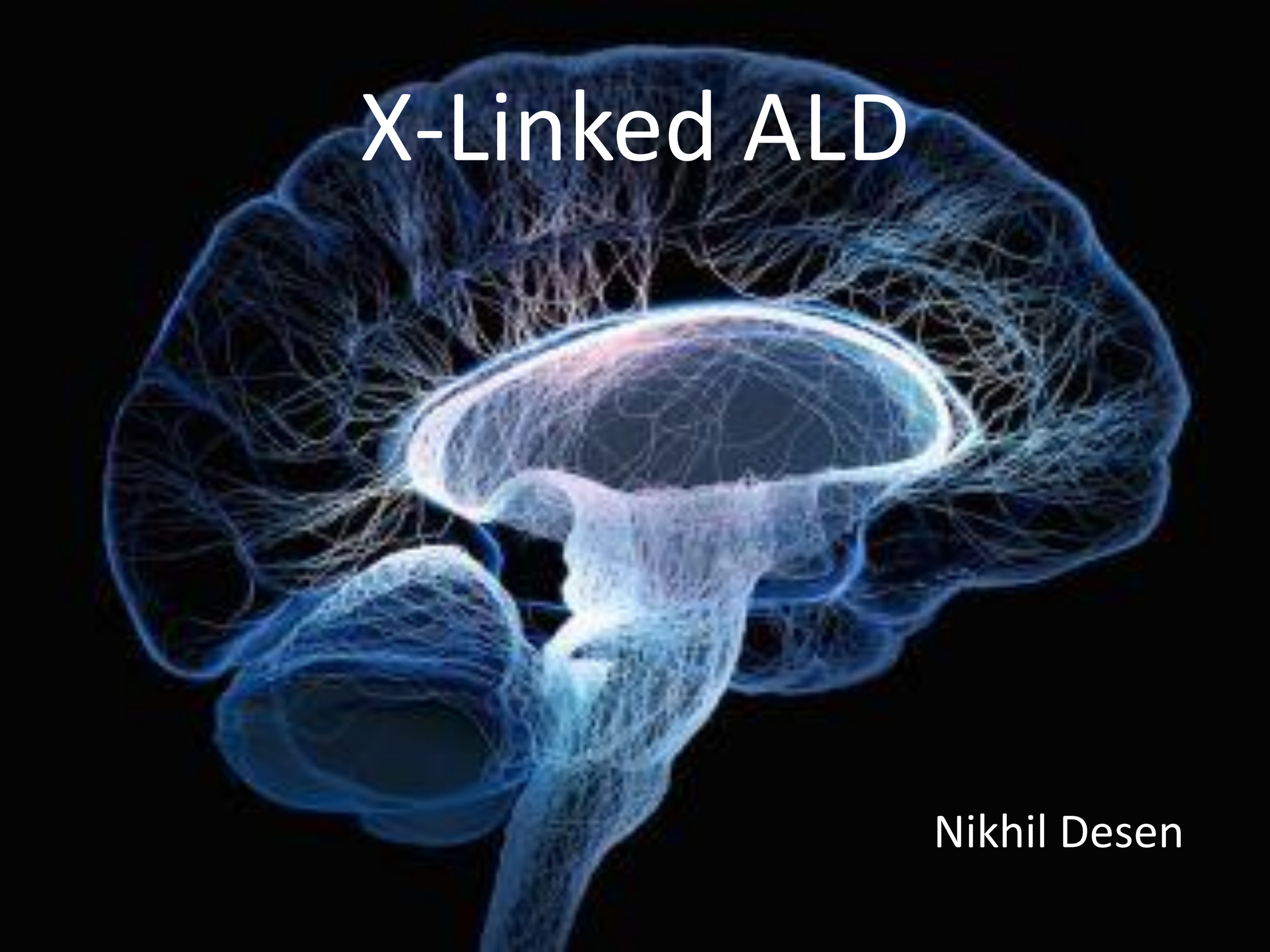
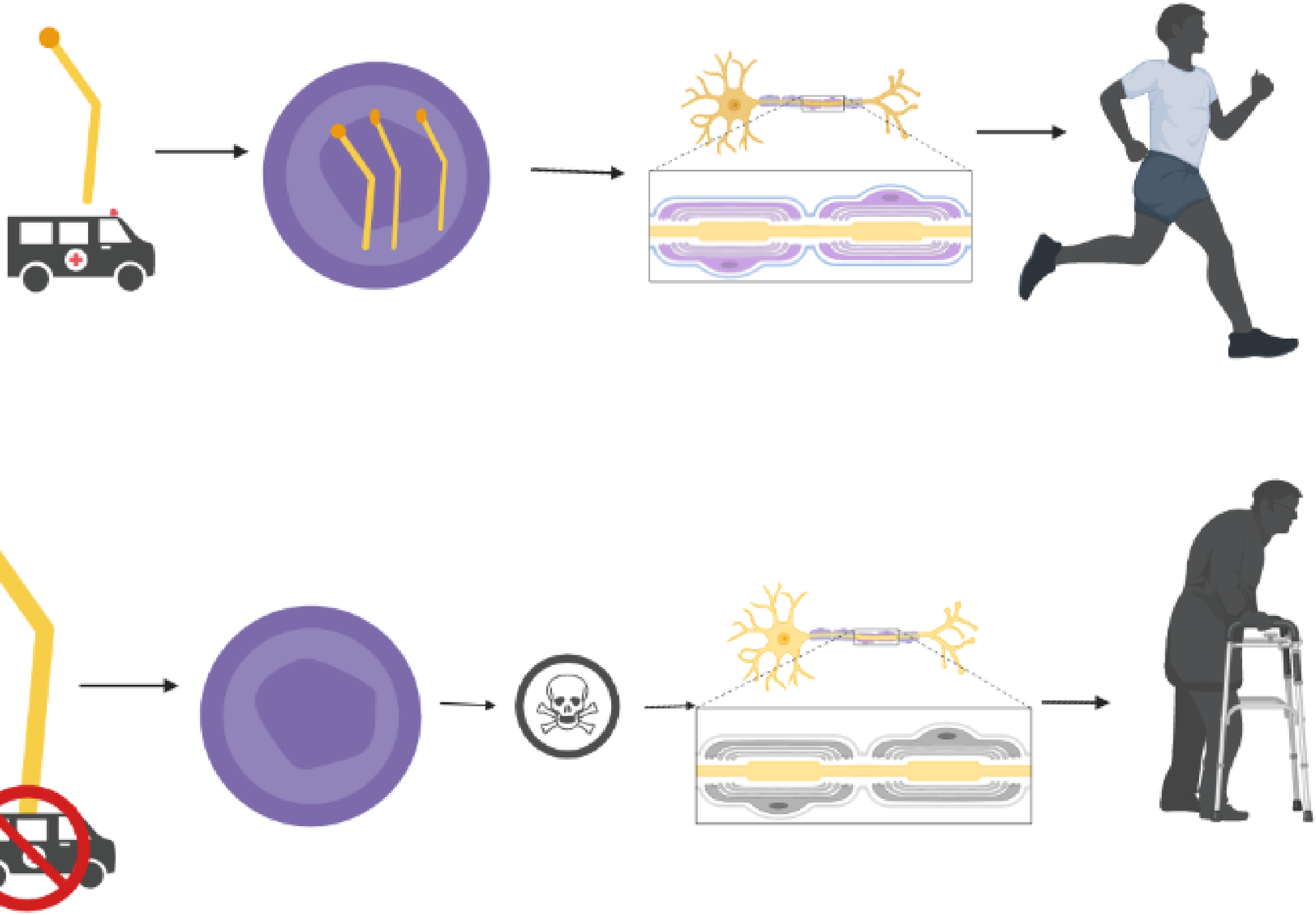
X-Linked ALD

