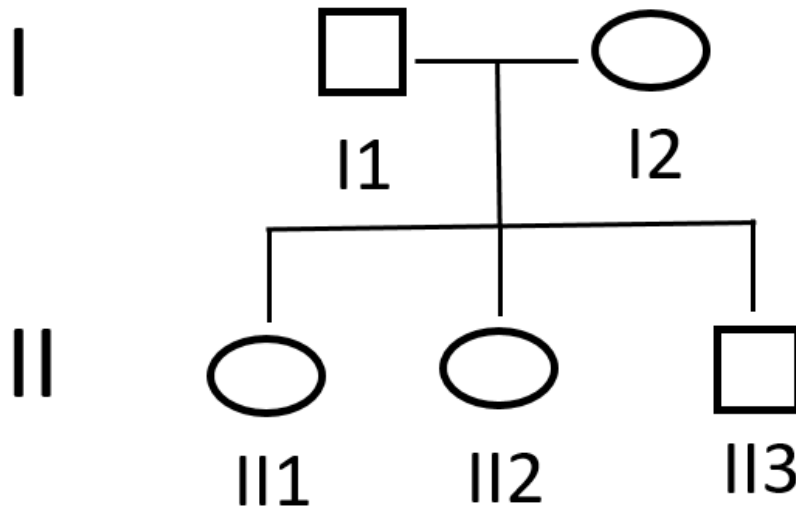


Genetics: Pedigree Analysis











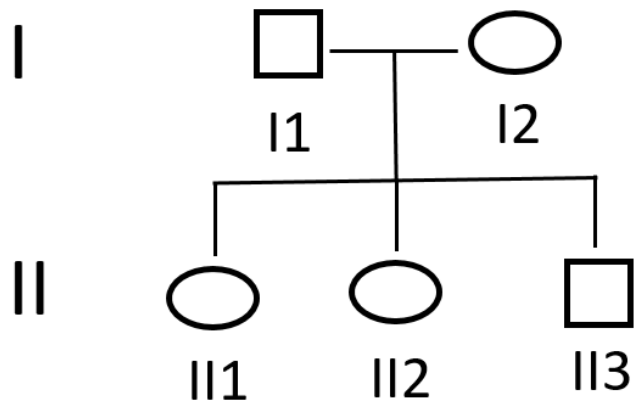
Pedigree Analysis 1

- ▶ Another way you can determine traits is by a Pedigree Analysis
- ▶ In a Pedigree Analysis instead of seeing just the parents alleles you can see the entire known family tree.



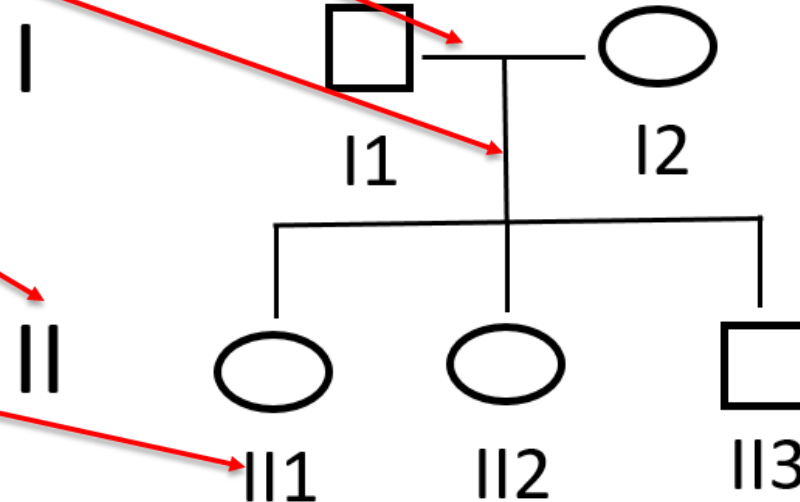
Pedigree Analysis 2

- ▶ Males are represented as squares 
- ▶ Females are represented as circles 
- ▶ Homozygous Dominant are blank  
- ▶ Homozygous Recessive are colored  
- ▶ Heterozygous (carriers) are half blank  



