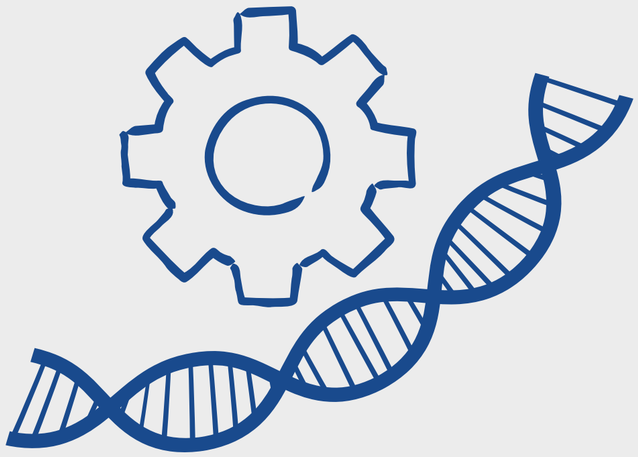
Desynthesizing synthetic biology

iGEM Thessaloniki 2026

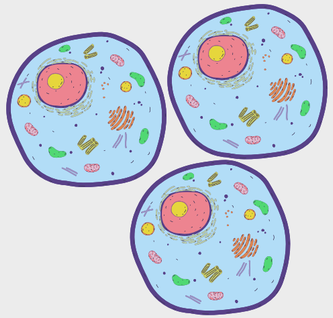
What is Synthetic Biology?

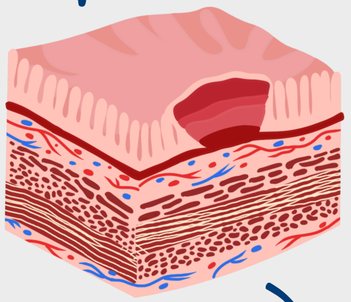


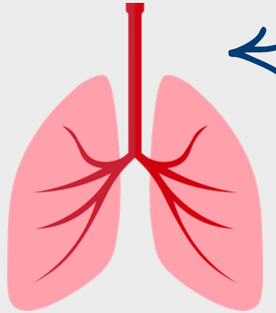
Synthetic biology (SynBio) is an interdisciplinary research field that seeks to create new biological parts, devices, and systems, or to redesign systems already found in nature

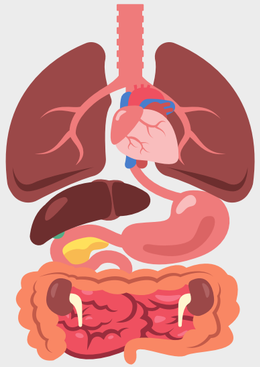
Let’s see how an organism is built

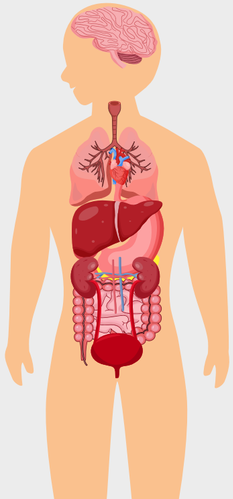
Cell: the fundamental unit of life
There are single-celled and multicellular organisms
Many similar cells → tissue
Various tissues → organs
Various organs → organ system
Organ systems → organism





