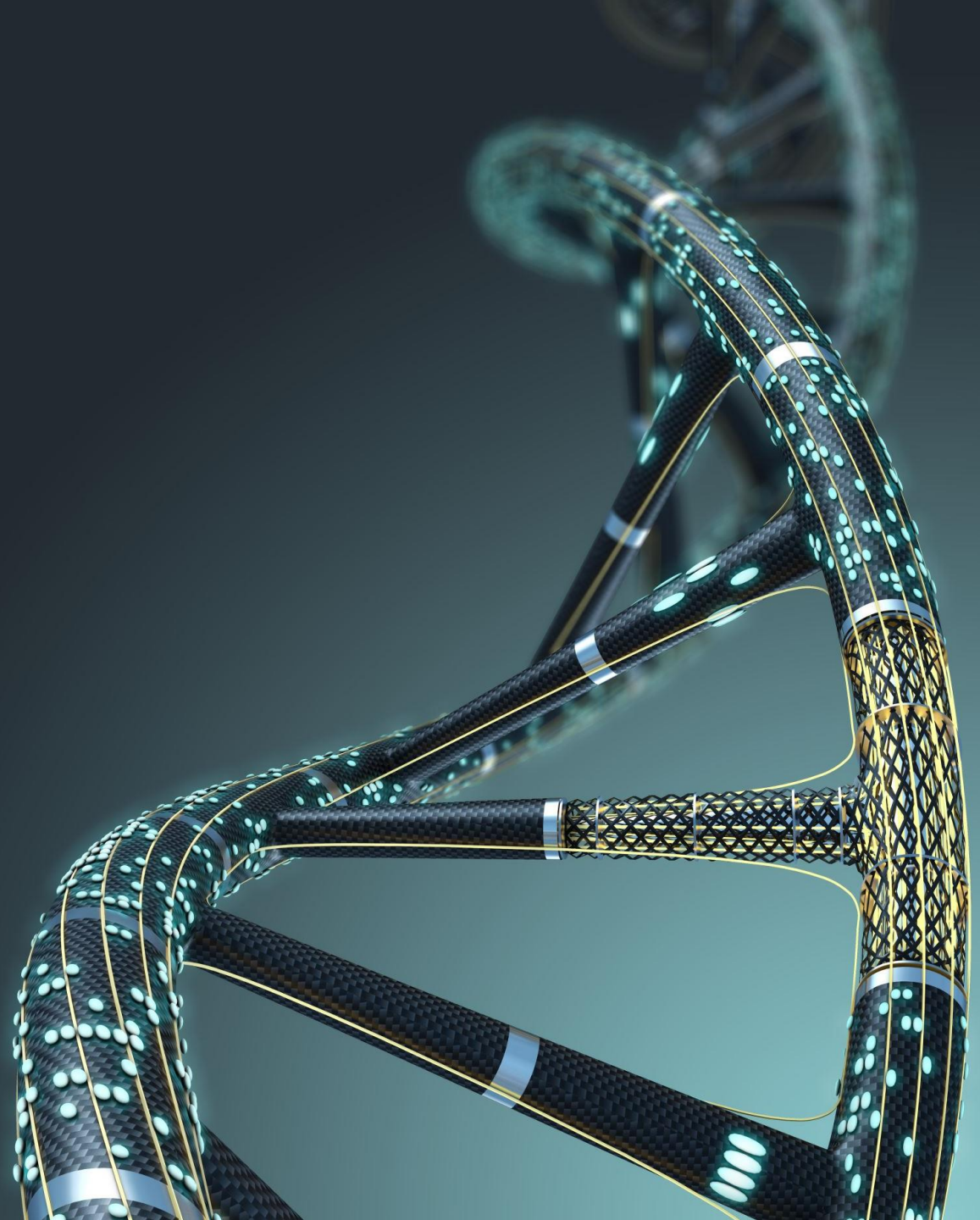
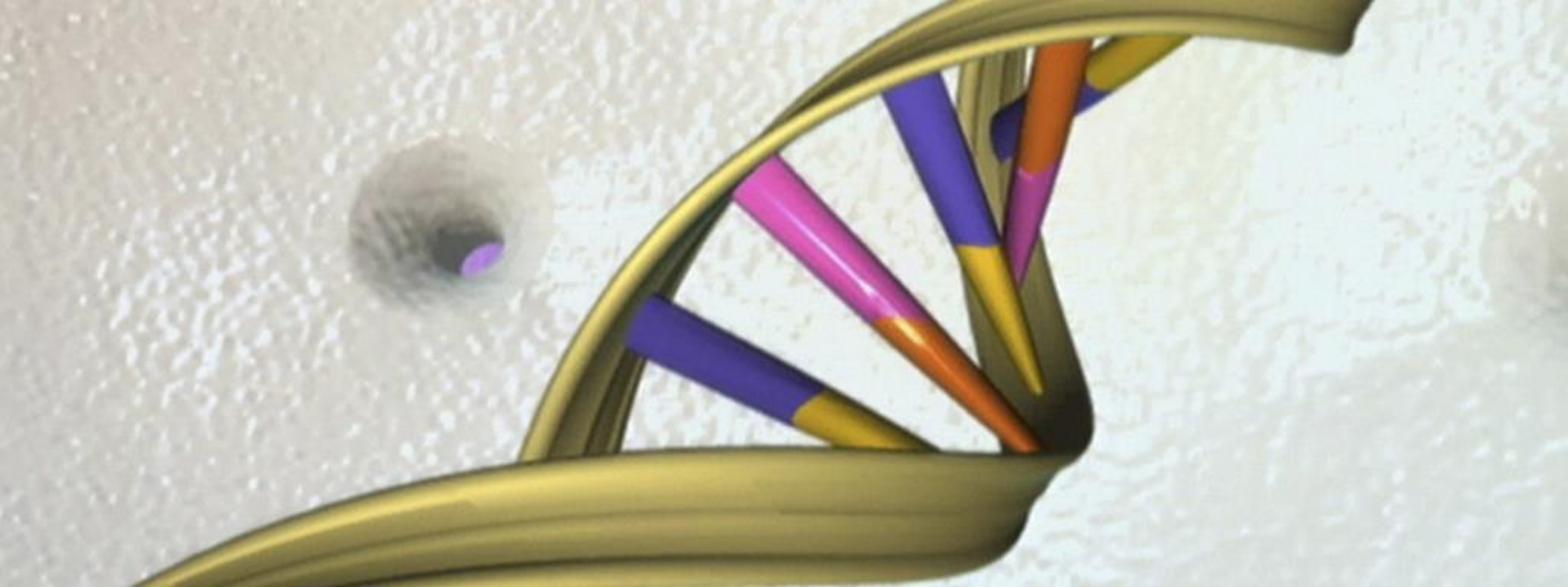


