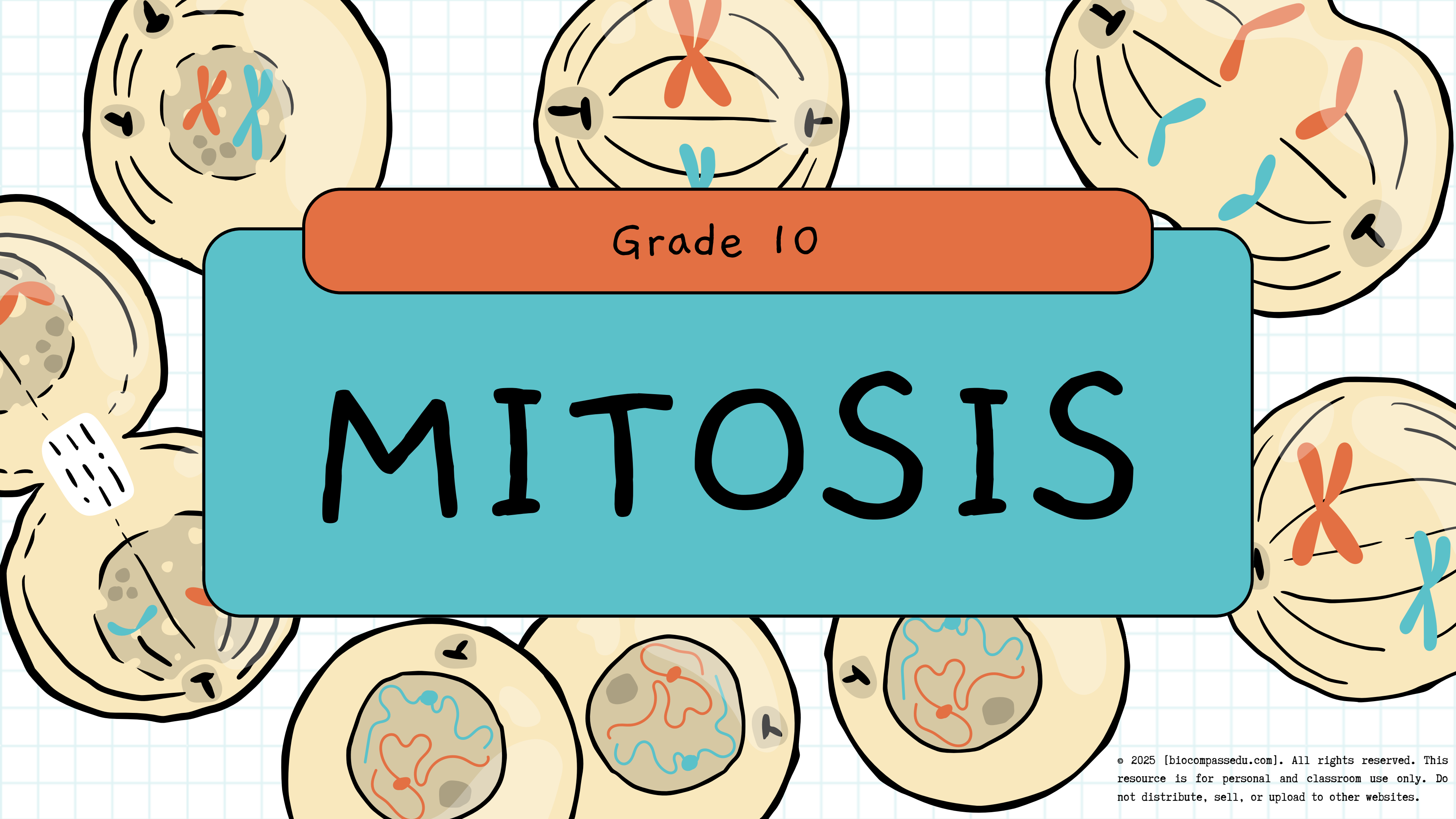
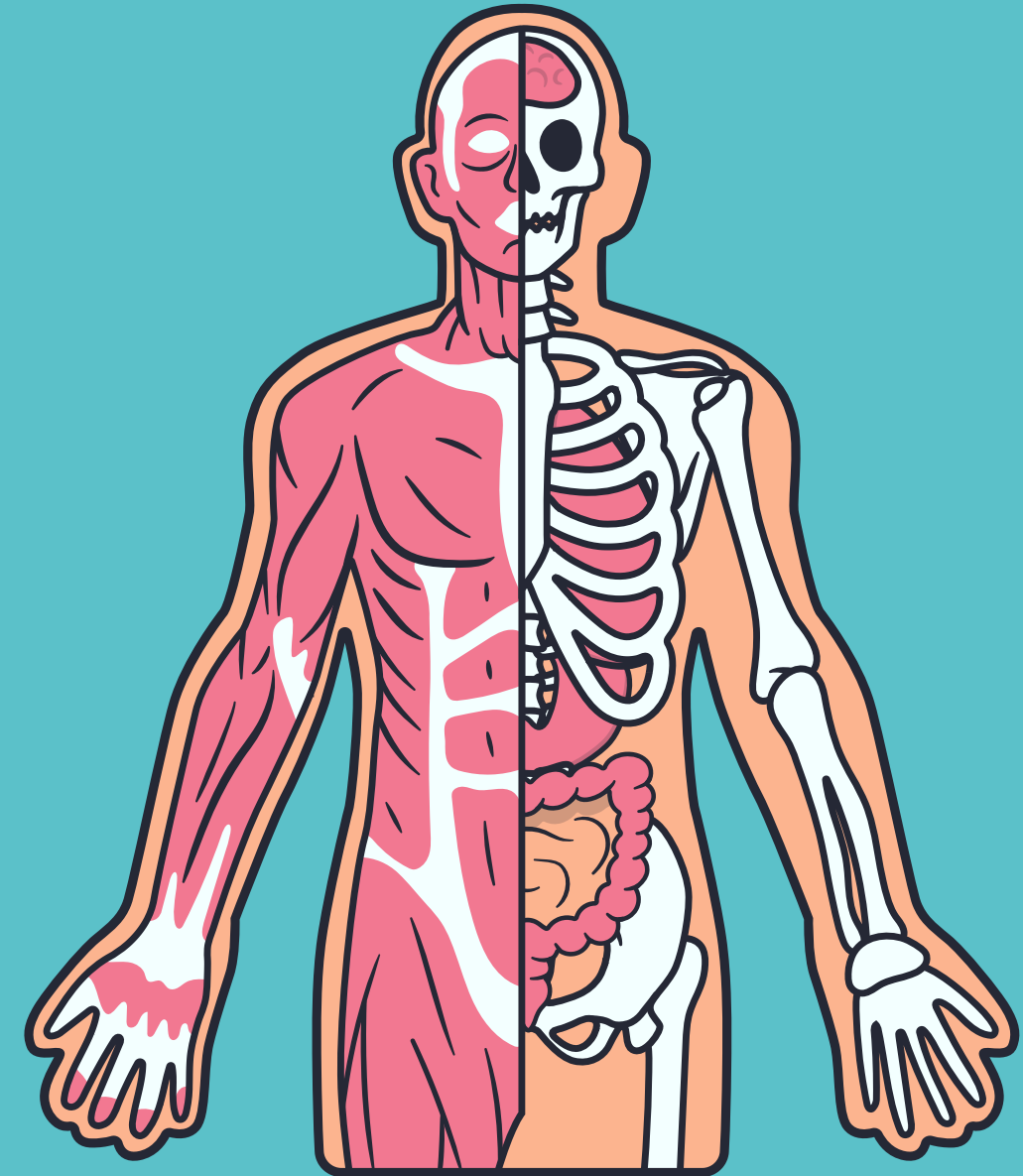