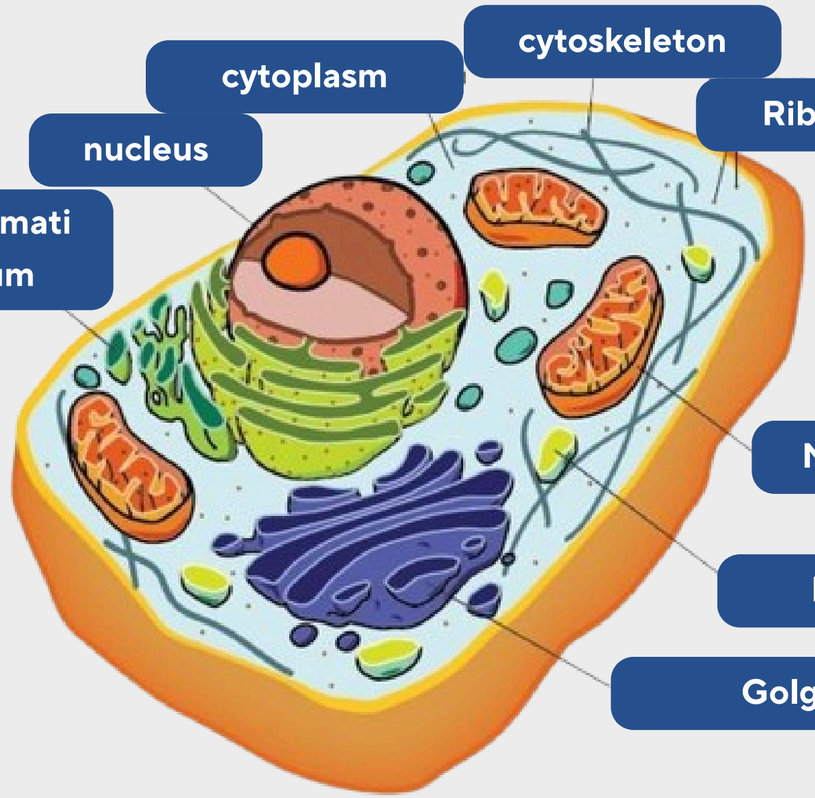




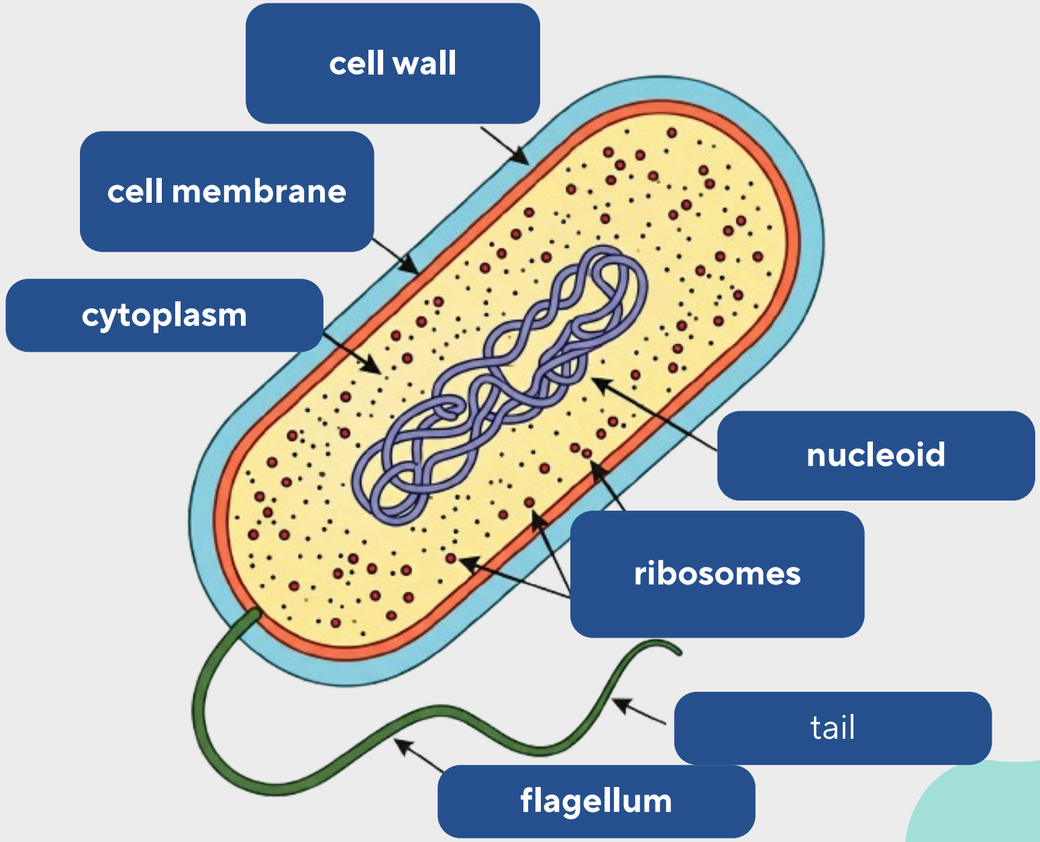


The cell

Eukaryotic cell



prokaryotic cell



From genome to cell

DNA

It constitutes our genetic code

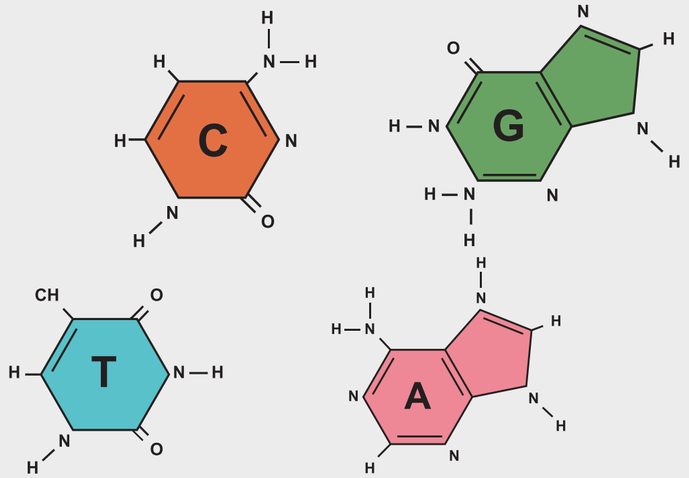
4 bases structure DNA

Adenine (A)

Thymine (T)

Guanine (G)

Cytosine (C)



mRNA

It constitutes the DNA transcript

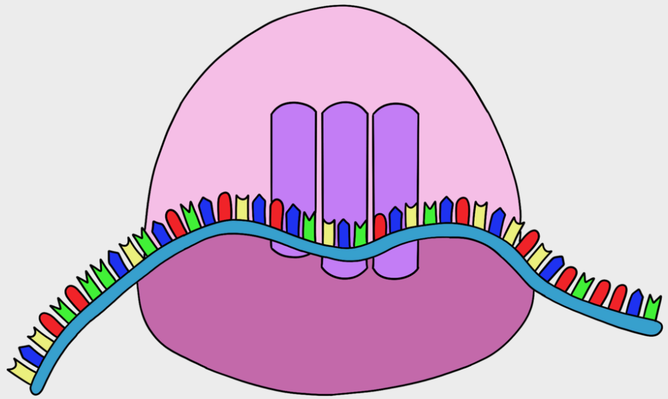
4 bases structure mRNA

Adenine (A)

Uracil (U)

Guanine (G)

Cytosine (C)