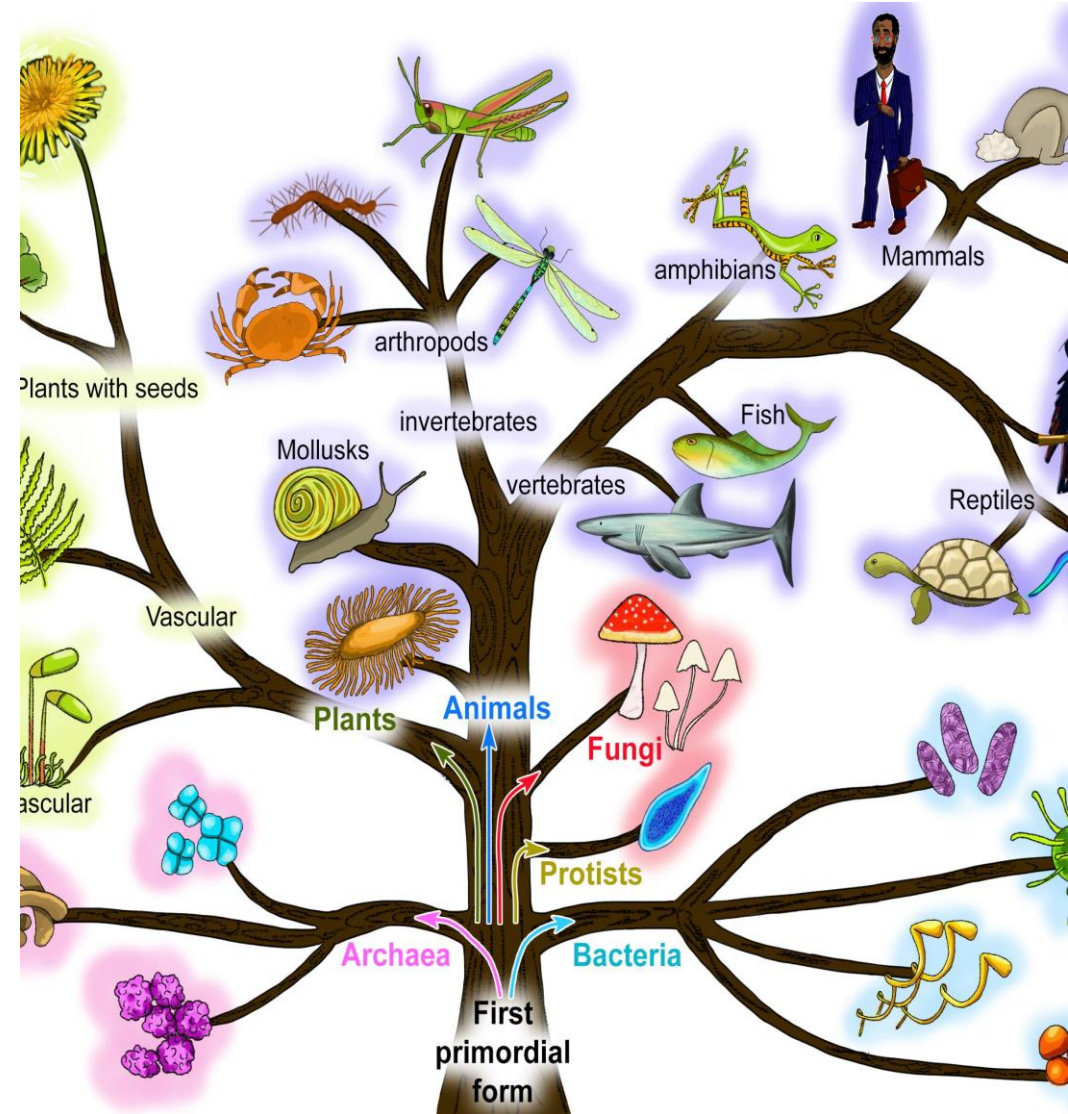
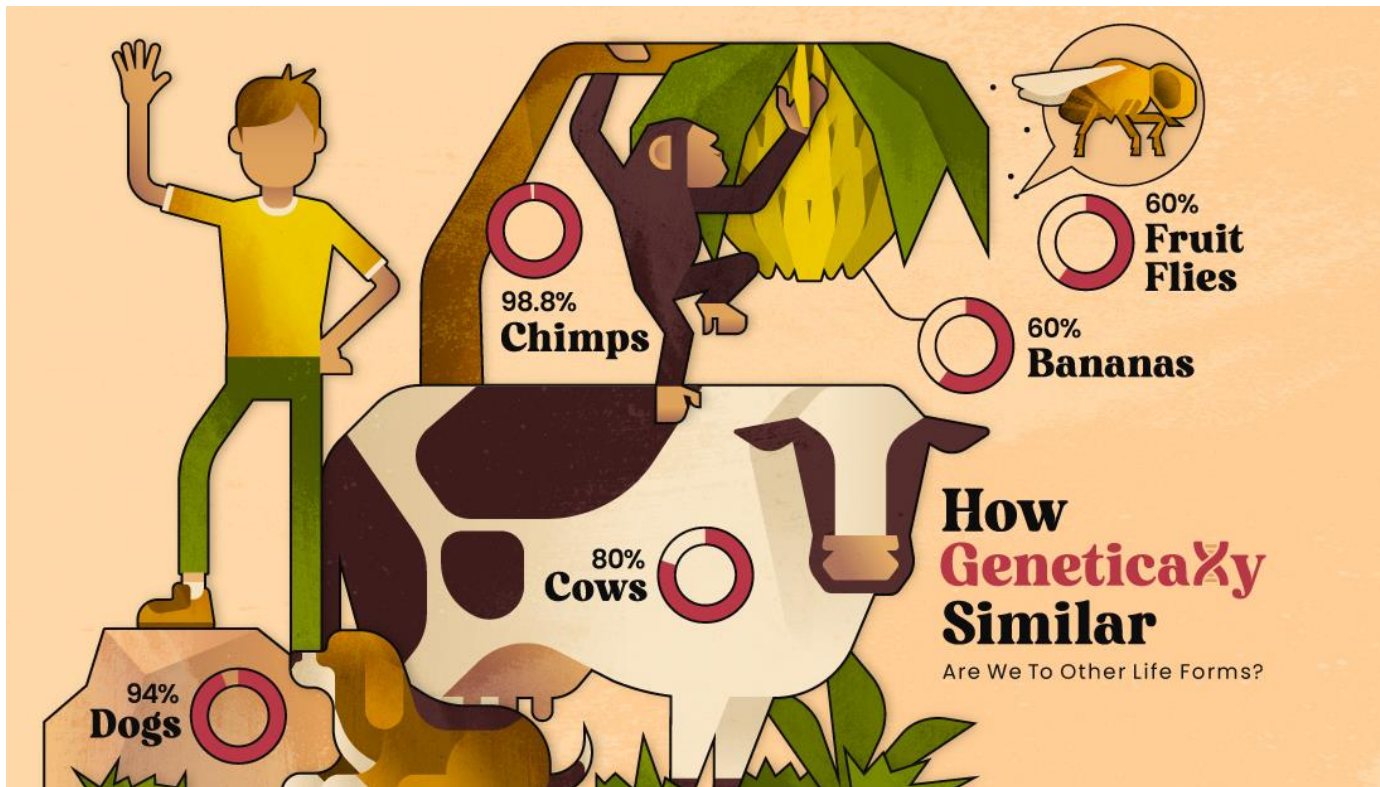
THE DNA MOLECULE