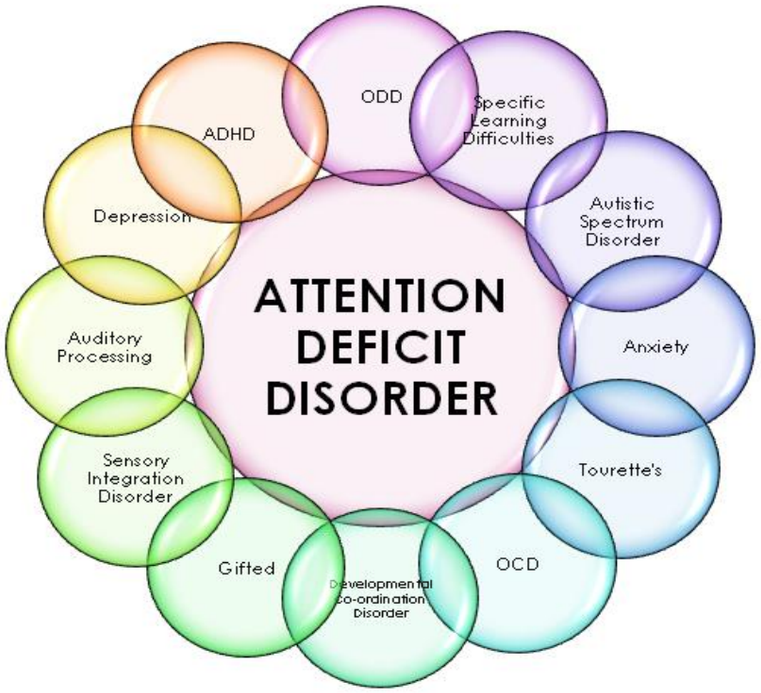


Nikhil Desen

What is X-linked ALD?

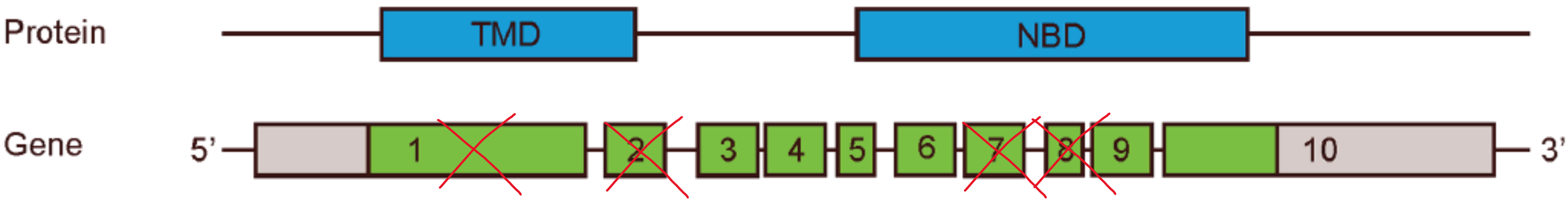


What are the symptoms of ALD?