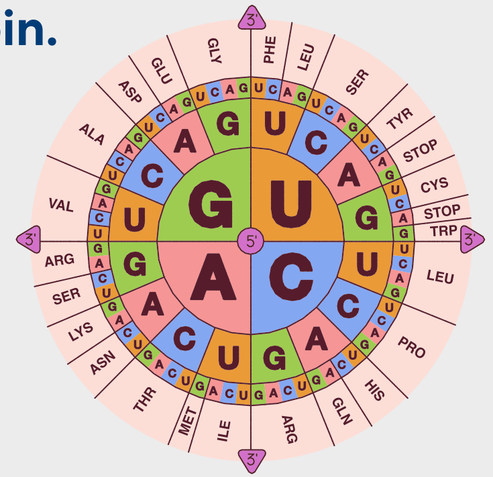


protein

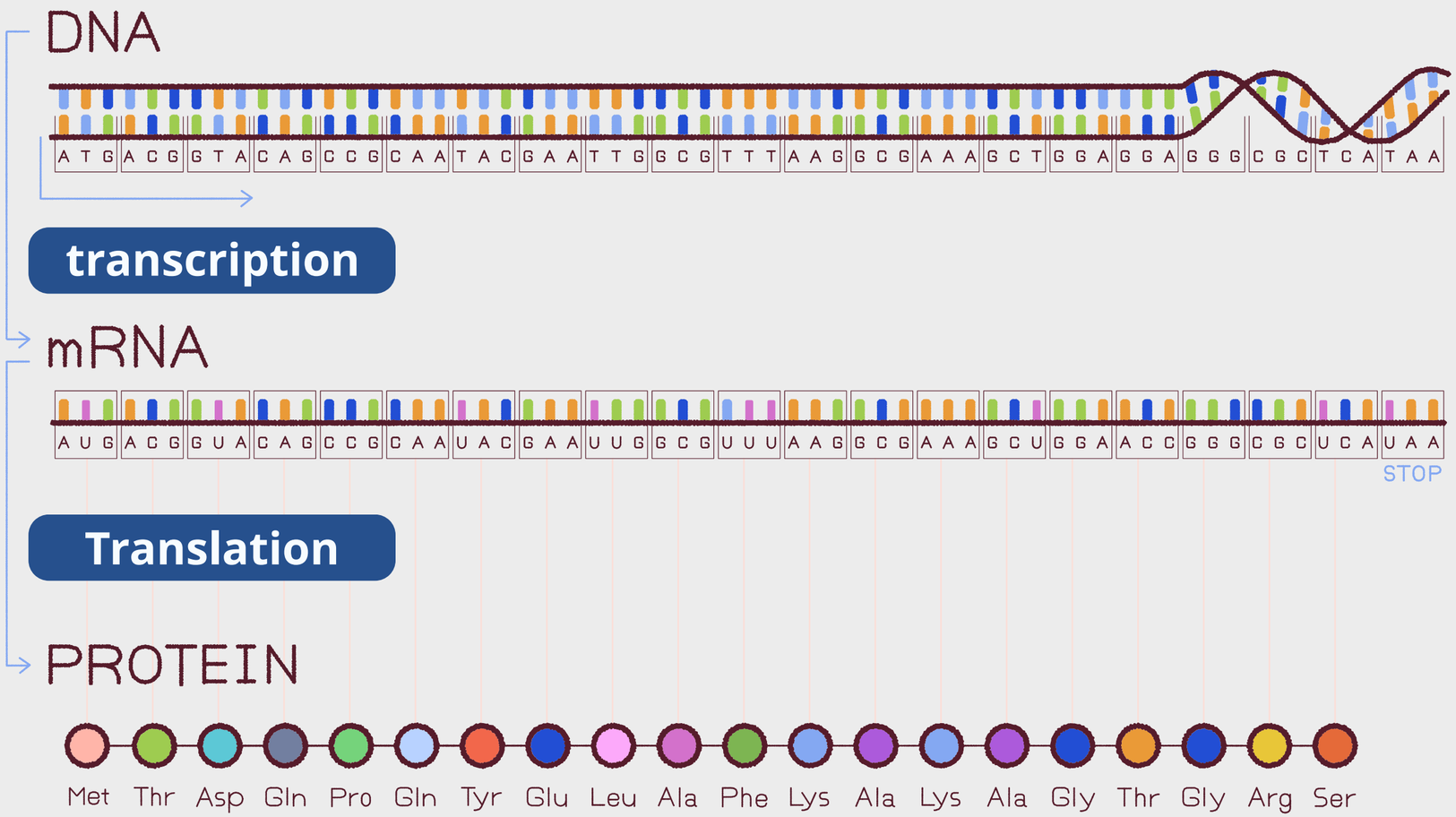
It constitutes the functional molecule that performs all cell functions!