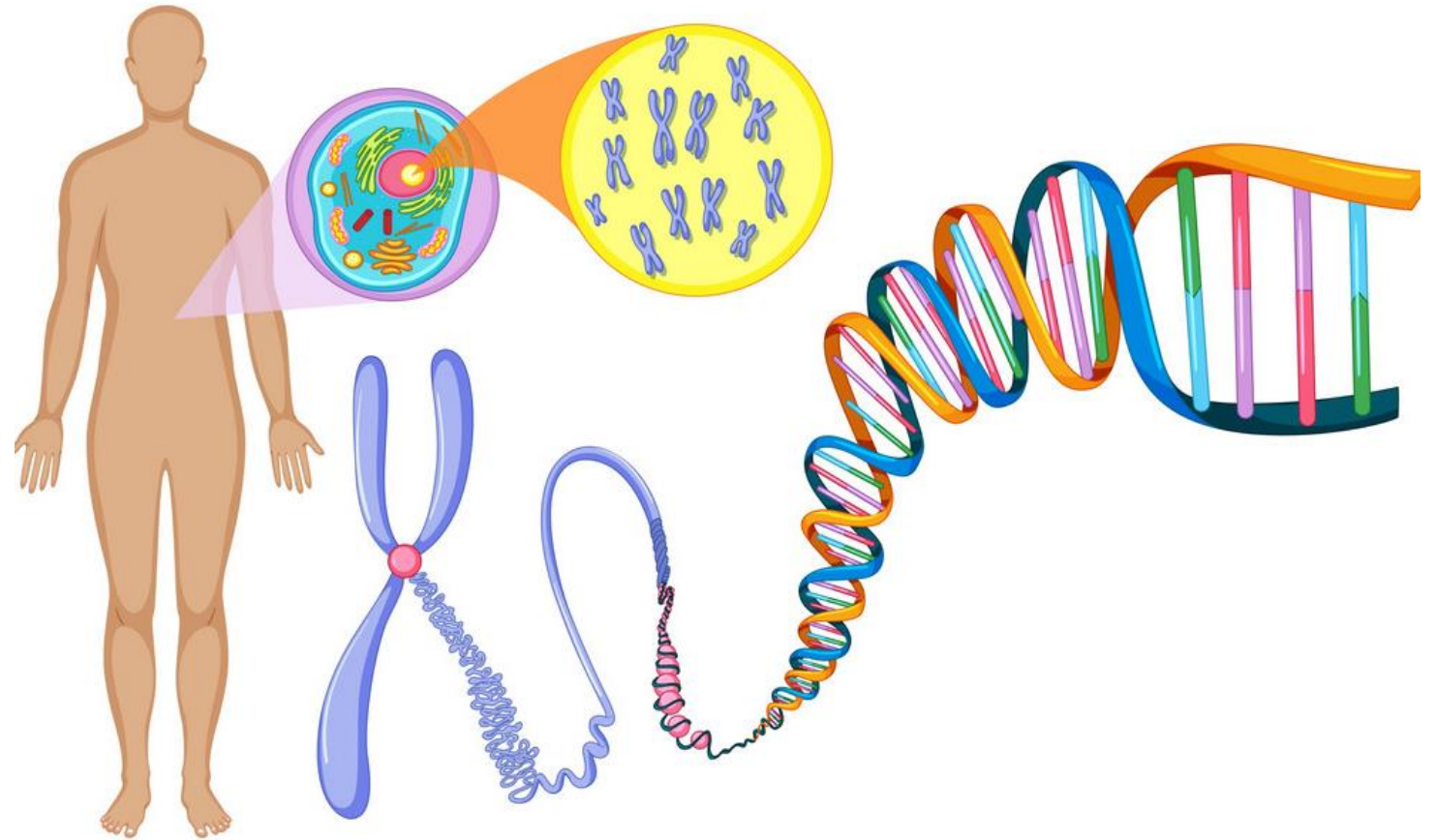


DEOXYRIBONUCLEID ACID, OR DNA, IS THE
CARRIER OF GENETIC INFORMATION IN ALL LIVING
THINGS.

Its structure is the same from bacteria to humans, indicating that all living things share a distant common ancestor.