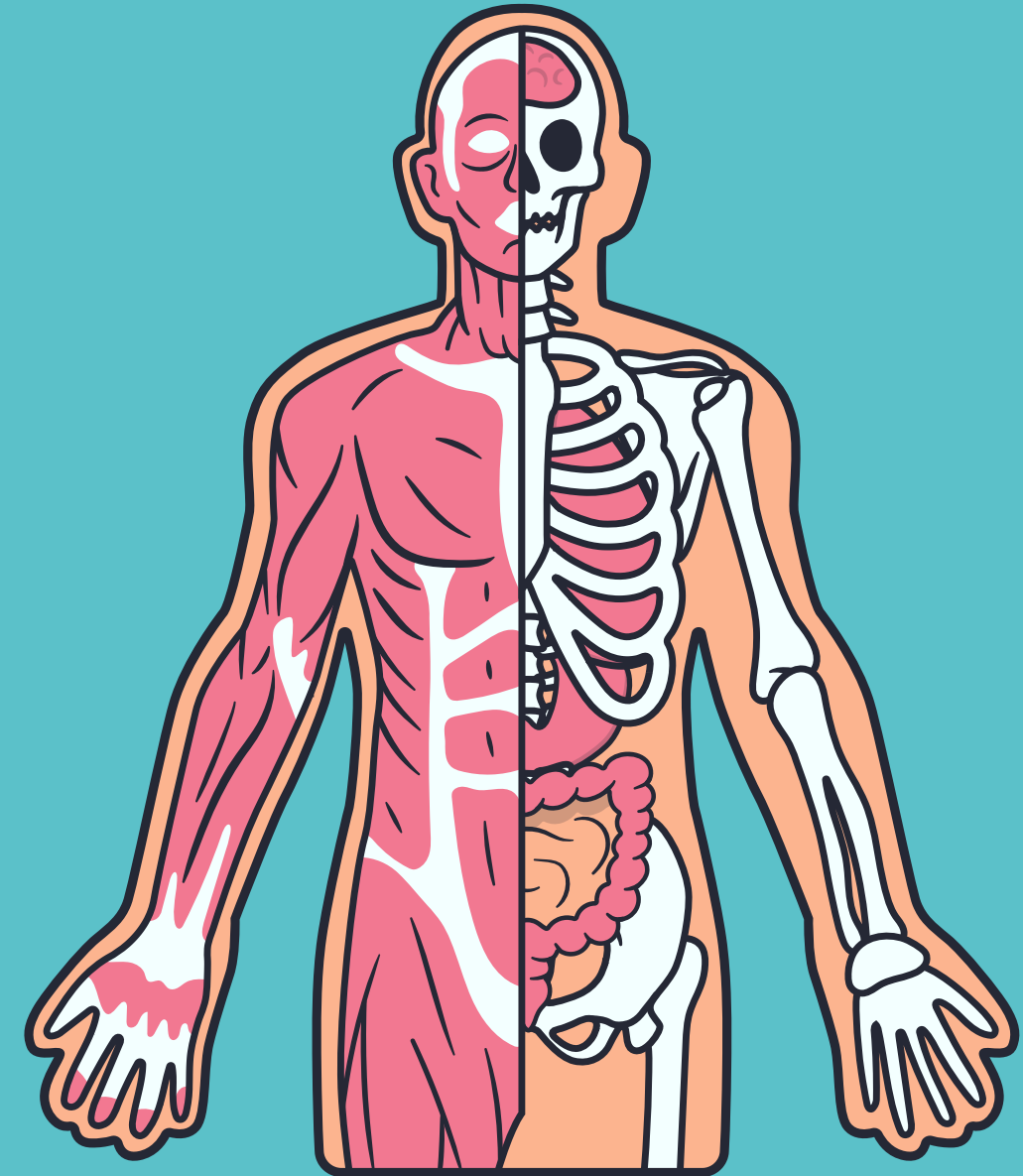
Grade 10

MITOSIS

Suppose your hand, arm, or foot
were made of only one cell.
What would happen if that cell
stopped working or died?