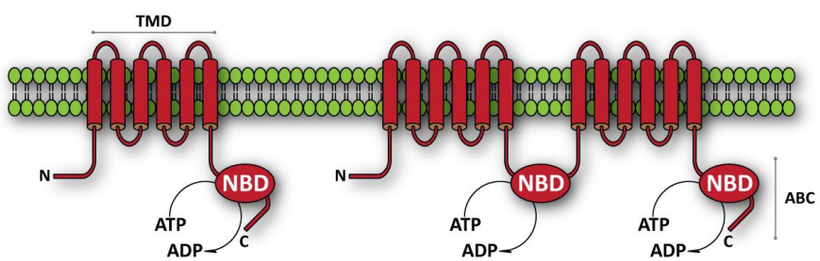
What gene is responsible?

ABCD1

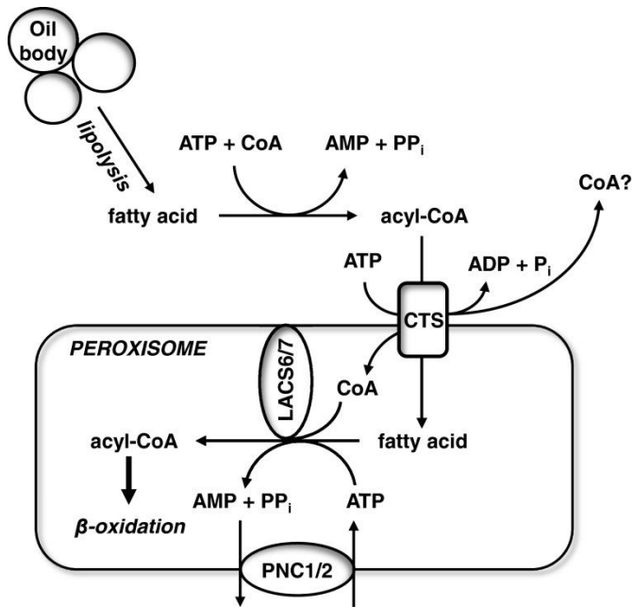


Marked areas are probable for mutation in ALD.

