Communication aid

Genes, chromosomes and DNA

This communication aid has been produced for clinicians to help support and guide conversations about genes, chromosomes and DNA with their patients.

Our bodies are made up of trillions of cells. Almost all cells have a nucleus that contains our genetic information, called **DNA**, which is organised into **genes** and packaged into structures called **chromosomes**. Some genetic information is also found in a cell's mitochondria.

All the DNA contained in one cell is called the **genome**.

Chromosomes: DNA in the nucleus is packaged into chromosomes. People usually have 23 pairs of chromosomes: 22 pairs of autosomes and one pair of sex chromosomes. One chromosome from each pair is inherited from each parent.

DNA: DNA is made up of molecules called bases, arranged in a double helix pattern. The bases are called adenine (A), cytosine (C), guanine (G) and thymine (T).

Genes: Genes are stretches of DNA which contain instructions for making proteins. Proteins affect how a person's body grows and functions (for example, hair colour, eye colour). DNA between genes can also have other important roles.

Humans have over 20,000 genes, that we know of. Everybody has two copies of each gene, one inherited from each parent. Genes can contain small differences in their DNA sequence between the two copies, and between individuals.

Want to learn more?

Scan to watch short animations on the fundamentals of genomics from NHS England's Genomics Education Programme.

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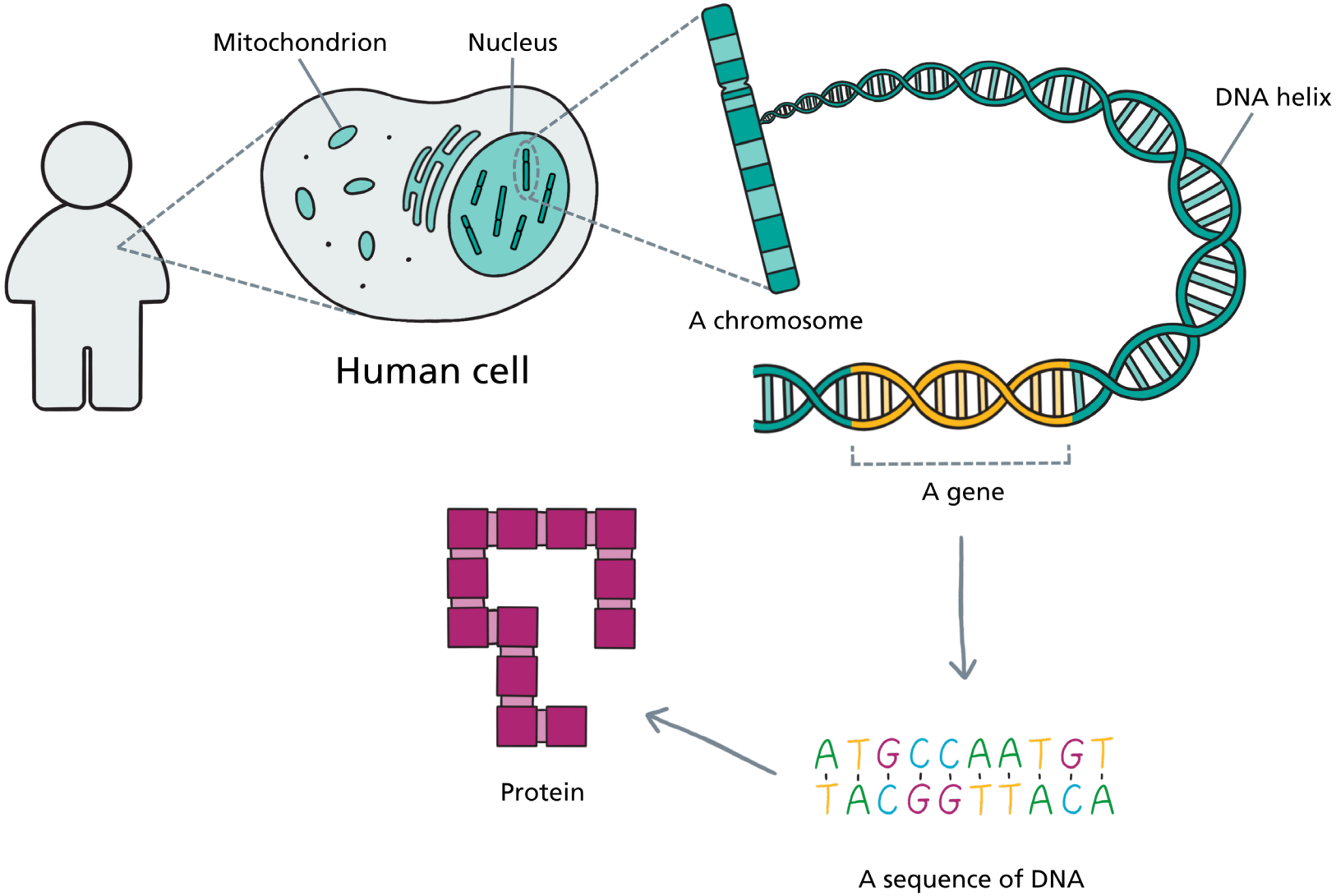

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