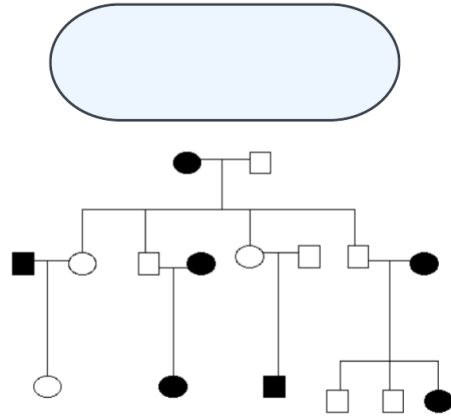
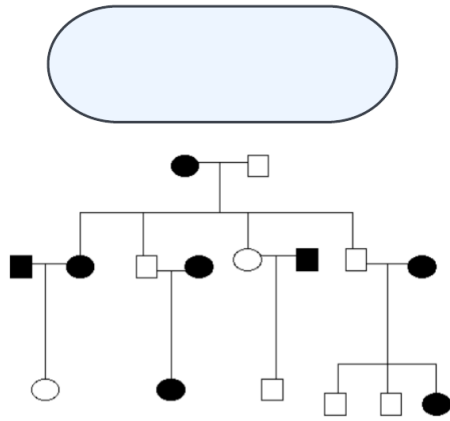
1. Affected children must have at least one affected parent.
2. Two affected parents can have an unaffected child.



Autosomal Recessive

1. Parents don't have to be affected, but both must at least be carriers (heterozygous for the trait).
2. Two affected parents will only have affected children.

Which is dominant? Which is Recessive? (LABEL)



Homework

- Worksheet
- Homework P. 201 #1-5