Each nucleotide triplet corresponds to one amino acid.

Amino acid = building block of a protein.



The central dogma of molecular biology!



Who did organisms evolve?

...

Once upon a time, the letters in a gene were changed in someone

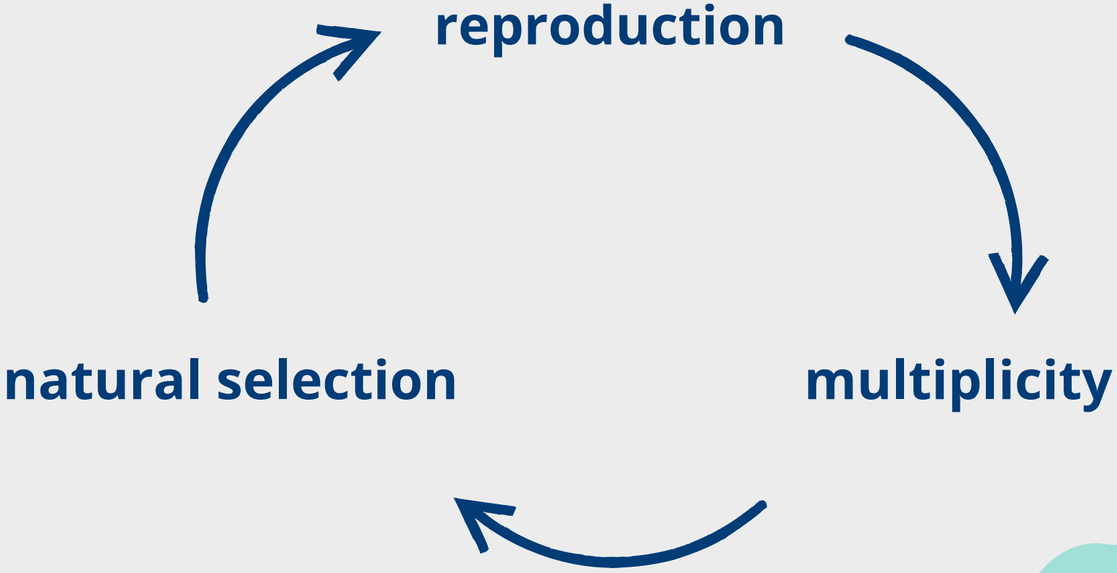
Higher chances of survival

more children

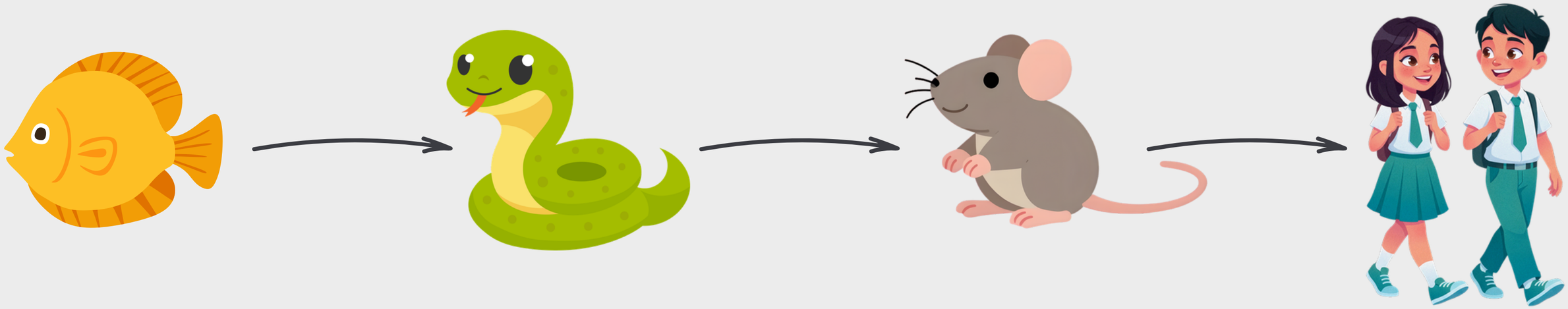
change in gene

...