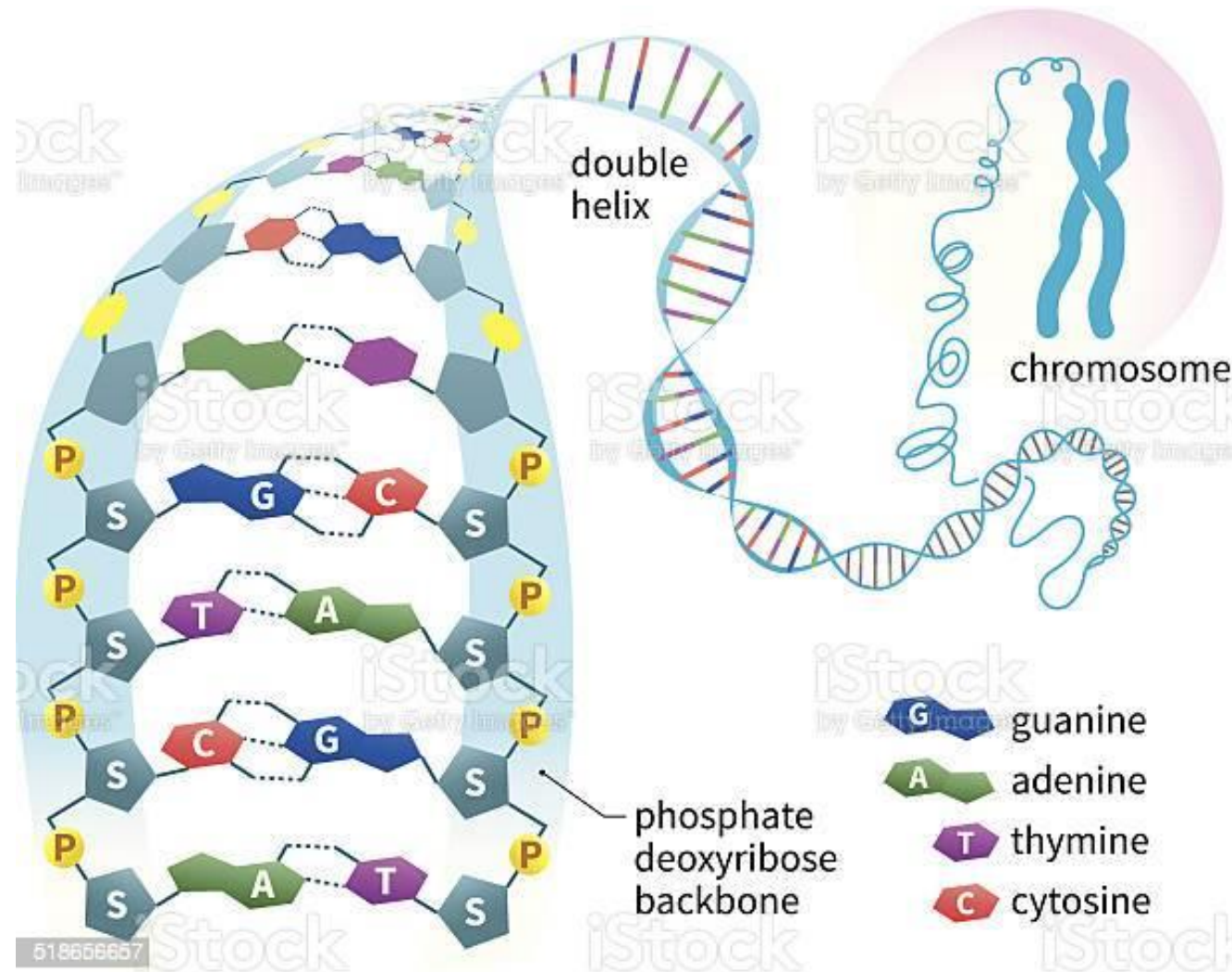


DNA is found in the nucleus of every cell in our body and is shaped like a double helix. In a human cell, we have 46 DNA