



[Click to watch the 25 Genomes introductory video](#)

Key words

DNA

Double helix

Bases

Sequence

Gene

Genome

Genome sequencing

Species

Human Genome Project

What is DNA?

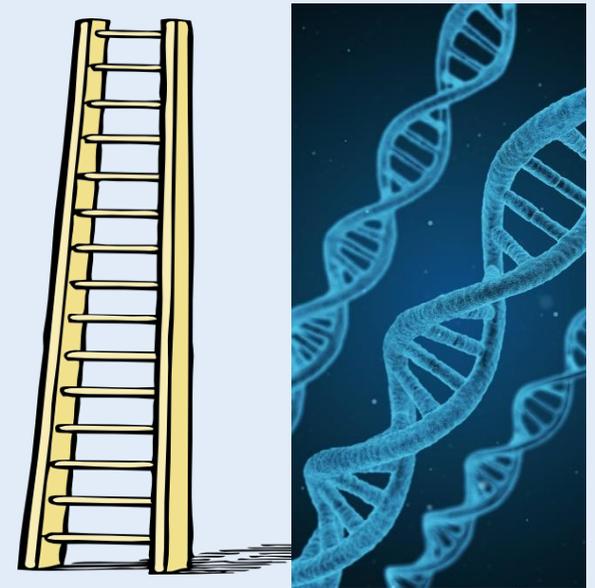
DNA is found in the nucleus of a cell. It is a long molecule that carries a set of codes to make you unique.

It is made of two strands that form a **double helix**; imagine a ladder twisted.

The “rungs of the ladder” are pairs of **bases**.

DNA has 4 different bases A, C, G, T.

The **sequence** (order) of bases make the instructions for your body.



[More about DNA](#)

What is a gene?

A section of DNA that codes for protein. Proteins affect features such as eye colour, hair colour, risk of certain diseases.

[More about genes](#)

What is a genome?

All the genetic material of a living thing. This includes all the genes that give instructions for your body, e.g. what colour your eyes should be, how tall you should grow and whether you're likely to get a certain disease.

[More about genomes](#)

What is genome sequencing?

Finding out the order of DNA bases so we can understand the code.

GAT AAAT CT GGTCTT ATTTCC

Why do it?

- find genes linked to diseases
- develop medicines and treatments
- trace human migration patterns from the past
- compare different species
- understand evolution

[Sequencing animation](#)

[More about genome sequencing](#)

The Human Genome Project

What?

Working out all the genes in a human.

E.g. the code for eye colour, the codes linked to cancer

When?

Started 1990

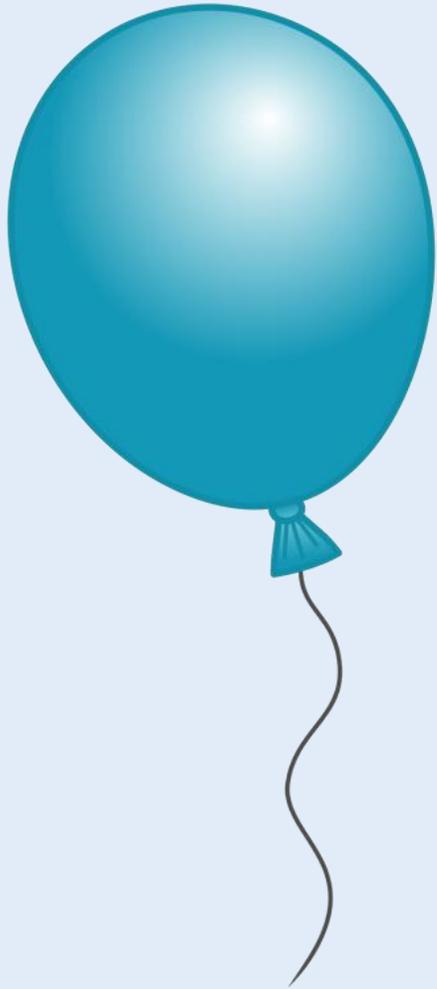
Completed 2003

Where?

Across the world! The UK's Wellcome Sanger Institute sequenced 1/3 of the total Human Genome.



[More about the Human Genome Project](#)



The Sanger Institute is celebrating its 25th birthday by sequencing 25 UK species.

Which species get decoded?

You choose!



Get online

Meet the species competing

Choose who gets their code

unraveled

25genomes.imascientist.org.uk

25 Genomes



questions to any of the species taking part in the competition.



to the species in your home zone live from your school computers.



for the species you think should win and have their genome sequenced.

You can vote in other zones as well as your home zone.

- [***What is DNA?***](#)
- [***What is a gene?***](#)
- [***What is a genome?***](#)
- [***What is DNA sequencing?***](#)
- [***Types of genome sequencing***](#)
- [***Illumina method of sequencing***](#)
- [***Sequencing animation***](#)



Activities

Sequencing animation

KS4/5 activity – Function finders (paper)

Discover how DNA sequences code for proteins with different roles and functions.

KS4/5 activity – Function finders (online)

Decode DNA sequences and discover the proteins they code for using online scientific databases.

- ***What happens to DNA sequence when it comes off a sequencing machine?***
- ***How do you put a genome back together after sequencing?***
- ***How do you identify the genes in a genome?***
- ***How do you find out the significance of a genome after sequencing?***
- ***How are sequenced genomes stored and shared?***