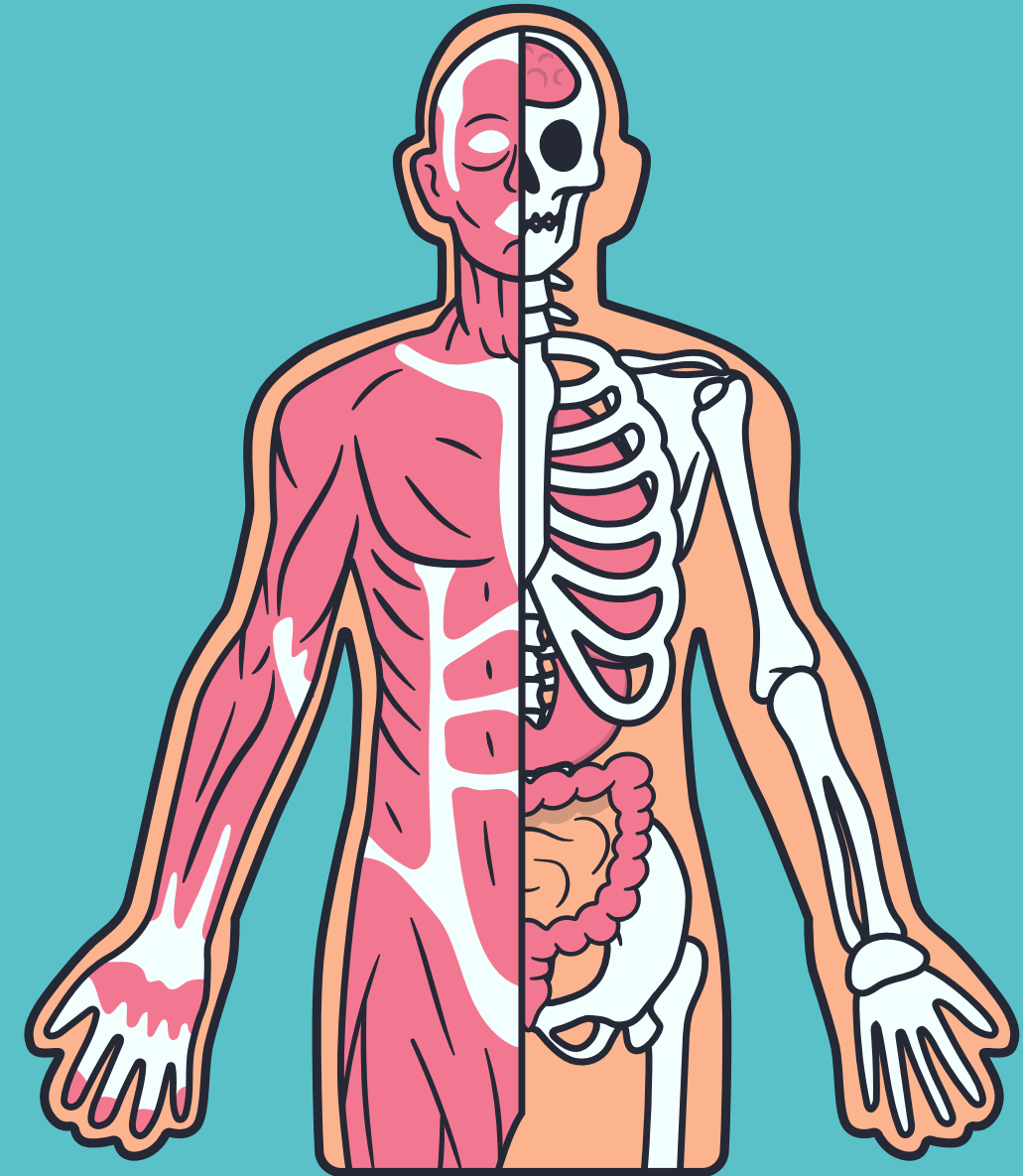


How many cells are really in
our bodies?