molecules organised into separate units called chromosomes.



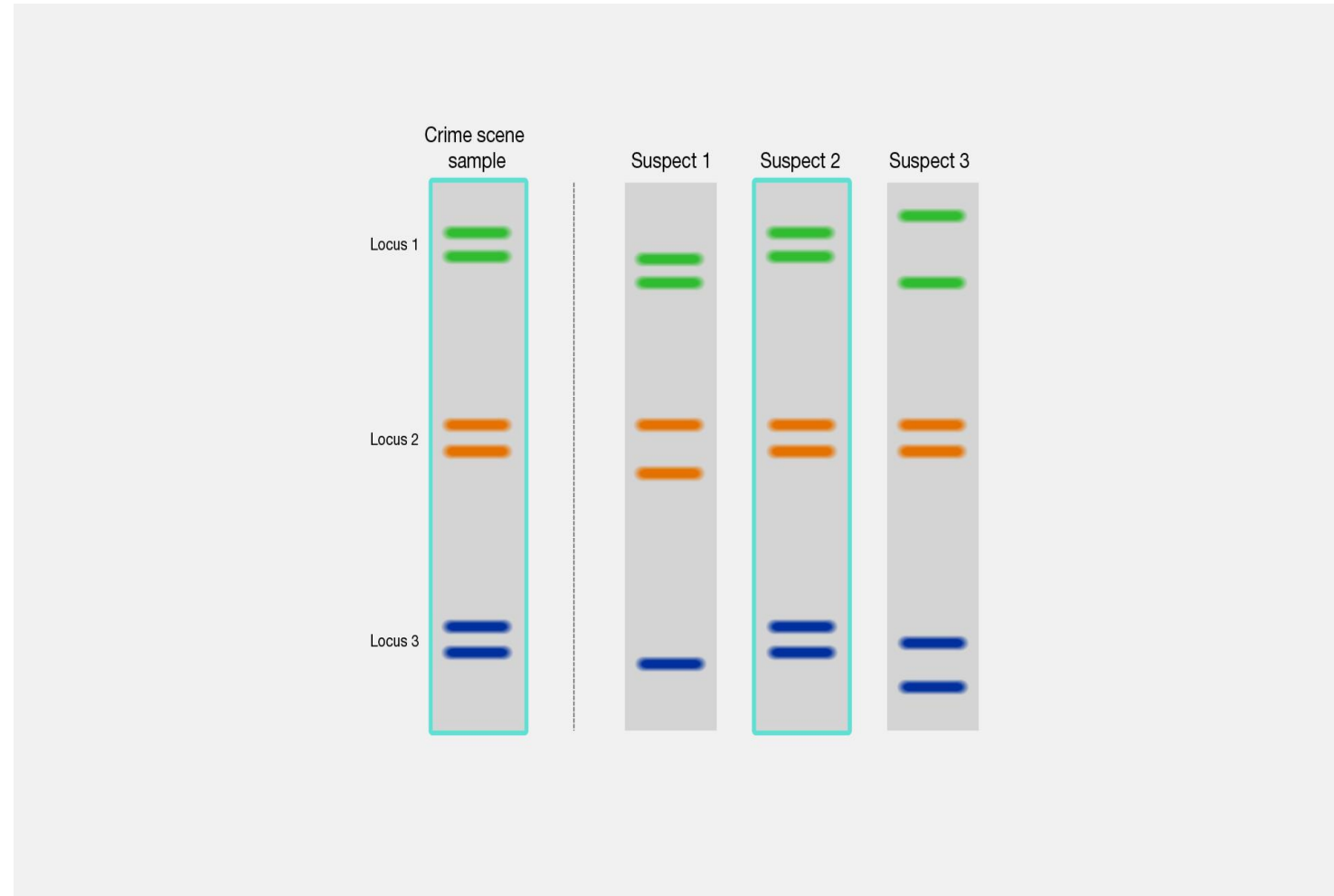
The basic building blocks of DNA are called nucleotides.