the algorythm of biological evolution



Let’s play the evolution game

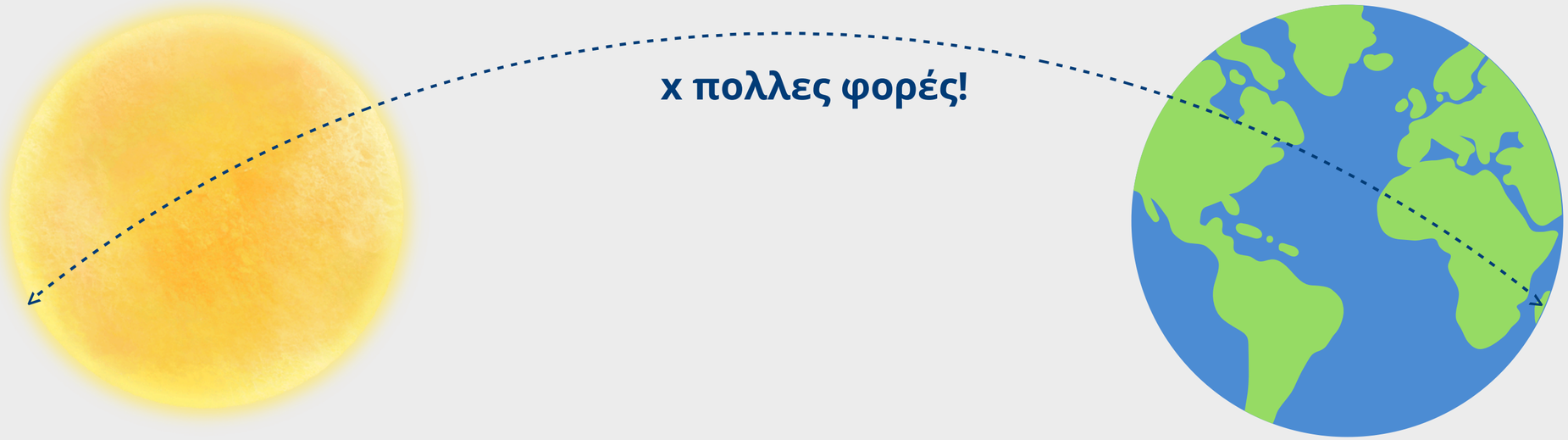


who will evolve first?

Fun Fact #1

What is the length of our DNA?

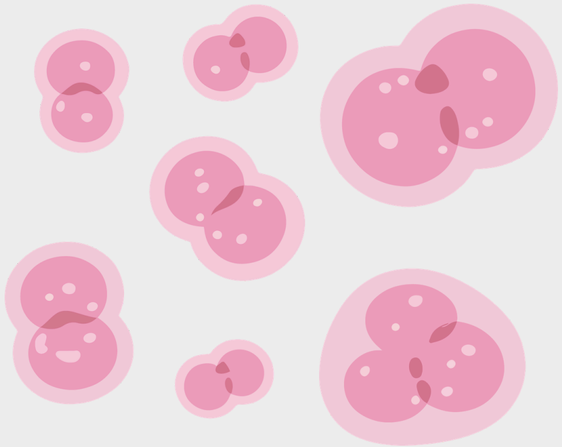
If you unwrap all the DNA from your cells, it will reach all the way to the Sun... and back multiple times



Fun Fact #2

cells vs bacteria

In our body more bacteria live than our cells!





Fun Fact #3

The mystery of pain

The brain cannot feel pain but creates the sensation of it!