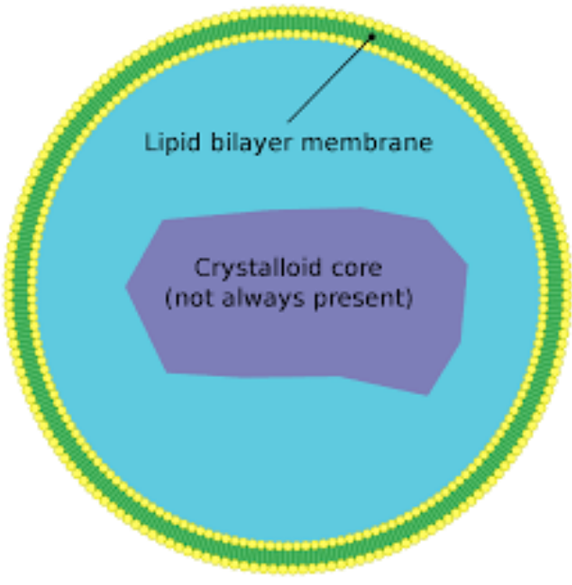
Molecular Function



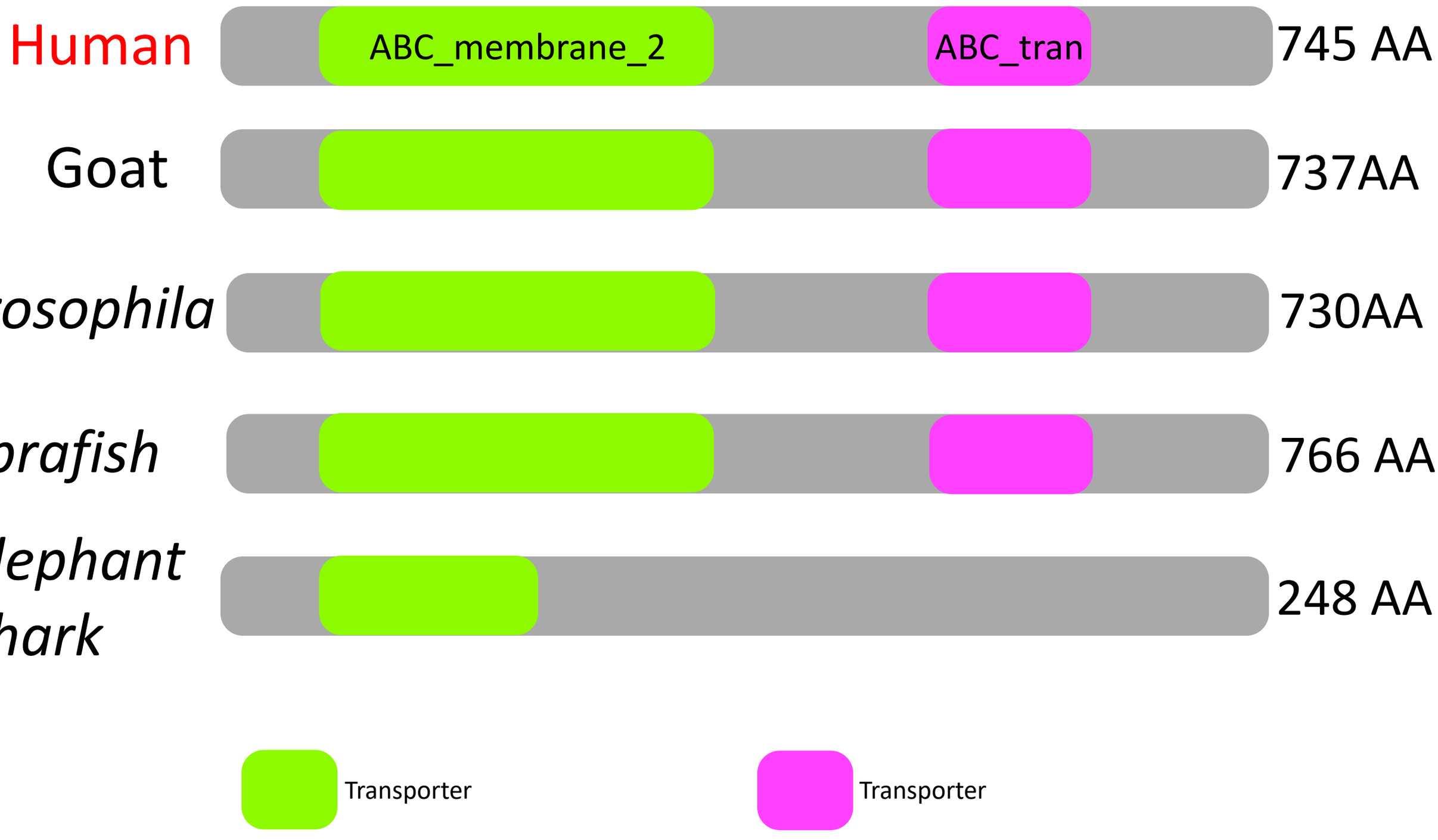
Biological Process