There are 4 different nucleotides: guanine, cytosine, adenine, and thymine nucleotide. Each nucleotide is made up of three parts: sugar, a phosphate group and one of 4 organic bases.

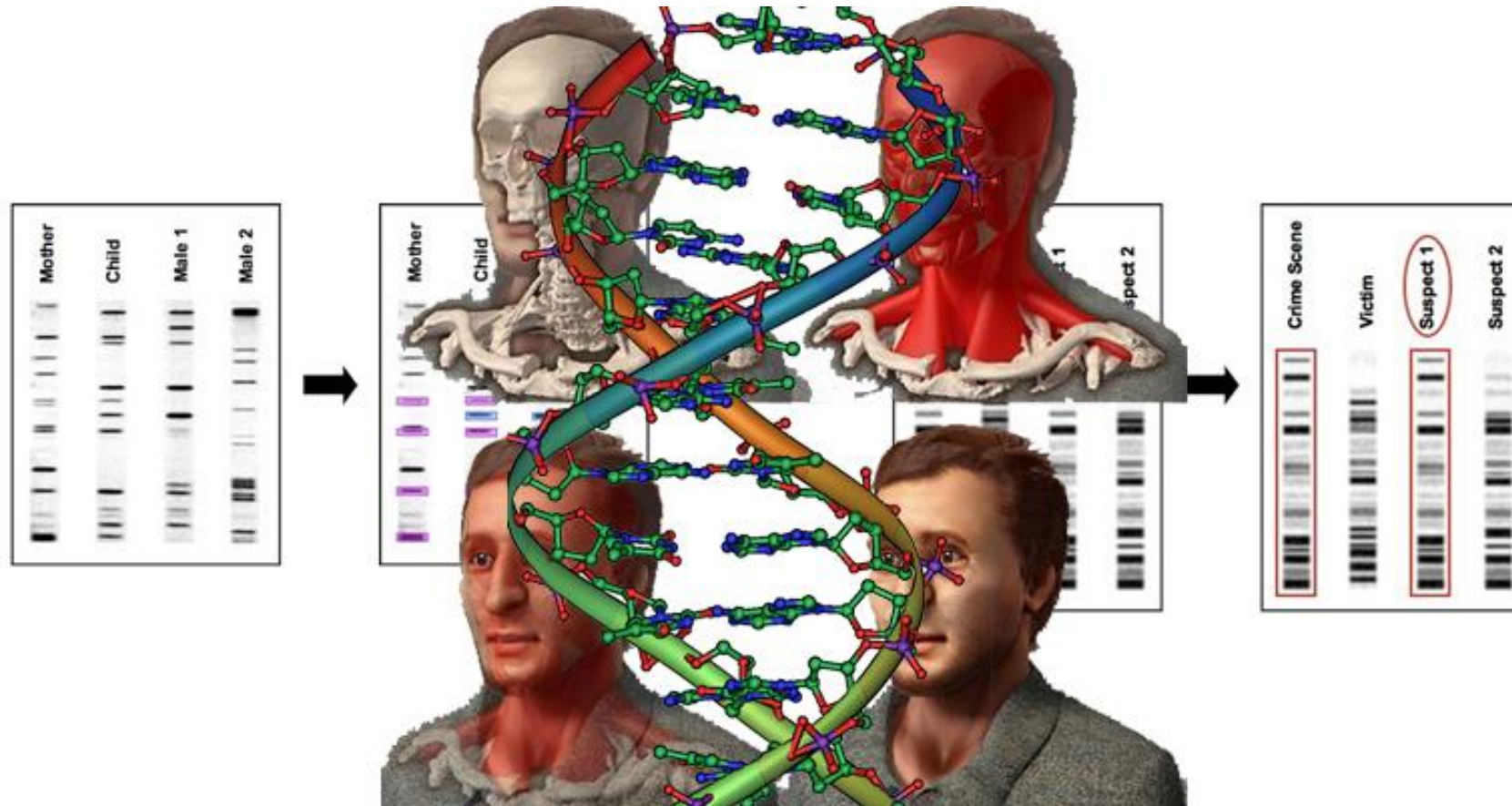


Just as people are distinguished by their fingerprints, we are distinguished by our DNA molecules. Each person has a unique nucleotide sequence (a unique DNA molecule).

