

Spot the Difference...

In each of the trillion-plus cells of our bodies are identical chromosomes - long, coiled sequences of DNA that are the genetic code or genome that makes us human. This genome has passed down the generations with little change over millennia - genetically we remain very like our ancestors of 200,000 years ago. Changes ('mutations') do accumulate, but very slowly, so our genomes are still much like chimpanzees'.

When chromosomes are stained with chemicals in a laboratory a number of dark bands show up. Each of our chromosomes has a different pattern that we can use to identify them, and compare them between chimpanzees and humans. Above you can see how similar the chromosomes of humans and chimpanzees look. All of our chromosomes can be matched up to the chimpanzee ones in this way.

If you unravel a chromosome, you find it is made of a long chain of chemicals called bases. There are four kinds of base, represented by the letters A,T,C and G and it is chains of these that form the genetic codes of all living things.

Here we have unravelled the X-chromosomes of four primates to show part of the code from a segment called the 'M-LWS opsin gene' that shapes our ability to see red-green wavelengths of light .

Can you see spot the differences in the sequences below? There are very few, because these genetic codes have passed down the generations from the shared ancestors of all the monkeys and apes, only slowly accumulating a few mutations and duplications along the way.