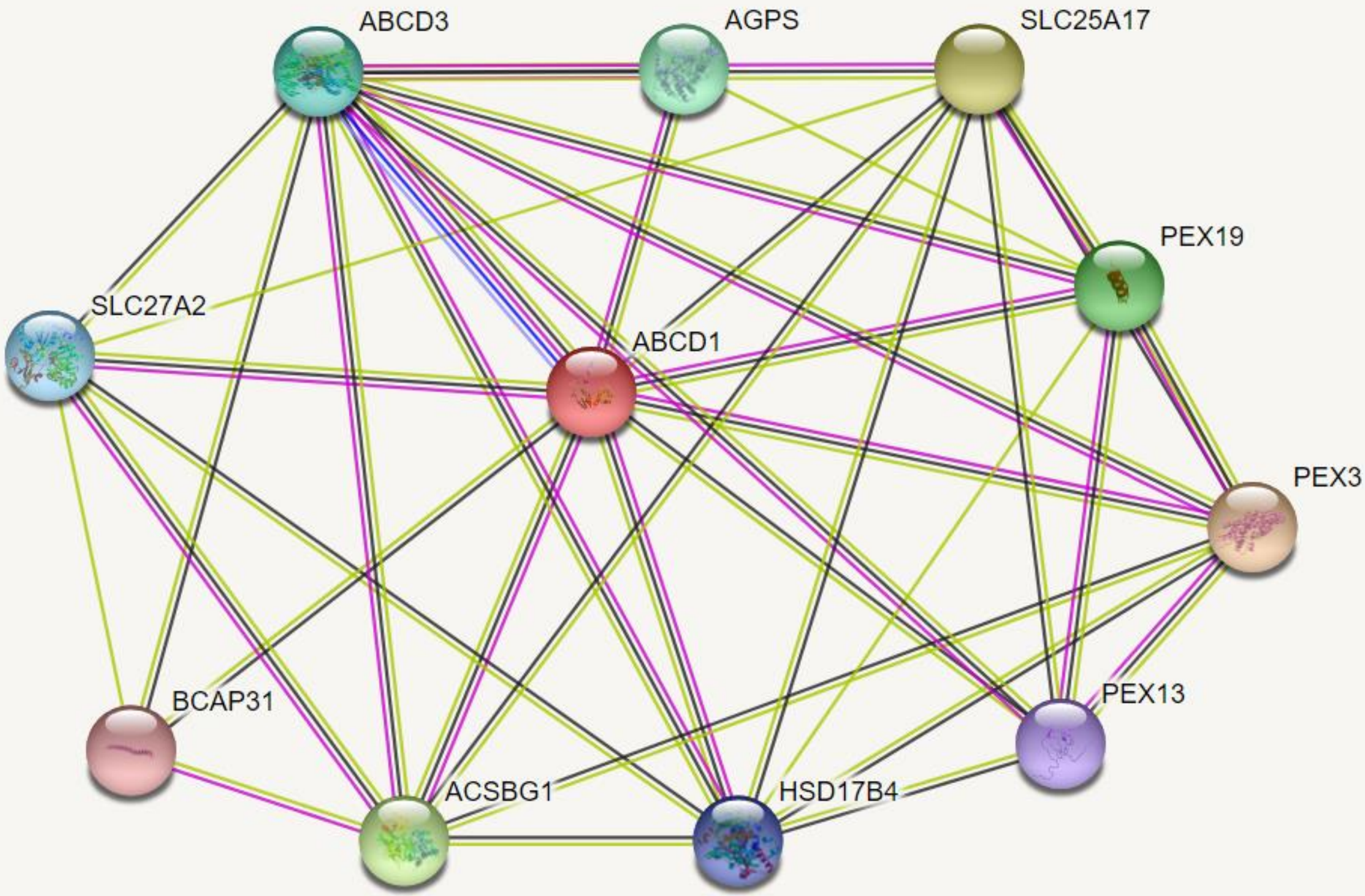
Cellular Component



How well is the gene conserved?



Protein Interaction: ABCD1



What is the model organism of choice?

