



# Mitochondrial inheritance

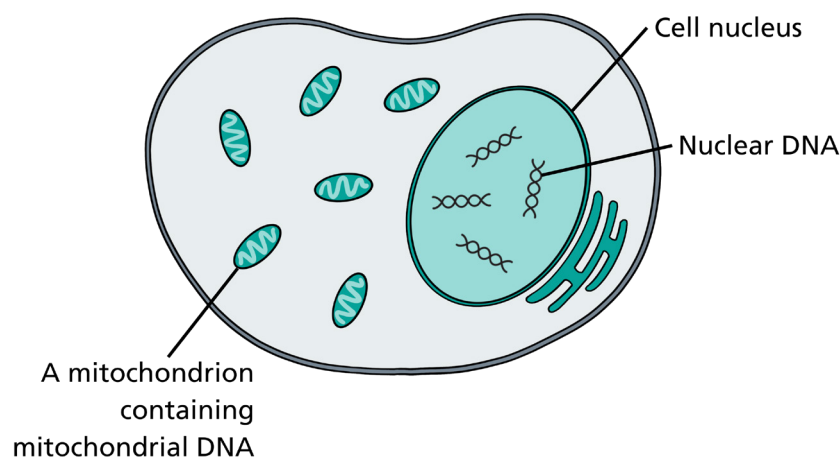
This communication aid has been produced for clinicians to help support and guide conversations about mitochondrial inheritance with their patients.

## 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.

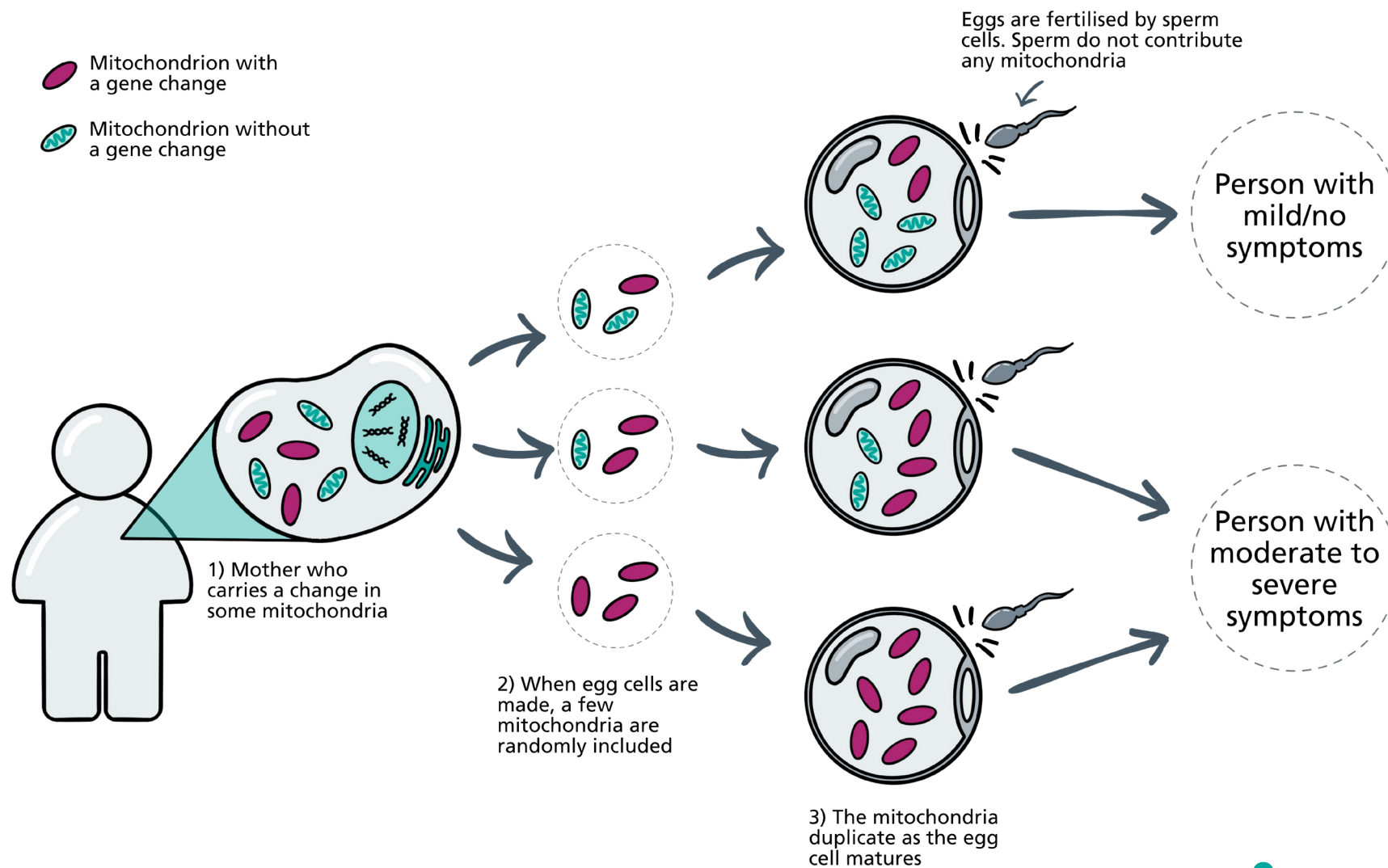
**Gene change:** Changes in a gene used to be referred to as 'mutations.' Now, they are more commonly called changes, alterations or variants.





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