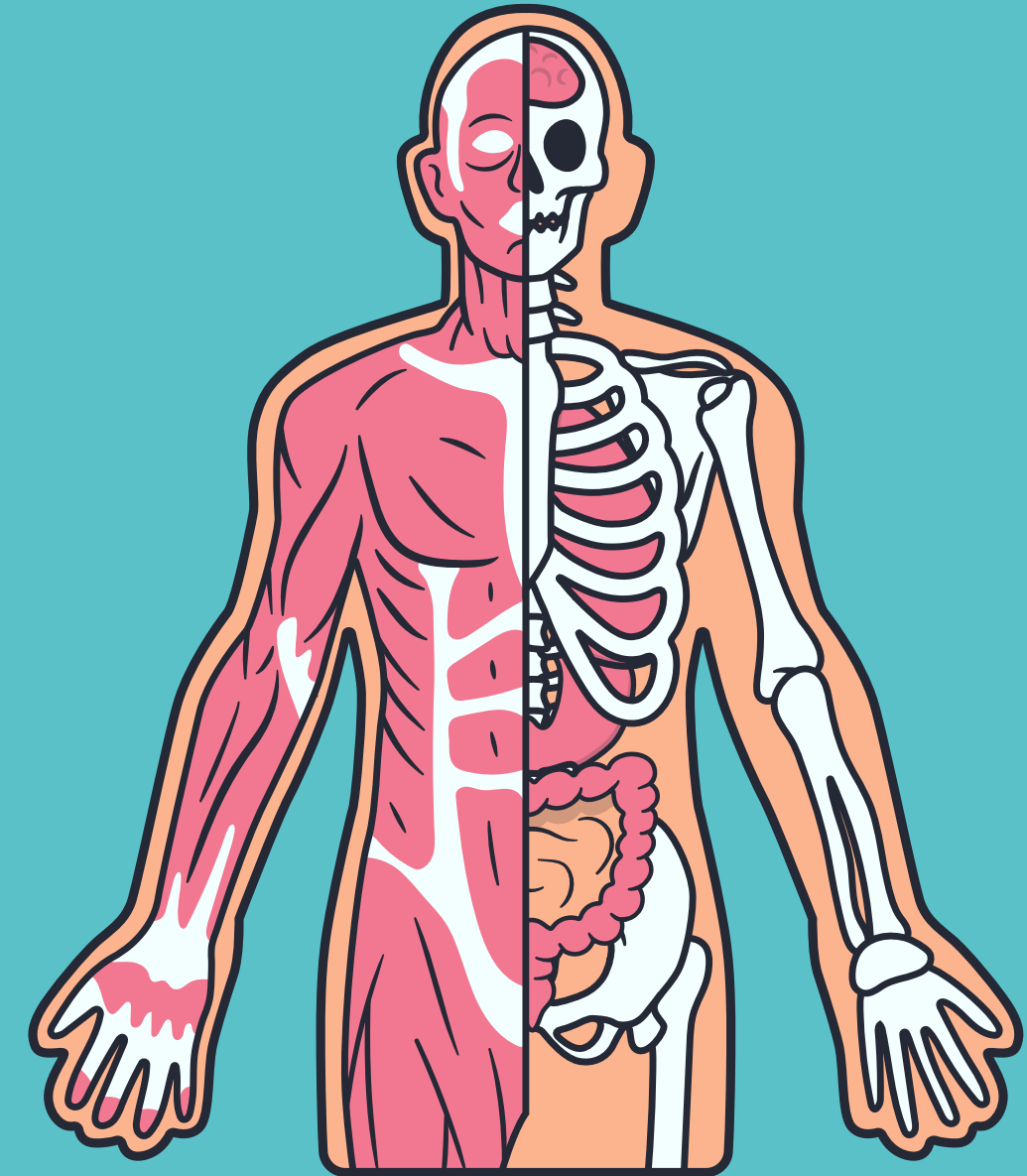


How many cells are really in
our bodies?

There are approximately 100
trillion (100,000,000,000,000)
cells in a human

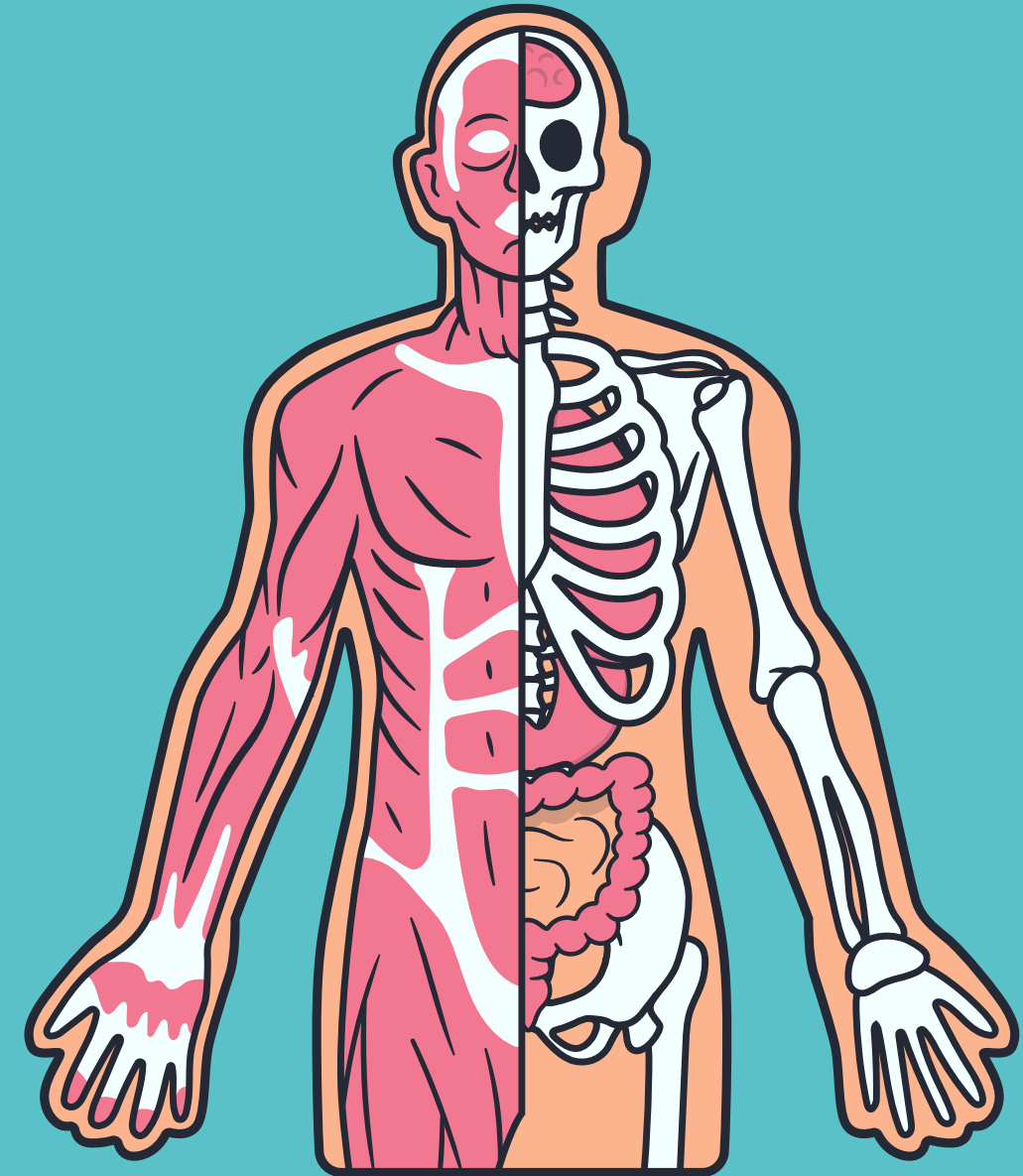


What does the body do to
replace cells that die, whether
in our hand or foot or
elsewhere in our bodies?