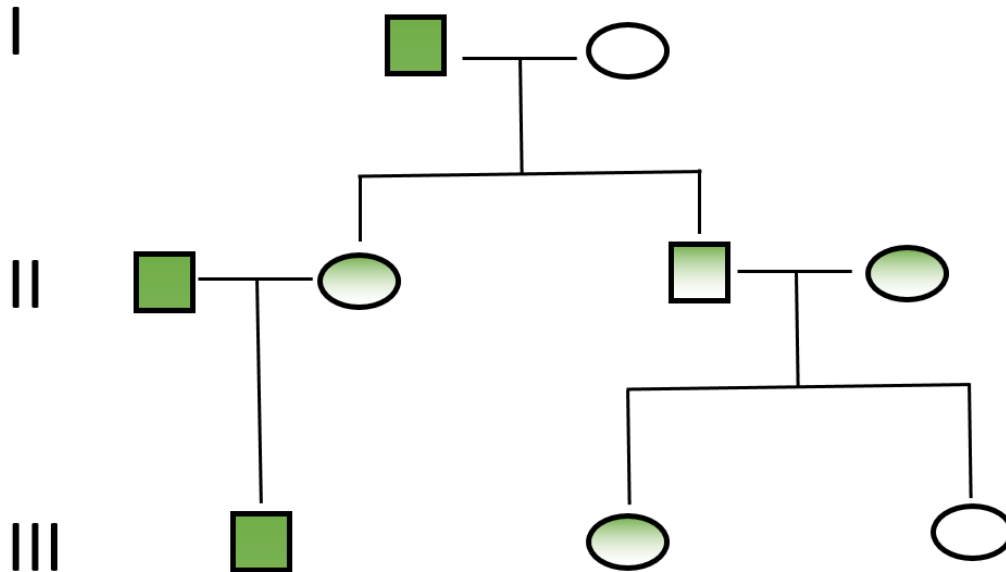
Pedigree Analysis 3

- ▶ This line represents a mating
- ▶ This line shows the offspring from the mating
- ▶ Each generation is shown by a Roman Numeral
- ▶ Each individual within a generation is designated by a number



Pedigree Analysis: Example 1

- Look at the following Pedigree Analysis for a recessive trait in the Shackleford Banks horses. How many males have the trait? Females? Are there any carriers?



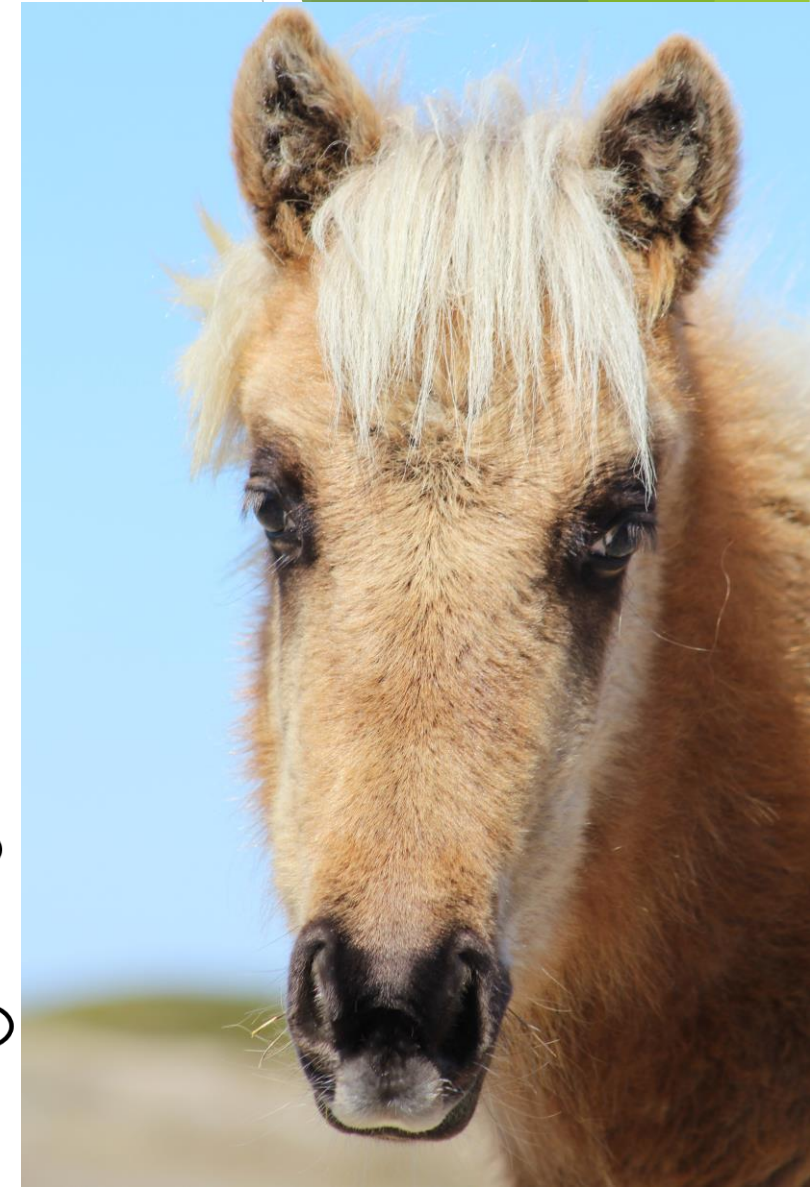
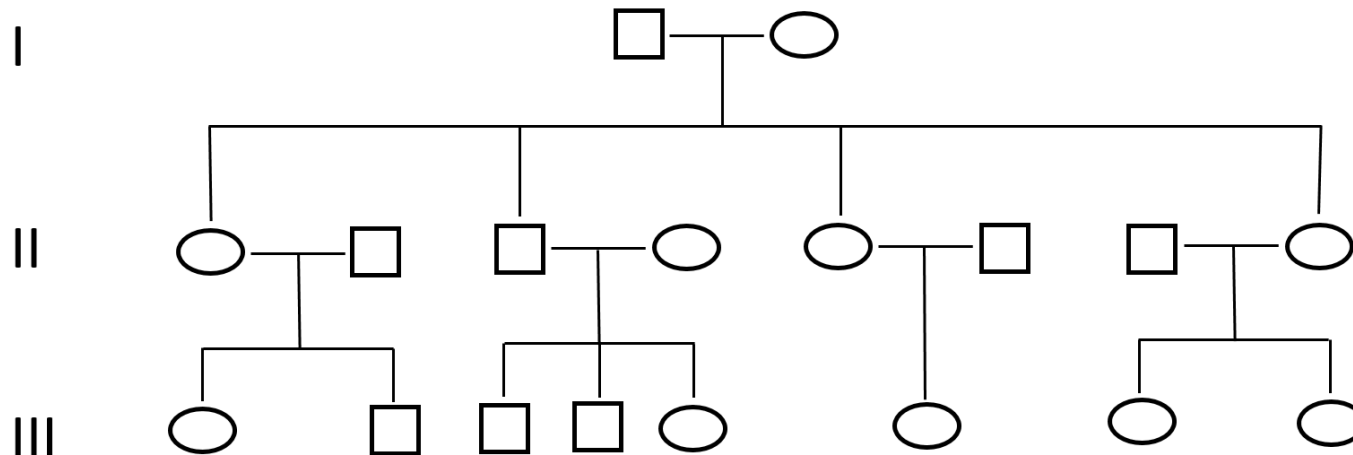
Pedigree Analysis: Example 1 Answers

