

Where is DNA?

Location

Ground floor, All About Us exhibition

In a nutshell

Zoom in on their hand and using animation, see where DNA is located within cells.

What to do

Place hand on the circular plate at the side and take a picture using the touch screen. Following the onscreen prompts zoom into the picture learning more about tissue, cells, genes, chromosomes and ultimately where the DNA is stored in cells.

Time Required

KS3 & KS4 4 minutes per student.

What's happening?

DNA is invisible to the naked eye, but present in almost every cell in the body. DNA makes up the human genome. In almost all of your trillions of cells, you carry a copy of these tiny strands of DNA, copies of your own, unique genome. Your body is made up of about one hundred, million, million cells (100 000 000 000 000). Each of these cells has a complete set of instructions about how to make your cells, their components and their components' components. This set of instructions is your genome. The genome is made up of several lengths of DNA called chromosomes; there are 46 in humans. Each of these chromosomes consists of a compact coil of an incredibly long molecule of DNA. The DNA is so tightly coiled that over 2 metres of it can fit into the nucleus of a human cell. A typical cell nucleus is so small that ten thousand could fit on the tip of a needle.



Curriculum links

Curriculum links	
KS3	<p>Science - Cells and organisation</p> <ul style="list-style-type: none"> - cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope - the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts <p>Science - Inheritance, chromosomes, DNA and genes</p> <ul style="list-style-type: none"> - a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model <p>Mathematics - Number</p> <ul style="list-style-type: none"> - interpret and compare numbers in standard form $A \times 10^n$ $1 \leq A < 10$, where n is a positive or negative integer or zero
KS4	<p>Science - Prokaryotic and eukaryotic cells</p> <ul style="list-style-type: none"> - explain how the main sub-cellular structures of eukaryotic cells (plants and animals) and prokaryotic cells are related to their functions, including the nucleus/genetic material, plasmids, mitochondria, chloroplasts and cell membranes - explain how electron microscopy has increased our understanding of sub-cellular structures <p>Science - The genome and gene expression</p> <ul style="list-style-type: none"> - describe DNA as a polymer made up of two strands forming a double helix - describe the genome as the entire genetic material of an organism - explain the following terms: gamete, chromosome, gene, allele/variant, dominant, recessive, homozygous, heterozygous, genotype and phenotype <p>Computing</p> <ul style="list-style-type: none"> - develop their capability, creativity and knowledge in computer science, digital media and information technology

Relates to:

Workshops & Theme Days	Shows	Trails	Other exhibits
<ul style="list-style-type: none"> • DNA Codebreakers (KS3 lower) • DNA Detectives (KS3 & KS4) • A Question of Taste day (KS3 & KS4) 	<ul style="list-style-type: none"> • How my body works (KS3) 		<ul style="list-style-type: none"> • Genome explorer • Constructing DNA • Building proteins • How much DNA • Relative values • How to build a human