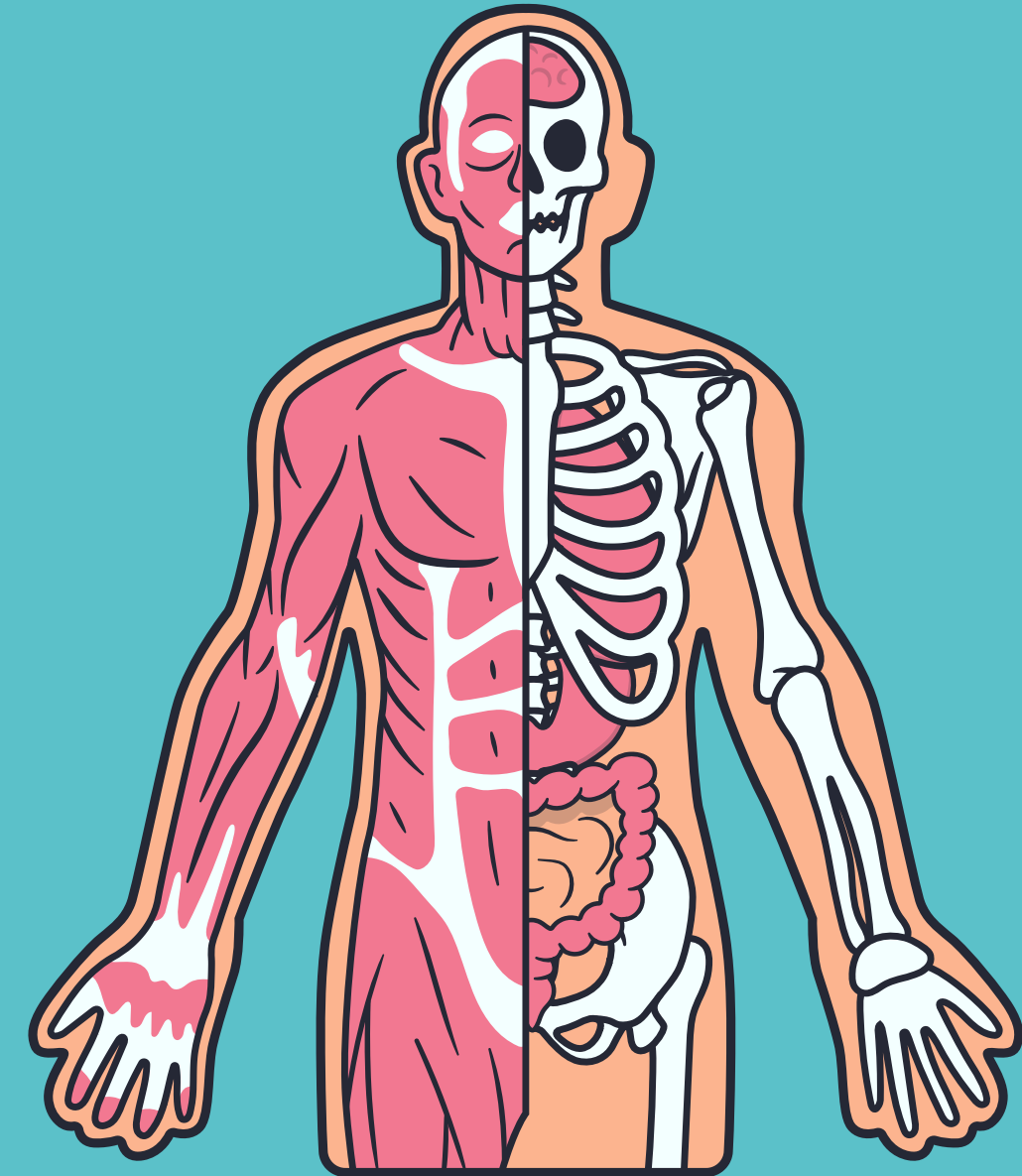


What does the body do to
replace cells that die, whether
in our hand or foot or
elsewhere in our bodies?

Other cells divide to fill in the
space left by the cell that died.

