

PEDIGREE CHARTS

A family history of a genetic condition

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What is a pedigree chart?

- Pedigree charts show a record of the family of an individual
- They can be used to study the transmission of a hereditary condition
- They are particularly useful when there are large families and a good family record over several generations.

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Studying human genetics

- You cannot make humans of different types breed together
- Pedigree charts offer an ethical way of studying human genetics
- Today genetic engineering has new tools to offer doctors studying genetic diseases
- A genetic counsellor will still use pedigree charts to help determine the distribution of a disease in an affected family

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Constructing a Pedigree

- Female 
- Male 

Connecting Pedigree Symbols

Examples of connected symbols:

- Married Couple 
- Siblings 

Connecting Pedigree Symbols

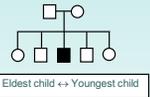
Examples of connected symbols:

- Fraternal twins 
- Identical twins 

Symbols used in pedigree charts

-  Normal male
-  Affected male
-  Normal female
-  Affected female
-  Marriage
-  Carrier
-  Deceased

A marriage with five children, two daughters and three sons. The eldest son is affected by the condition.

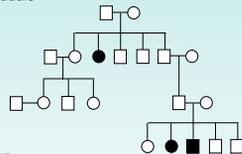


Elders child ↔ Youngest child

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Organizing the pedigree chart

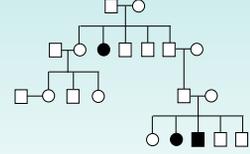
- A pedigree chart of a family showing 20 individuals



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Organizing the pedigree chart

- Generations are identified by Roman numerals



I
II
III
IV

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Organizing the pedigree chart

- Individuals in each generation are identified by Arabic numerals numbered from the left
- Therefore the affected individuals are II3, IV2 and IV3

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Interpreting a Pedigree Chart

Determine whether the disorder is dominant or recessive.

- If the disorder is dominant, one of the parents must have the disorder.
- If the disorder is recessive, neither parent has to have the disorder because they can be heterozygous.
- If most of the males in the pedigree are affected the disorder is X-linked

Example of Pedigree Charts

Dominant or Recessive?

Answer

Dominant

It is dominant because a parent in every generation have the disorder. Remember, if a parent in every generation has the disorder, the disorder has not skipped a generation. If the disorder has not skipped a generation the disorder is dominant.

Example of Pedigree Charts

Dominant or Recessive?

Answer

Recessive

It is recessive because a parent in every generation does not have the disorder. Remember the disorder can skip a generation if the disorder is recessive. The parents can be heterozygous and be carriers of the disorder, but not have the symptoms of the disorder.