Cheap

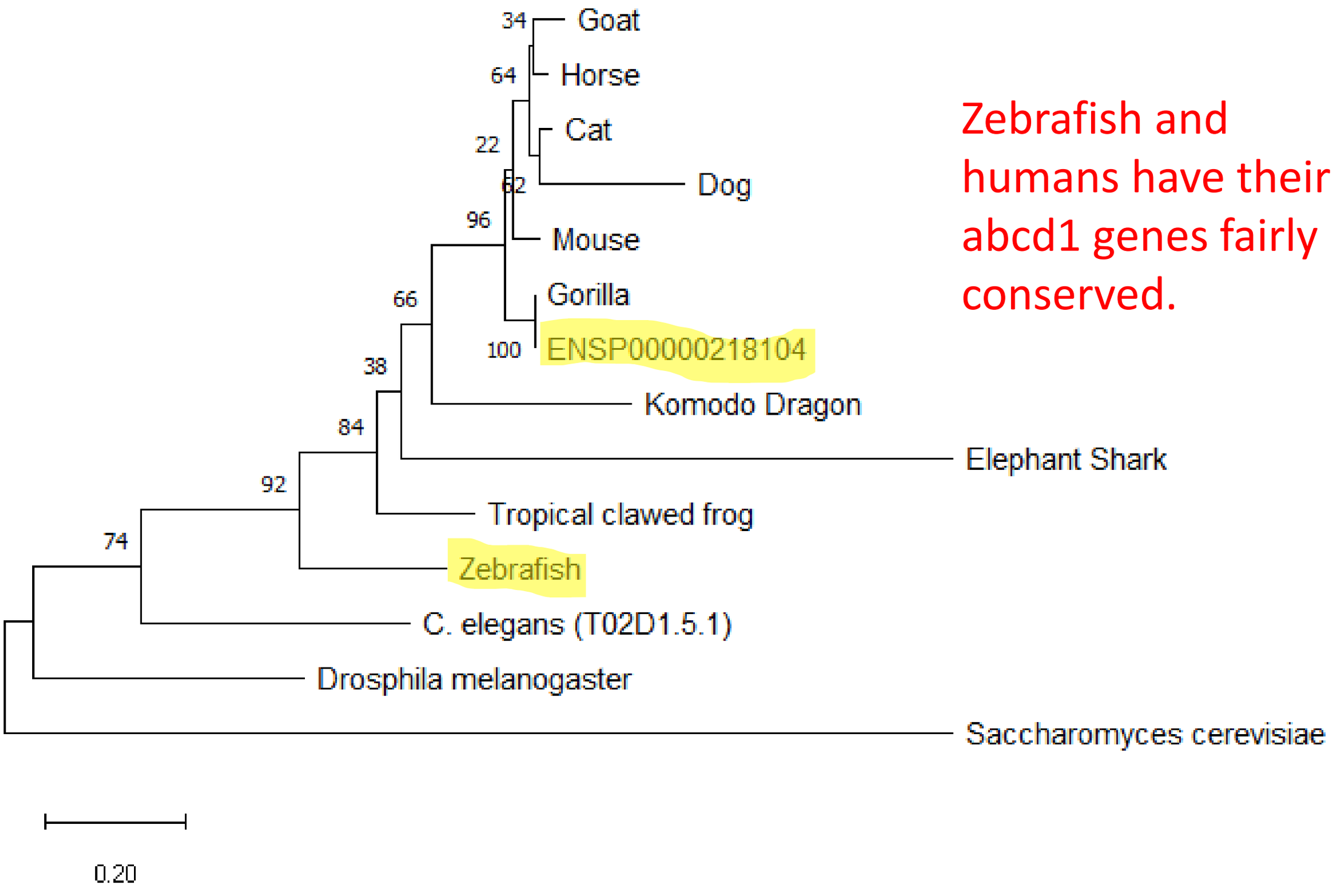
Many Offspring

Rapid Growth

Transparency

Eggs Outside

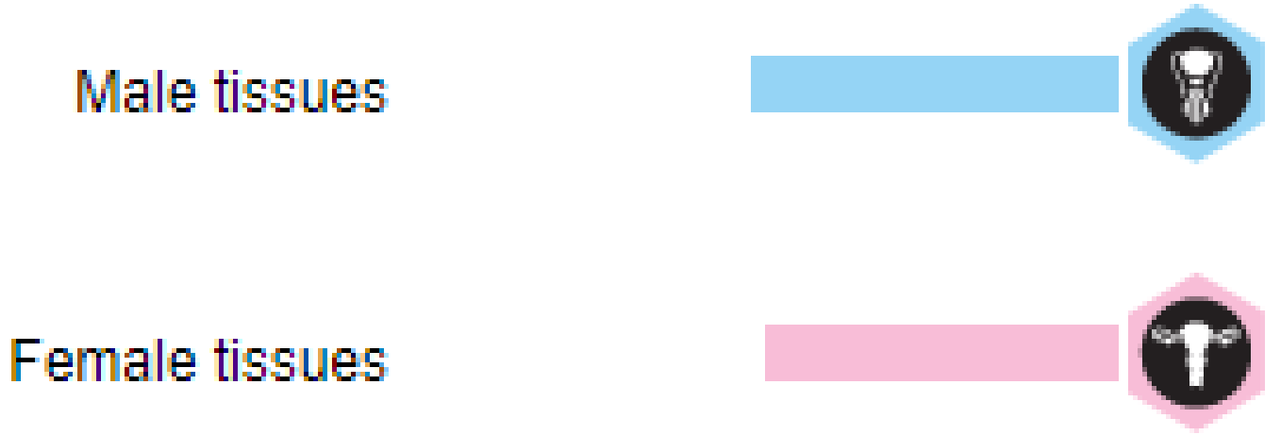
Phylogeny



Zebrafish and humans have their abcd1 genes fairly conserved.

What is the gap?

Although males are more susceptible to the disease given that it is x-linked, why do males experience more severe versions of the disease than females?



What is the primary goal?

To determine what may be the cause of increased severity of ALD in males.

Aim 1

Identify regions responsible for transporter function.

