



Mitochondrial inheritance

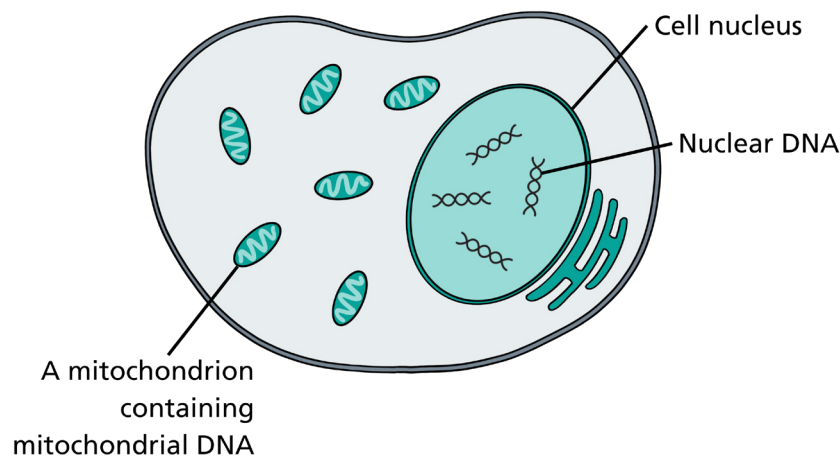
This communication aid has been produced for clinicians to help support and guide conversations about mitochondrial inheritance with their patients.

What are mitochondria?

We all have over 20,000 genes, which provide instructions for how our body works. Genes are made of DNA. Most genes are found inside the nucleus of a cell, known as **nuclear DNA**. Some genes are found in the mitochondria of a cell.

Mitochondria are structures found inside most cells in the body. Their job is to produce energy the cell needs. Each mitochondrion inside a cell contains a copy of a person's **mitochondrial DNA**.

Changes in mitochondrial genes can cause genetic disease. Usually, a person will have some mitochondria with the gene change and some without the gene change.



How are changes in mitochondrial genes passed on to children?

Genes in the mitochondria are always inherited from the mother. Mothers will pass a random selection of their mitochondria on to their children. If a mother carries a mitochondrial gene change, this will be inherited by their children.

The severity of a condition will depend on the number of mitochondria with a gene change someone inherits. Some people with very low numbers of mitochondria may have milder symptoms, or no symptoms at all.

Both males and females can inherit a mitochondrial gene change from their mother, but males will not pass this on to their children because sperm cells do not contribute any mitochondria at conception.

Key terms

Nuclear DNA: DNA found inside the nucleus of a cell.

Mitochondrial DNA: DNA found inside the mitochondria of a cell.

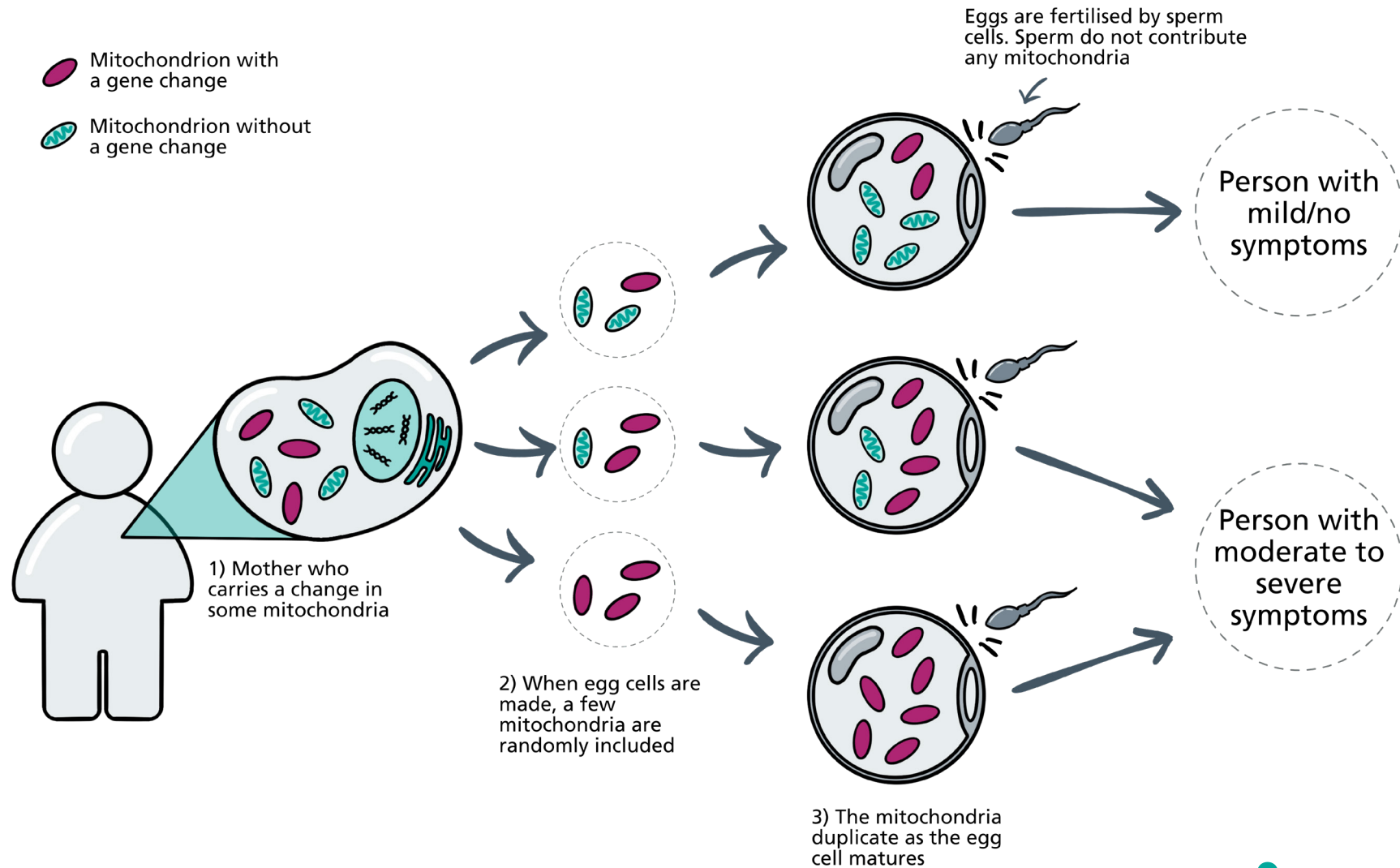
Gene change: Changes in a gene used to be referred to as 'mutations.' Now, they are more commonly called changes, alterations or variants.





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