

# Strawberry DNA Extraction

Some might think scientific procedures, like DNA extraction, are only done in high-tech laboratories with expensive equipment. In fact, DNA can be extracted from a single strawberry with common ingredients found in most homes, in a matter of minutes. (See page 2 for full instructions.)

## What is DNA?

DNA, short for **d**eoxyribo**n**ucleic **a**cid, is present in all living cells and is the blueprint that tells each cell how to function properly. The unusual, twisting shape of a DNA strand is called a double helix.

## Speaking in Code

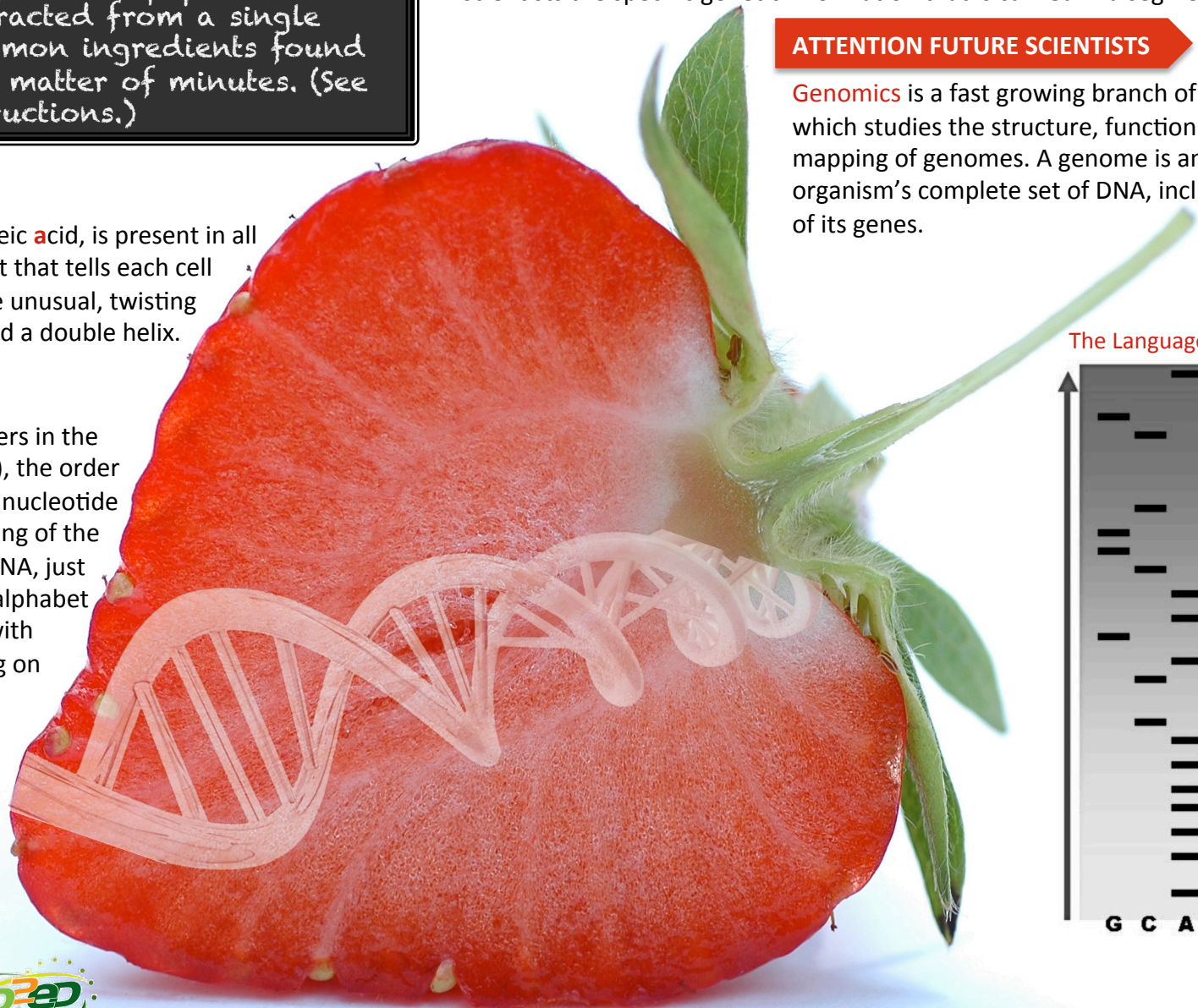
While there are only four letters in the genetic “alphabet” (A, T, C, G), the order of these letters (representing nucleotide bases), determines the meaning of the information encoded in the DNA, just like the letters in the English alphabet make many different words with different meanings depending on how the letters are ordered.

## Breaking the Code

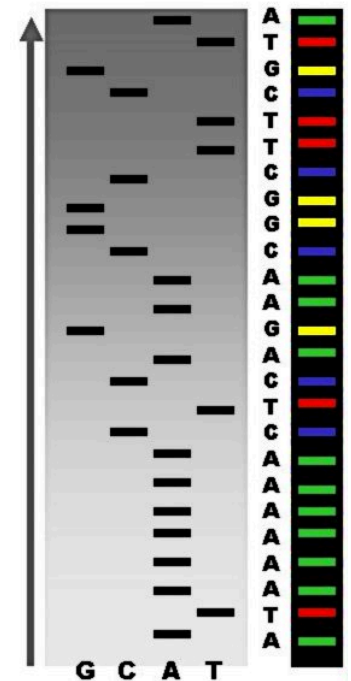
A DNA sequence is a detailed description of the order of the chemical building blocks (A, T, C, G) in a given stretch of DNA. The sequence tells scientists the specific genetic information that is carried in a segment of DNA.

## ATTENTION FUTURE SCIENTISTS

**Genomics** is a fast growing branch of biology which studies the structure, function and mapping of genomes. A genome is an organism’s complete set of DNA, including all of its genes.



## The Language of Genetics



# Strawberry DNA Extraction: Step-by-step

1



Place several strawberries in a sealed plastic bag and mash well with fingers.

➤ *Breaks apart the cell walls.*

2

In a beaker, combine:

- 100 ml water
- 10 ml dish detergent
- 4 g table salt (¼ tsp)

➤ *Soap breaks cell membrane.*

➤ *Salt denatures proteins.*



3



Pour detergent mixture into plastic bag with strawberries and mash/mix well for one minute.

➤ *Releases DNA from cells.*

4

Let sit for five minutes.

➤ *Allows DNA to cluster.*

6



Add 10 ml COLD rubbing alcohol to the strained liquid by running it slowly down the side. Do not pour quickly or mix layers.

➤ *Alcohol precipitates DNA from solution.*

7



The DNA will begin to accumulate at the alcohol/liquid interface.

8



Gently swirl a wooden skewer to collect the extracted strawberry DNA.

Extracted DNA can be used to help scientists study the function of a specific gene. In strawberry, a breeder would be interested in knowing which genes are responsible for taste/ flavor, disease resistance and nutritional qualities.