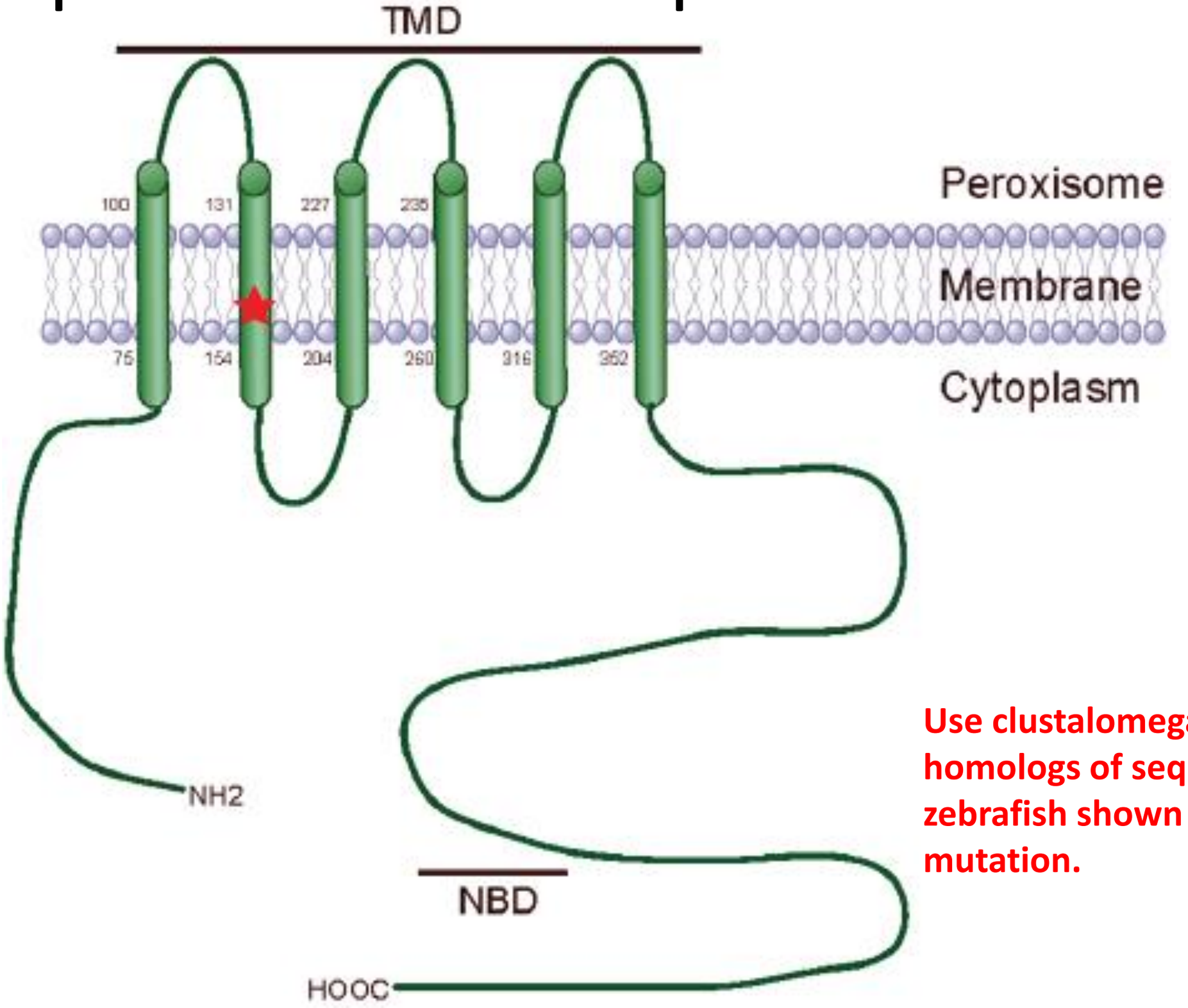
Aim 2

Look at differential expression of genes in ABCD1 mutant male and females.

Aim 3

Hypothesis: Differential expression in males could lead to more extreme cases of ALD.

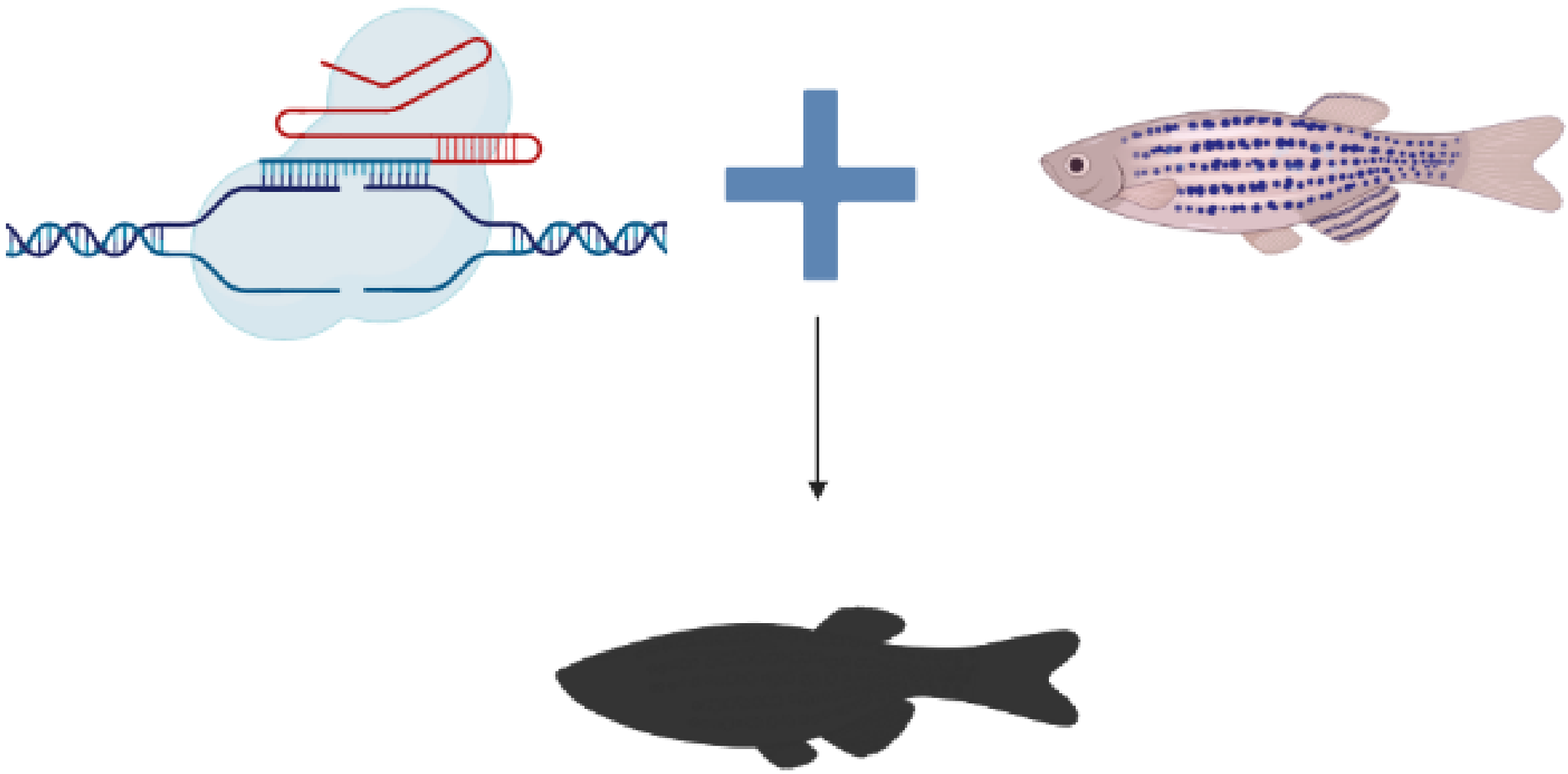
Aim 1: Identify regions of the protein responsible for transporter function.