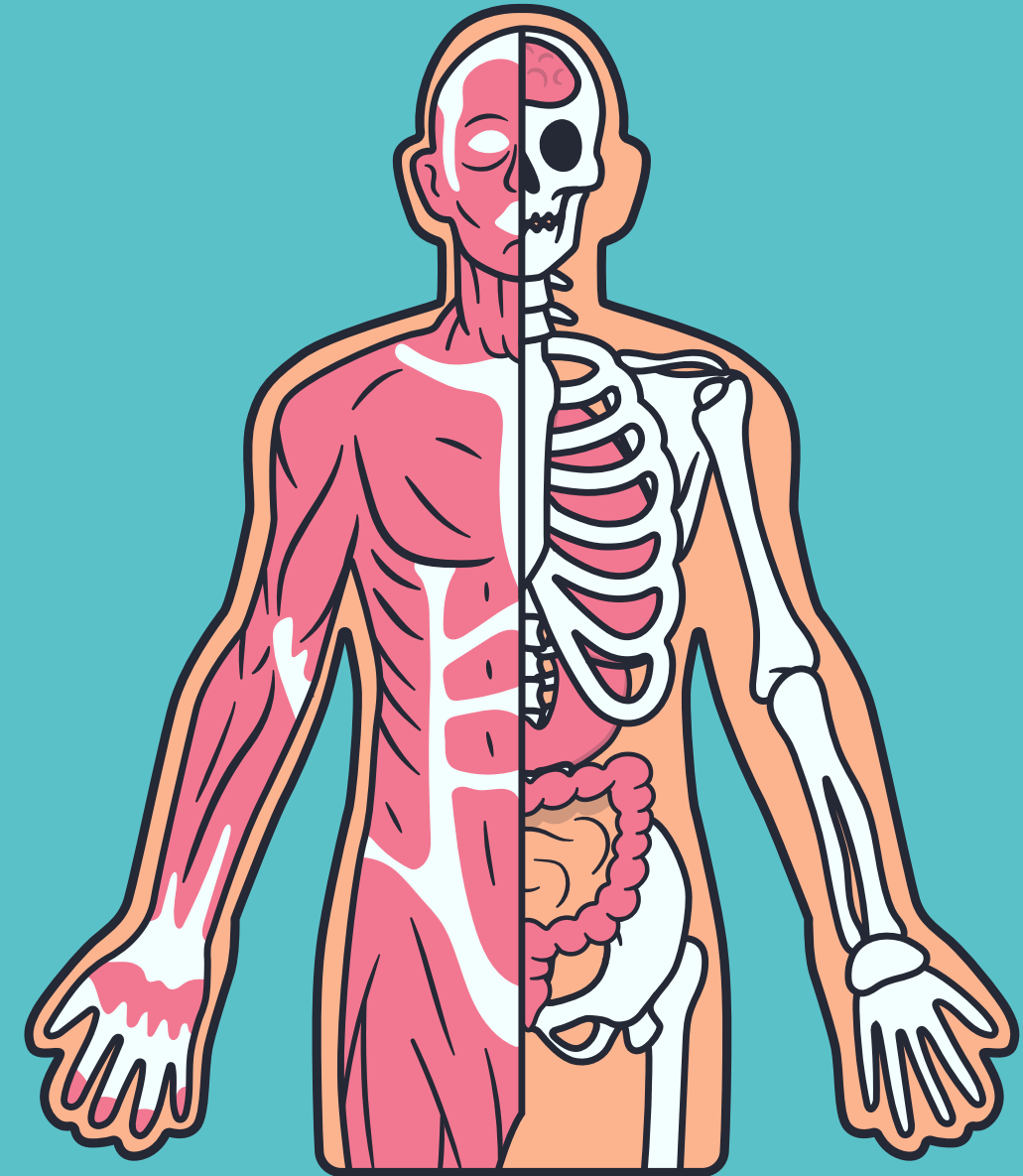


What is this process called?



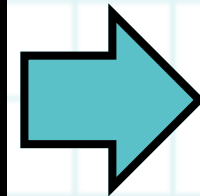
What is this process called?

Mitosis

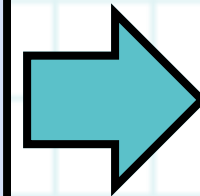


Learning Points

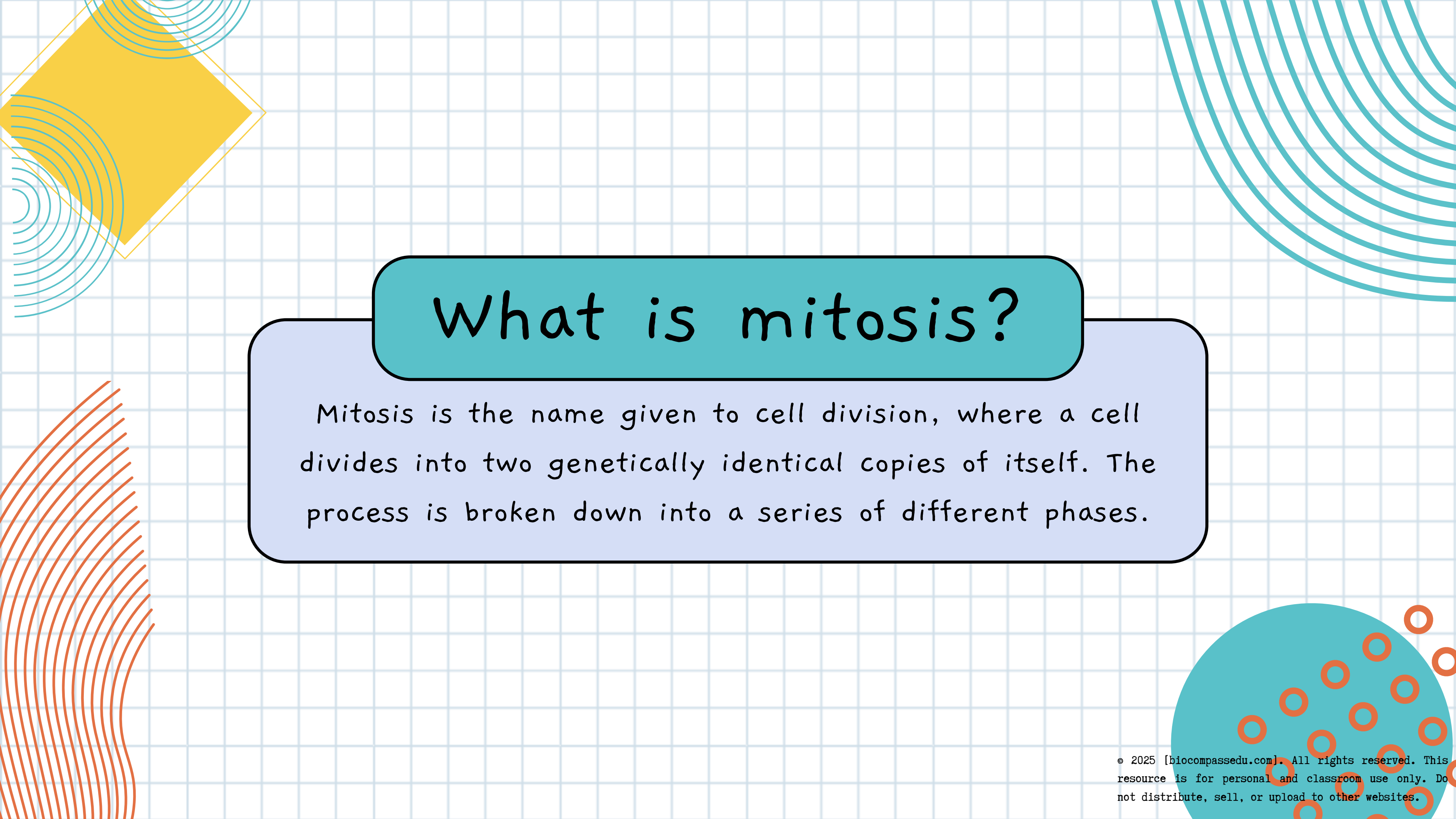
Define mitosis and what the process achieves.



Name each phase of mitosis in the correct order.



Explain what is happening to the chromosomes at each phase.



What is mitosis?