This feature has been used very successfully in forensics in recent decades.



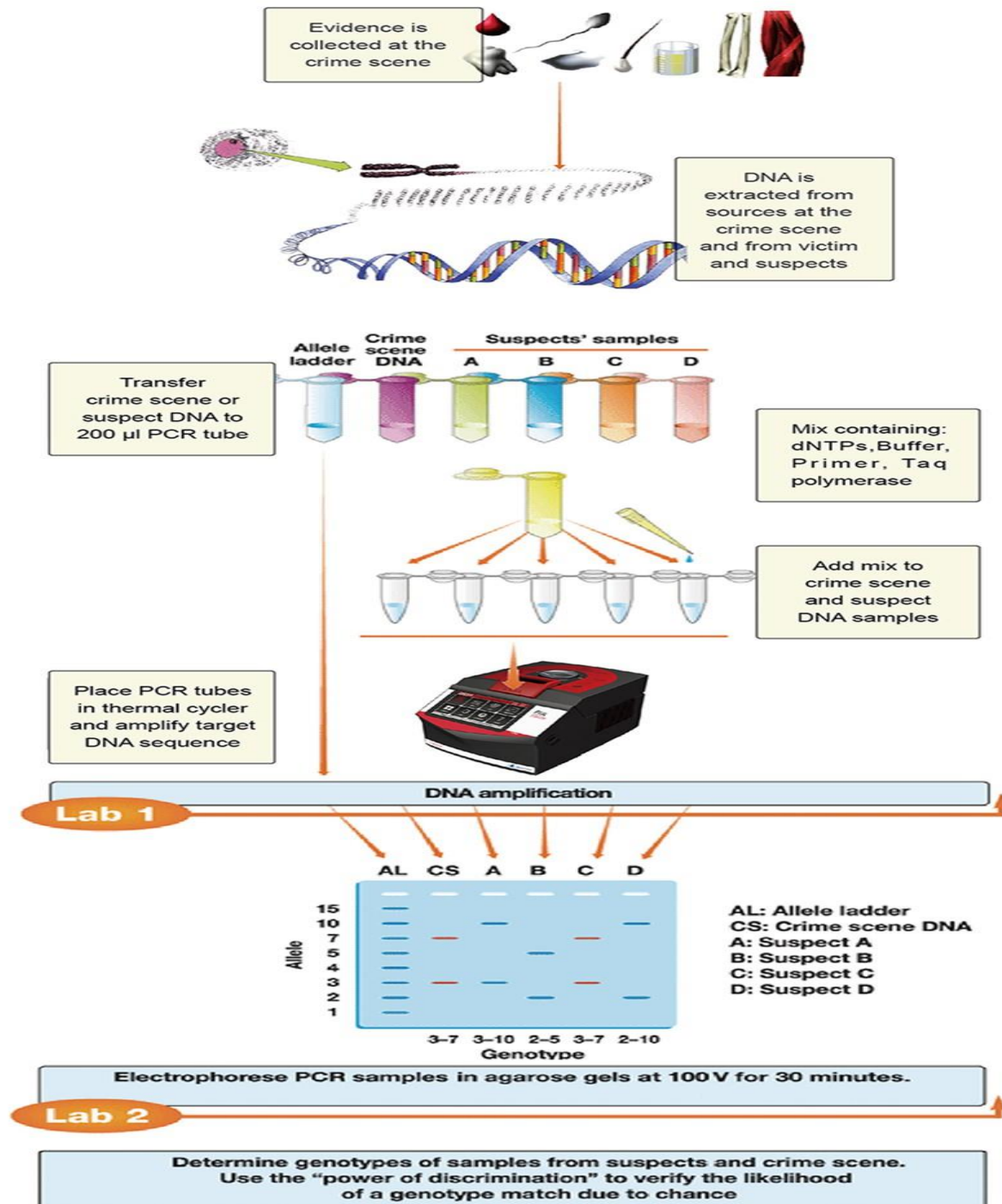
The DNA molecule contains the detailed blueprint for the construction of the human body, which means that in addition to general body characteristics such as having a head, two arms and two legs, and internal organs, our body features such as skin colour, eyes, hair, height, etc., which vary from person to person, are also written down in genetic language in the DNA molecule. Moreover, the DNA molecule we carry in our cells also contains our genetic history, our origin. This means that the analysis of DNA found at a crime scene can potentially provide a great deal of information about the appearance of the person to whom the DNA molecule belongs to and where they come from.