Use clustalomega to find homologs of sequences in zebrafish shown to cause the mutation.

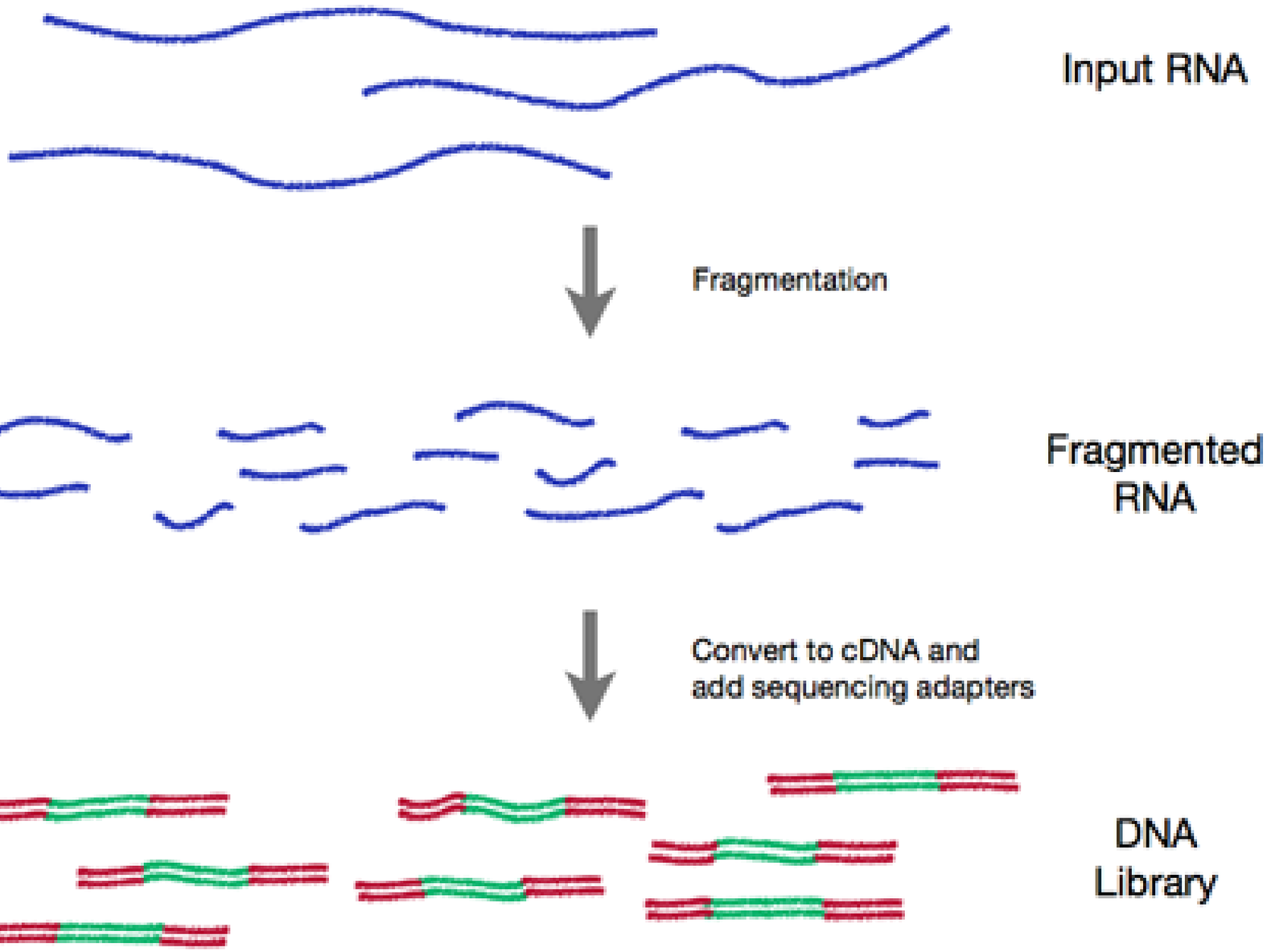
Aim 1: Identify regions of the protein responsible for transporter function.

CRISPR



Aim 1: Identify regions of the protein responsible for transporter function.

Aim 2: Look at gene expression of differentially expressed genes in males and females.



Why: Given that the expression levels of the gene are about the same, there must be another factor playing a part.

Future Directions: Upregulation of the ABCD2 gene.

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2967711/

Image References

- https://www.google.com/imgres?imgurl=https%3A%2F%2Fupload.wikimedia.org%2Fwikipedia%2Fcommons%2Fthumb%2Fc%2Fcb%2FPeroxisome.svg%2F1200px-Peroxisome.svg.png&imgrefurl=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FPeroxisome&tbnid=hEp91eL7de9viM&vet=12ahUKEwjU_O28n9LoAhXHNawKHXvwCf0QMygBegUIARCFAg..i&docid=bQv55noxXvaxKM&w=1200&h=1200&q=peroxisome%20structure&hl=en&ved=2ahUKEwjU_O28n9LoAhXHNawKHXvwCf0QMygBegUIARCFAg

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