- ▶ Males- I1, II1, III1
- ▶ Females- None are Homozygous for the trait
- ▶ Carriers- II2, II3, II4, III2



Pedigree Analysis: Example 2

- ▶ Looking at the Pedigree Analysis, answer the following questions.
 - ▶ What is the relation between II3 and II4?
 - ▶ What is the relation between III3 and III5?
 - ▶ What is the relation between III2 and III7?
 - ▶ What is the relation between III2 and II5?
 - ▶ How many cousins does III4 have?



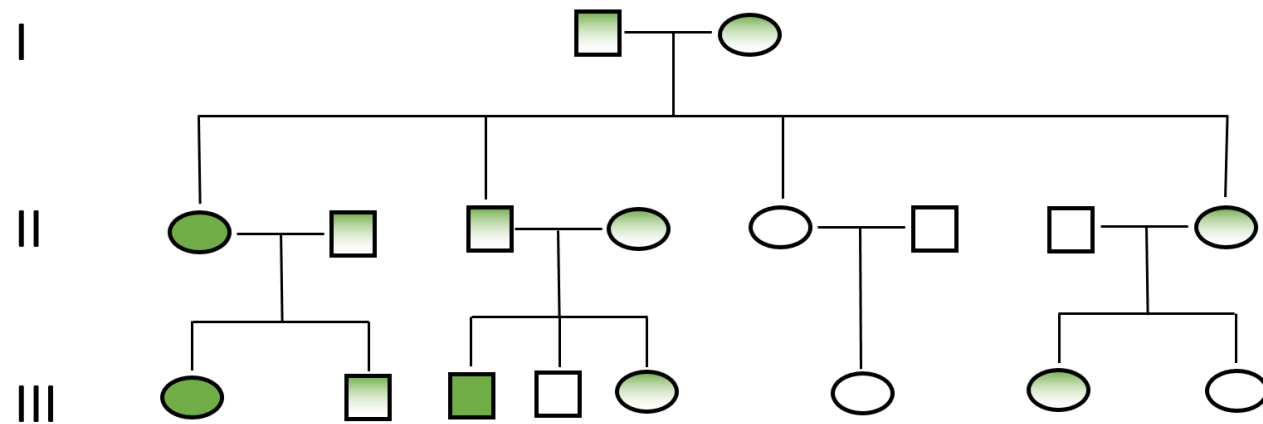
Pedigree Analysis: Example 2 Answers

- ▶ What is the relation between II3 and II4?
 - ▶ Married/Mated
- ▶ What is the relation between III3 and III5?
 - ▶ Siblings
- ▶ What is the relation between III2 and III7?
 - ▶ Cousins
- ▶ What is the relation between III2 and II5?
 - ▶ Nephew/Aunt
- ▶ How many cousins does III4 have?
 - ▶ 5



Pedigree Analysis: Example 3

- ▶ The following Pedigree Analysis is for the recessive trait blue eyes in horses.
 - ▶ List all the male horses that will have blue eyes.
 - ▶ List all the female horses that will be carriers for blue eyes.
 - ▶ If you were to breed III1 with a male heterozygote what percent of the offspring will have blue eyes? What percent will be carriers?



Pedigree Analysis: Example 3 Answers

- ▶ Males with blue eyes- III3
- ▶ Female carriers- I2, II4, II8, III5, III7
- ▶ 50% will have blue eyes, and 50% will be carriers