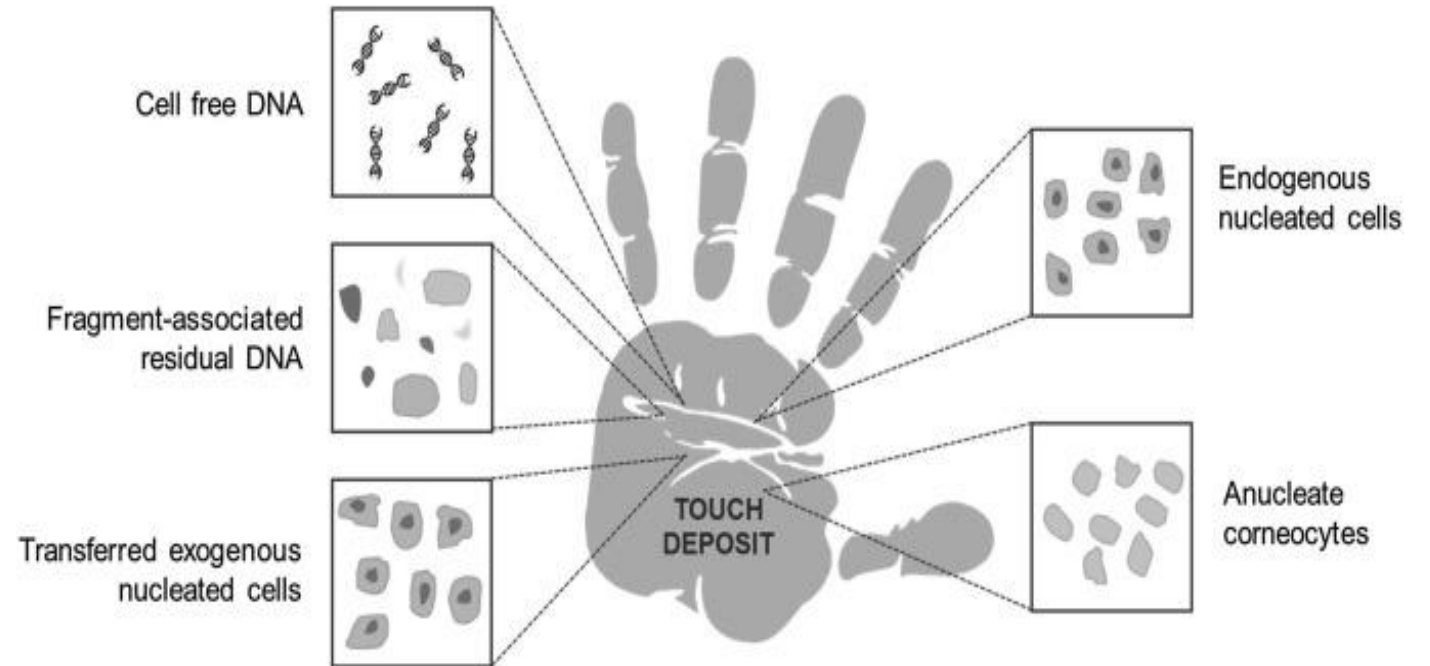
Nowadays, forensic scientists can obtain a DNA profile if the object was just touched briefly.



If detectives find a bloodstain (or other biological sample containing DNA) at a crime scene, which belonged to the perpetrator, forensic scientists can extract the DNA profile of the criminal and then compare it with the DNA profiles of different suspects. As with a fingerprint, a DNA profile match will point to the real perpetrator.



DNA technology is so sensitive that just a few - usually five to eight - human cells are enough for analysis. Every time we touch something with our bare skin, we leave behind a small number of skin cells - and forensic scientists can trace these cells and analyse their DNA. So today, it is possible to determine the DNA profile of a perpetrator if they grabbed, for example, a mobile phone, the steering wheel of a car or the hand of a victim.



MAKING A DNA MODEL

1. You need:

- a cardboard tube
- a larger, not too hard cardboard
- glue, scissors, 6 coloured felt-tip pens, ruler

2. Procedure:

- Draw a rectangle 10x20 cm on the cardboard. (2,05)
- Make a vertical line of 5 cm and draw a 1 cm edge on each side. (2,40)
- Make horizontal lines every 2 cm and get 10 base pairs, which can be drawn and coloured as you wish. (3,31)
- Then cut them horizontally in pairs and fold the edges left back, right forward. (7,07 in 7,43)
- Cut the cardboard tube along the gluing line and if the tube is still too wide cut it in half vertically again. (8,39)
- Mark the 2 cm sections and draw lines. Write S (sugar) on one square and P (phosphate group) on the other. S is painted with one colour and P with another colour. (11,35 in 13,50)
- The strips are then folded into a spiral. The organic bases are glued in between so that the contact is at a 90° angle. (15,34)
 - Side with labelled nucleotides.
 - Glue the first one at an angle as well.
 - The other pairs are glued vertically, so that the organic bases are vertically with the sugar. (17,36 in 17, 57)

<https://www.youtube.com/watch?v=IN3tBkk8UjQ>

(video showing how to make a DNA model)