



ALS/MND GENETICS

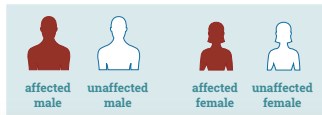
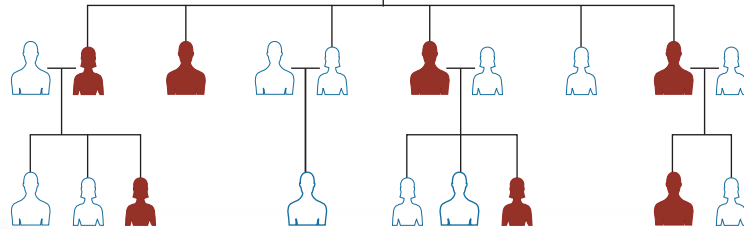
WHY IS IT IMPORTANT TO UNDERSTAND GENETIC CAUSES OF DISEASE?

- Help with diagnosis
- Understand disease biology
- Target for treatments

A pedigree chart displays a family tree, and shows the members of the family who are affected or unaffected by a genetic trait.



Pedigree analysis, combined with DNA samples from family members, can help with discovery of new genes.



WHY IS GENETICS RELEVANT TO ALS/MND?

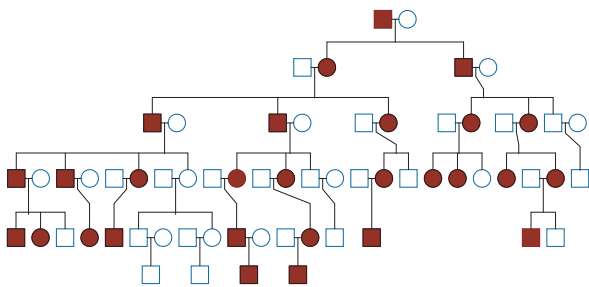
- Most people with ALS/MND develop the condition for unknown reasons.
- Some people with ALS/MND have a family history of the condition, or related disorders.
- Historically, the above have been referred to as **sporadic and familial ALS/MND**, respectively.
- Genetic causes have not been identified in all people with familial ALS/MND.
- In some cases of sporadic ALS/MND, genetic causes have been identified.

Familial/hereditary

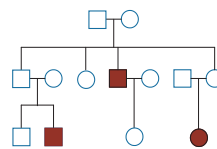
Ambiguous
family history

Sporadic with
genetic mutation

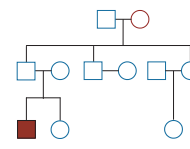
Sporadic



In these families, it is likely that a gene causing disease has been identified as the cause.



Family history is unclear. Underlying genetic cause with reduced penetrance (see Advanced Concepts in ALS/MND Genetics)



A genetic cause has been identified, but there is no family history.



There is no family history, and a genetic cause has not been identified.

- Our understanding of the role genetics plays in ALS/MND has advanced considerably.
- The field is moving away from a clear distinction between familial and sporadic ALS/MND, recognizing that ALS/MND exhibits a spectrum of inheritance patterns and genetic involvement.
- More than 40 genes have been identified** as being associated with either causing or increasing the risk of developing ALS/MND.
- Incidence of these genetic mutations **varies geographically**.