

DNA & Genes

Body & health

From base pairs to chromosomes, and what a gene actually is.

A double helix of paired bases — A with T, C with G — coiled into 46 chromosomes. Segments of it, called genes, code for proteins.

CHROMOSOMES

46

GENES

~20,000

BASE PAIRS

~3 billion

- Four bases: adenine, thymine, cytosine, guanine.
- A pairs with T; C pairs with G. Always.
- 46 chromosomes in 23 pairs, one of each pair from each parent.
- About 20,000 protein-coding genes.
- Three bases — a codon — specify one amino acid.
- Under 2% of human DNA codes for protein.

LOOK FOR IT

A mutation changing one base can change one amino acid — which is what causes sickle cell disease.

DNA is transcribed to RNA, then translated to protein. That one-directional flow is the central dogma of biology.