

hey

Mendels Extension

What is a pedigree?

- A family tree that can show trait transmission

Brain dump all the symbols and what they mean.

○ = female

□ = male

◇ = unknown sex

○-□ = unrelated parents

○=□ related parents (consanguineous)

● or ■ = affected by the trait/disease

○₁ ○₂ □₃ = offspring (usually in birth order)

What is a proband?

Individual with who brought attention to the issue

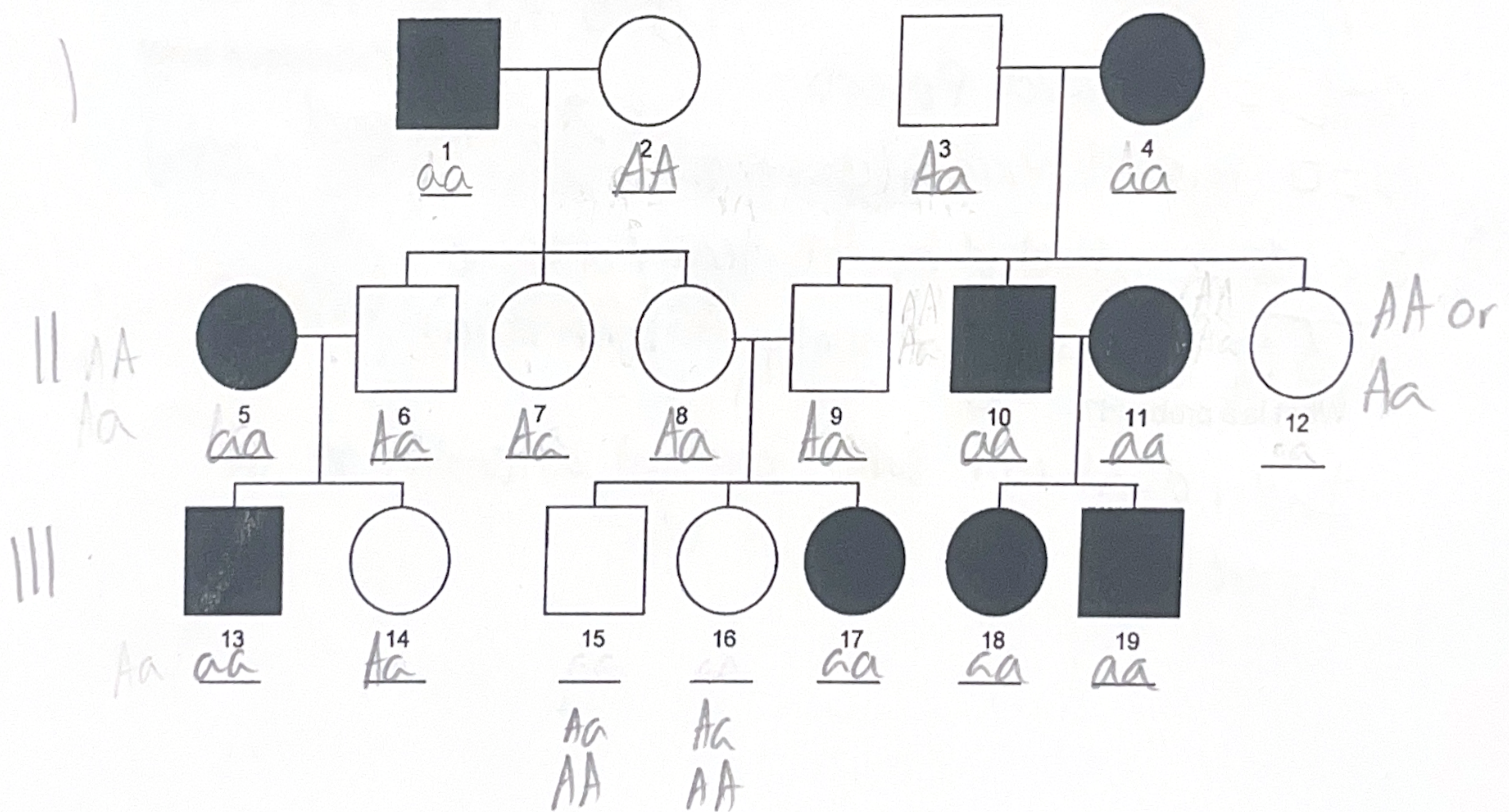
○△□ = fraternal twins

○△○ = identical twins

P → = Proband

Does this pedigree chart represent autosomal dominant or recessive? How do you know?

Autosomal Recessive
 1 Parents in generation II produced an affected offspring



What are the 3 types of mutations?

Loss-of-function = loss of wild-type functions
 gain-of-function = quantity of gene production ↑
 Neutral = no change

What letters designate wild type of mutated alleles?

e^+ = Wild type

e = mutant

What is incomplete dominance? Can you give an example?

When offspring's phenotype is a blend of the parents
White + Red = Pink
snapdragons

Red: R^1R^2 x White: R^1R^2

1 ZZ
1 R^1R^1 R^1R^2 1/4 red
2 R^1R^2 R^2R^2 2/4 Pink
1 R^2R^2 1/4 White

What is codominance? Can you give an example?

When offspring show both traits
Roan cattle or MN blood groups

$L^M L^N$ = both M & N blood groups are shown

Can you provide an example of multiple alleles? How are these represented?

3 or more alleles for one trait

blood type

$I^A = A$ $I^A I^B = AB$

$I^b = b$ $ii = O$

(A and B always dominant to i)

What is the Bombay phenotype?

Lack A & B antigens so AB blood type

Presenting as O

fut 1 gene

What are essential genes? What are lethal genes, and can you provide an example?

- required to live

- lethal = 2 copies results in death (Agouti mice)

Agouti mice have a lethal allele. Do the punnet square for these mice and determine which offspring will have the lethal gene.

A = normal

A^Y = mutation (2 copies is lethal)

$AA^Y \times AA^Y$

	A	A^Y	
A	AA	AA^Y	1 death
A^Y	$A^Y A$	$A^Y A^Y$	

What is epistasis?

When gene expression masks
another's phenotype