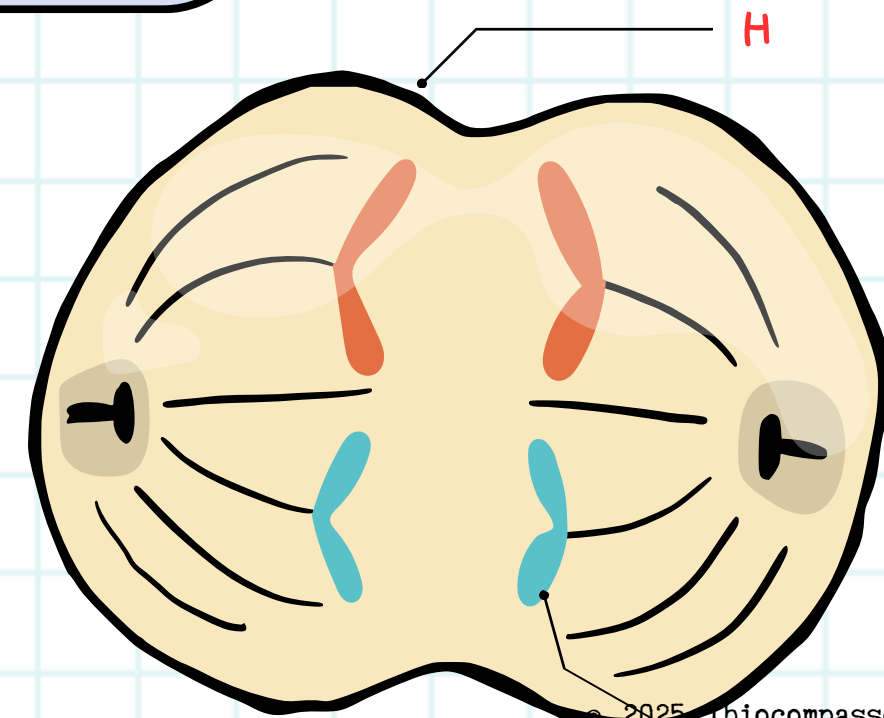
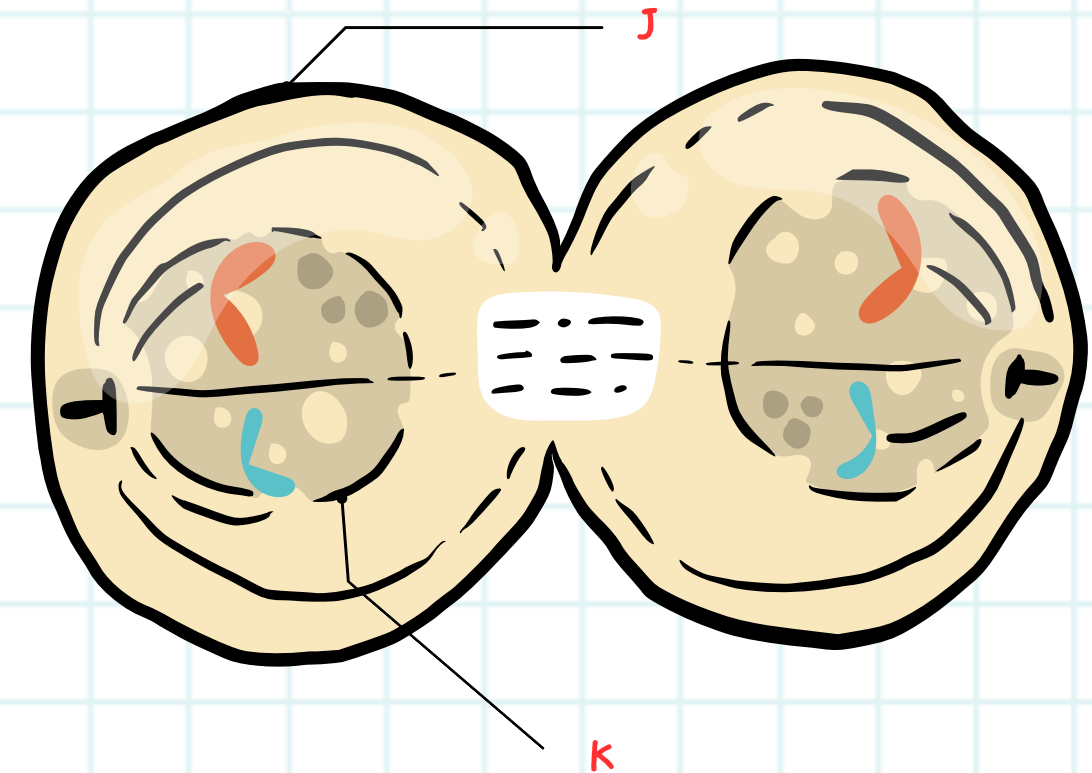
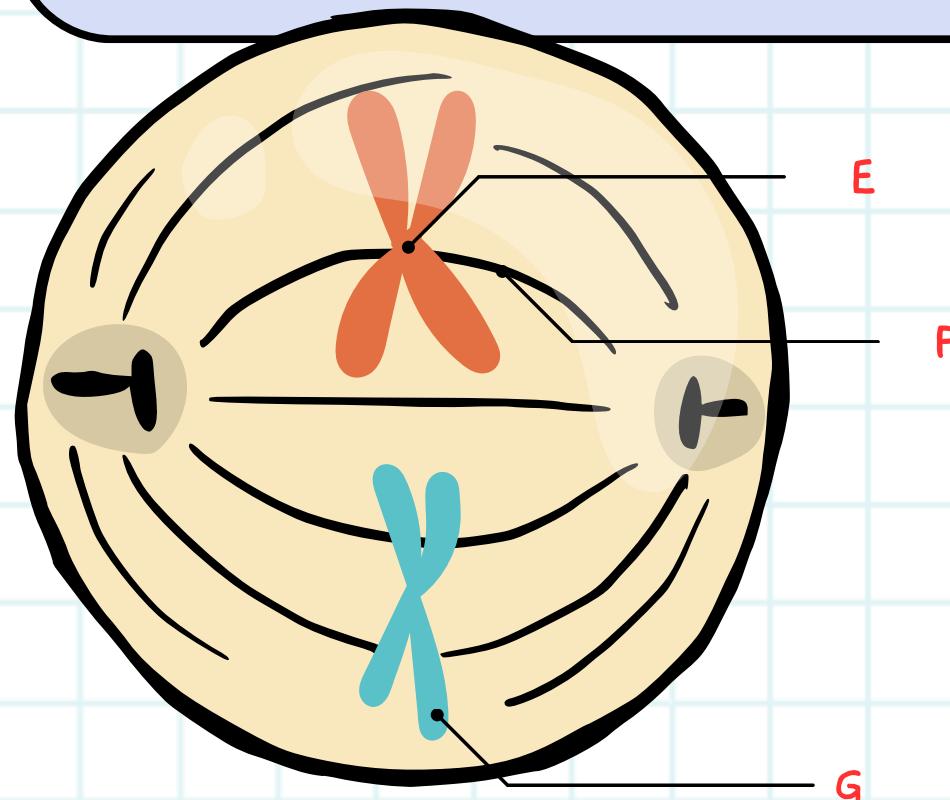
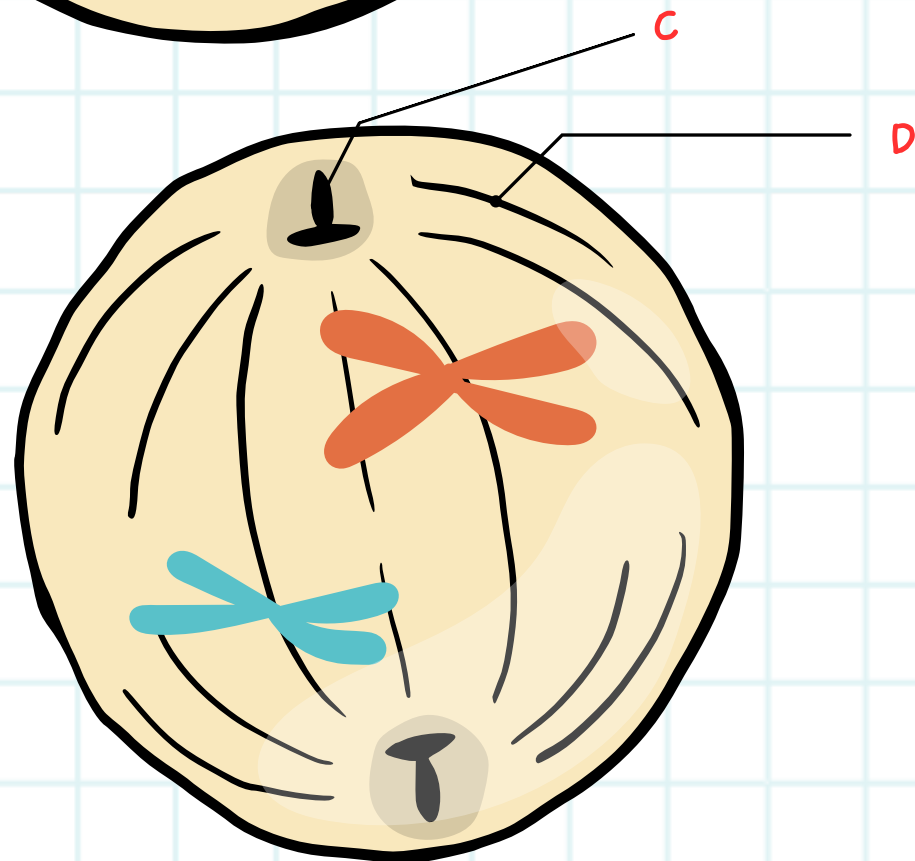
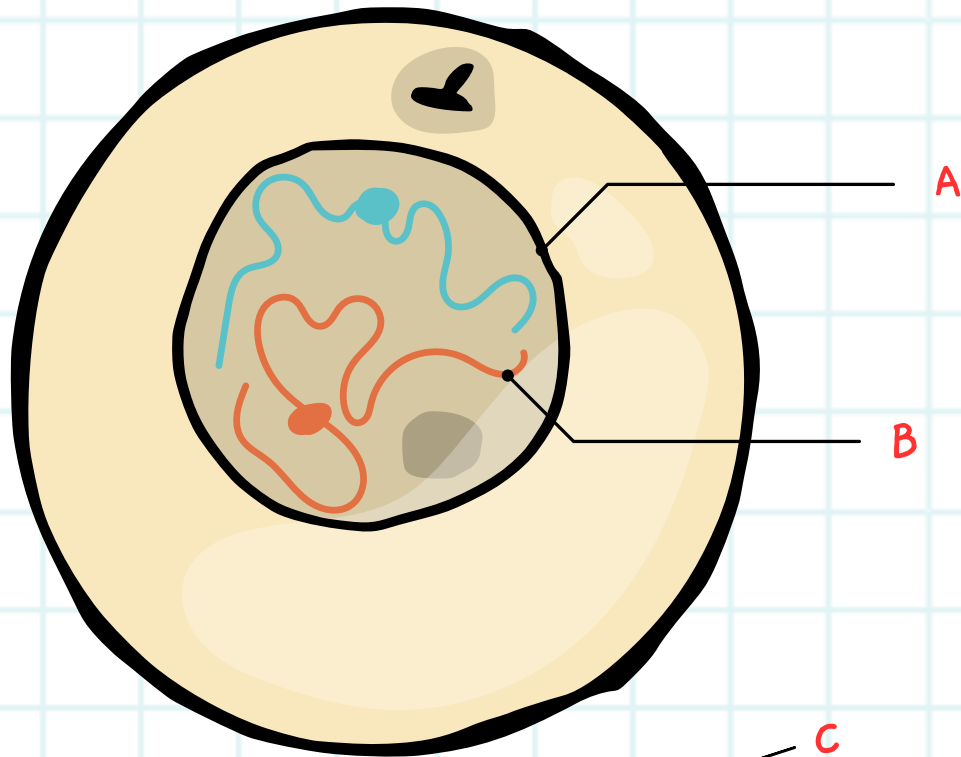
Mitosis is the name given to cell division, where a cell divides into two genetically identical copies of itself. The process is broken down into a series of different phases.



<https://gizmos.explorelearning.com/find-gizmos/launch-gizmo?resourceId=443>

Matching

Centromere
Chromosome
Spindle fiber
Nuclear membrane
Chromatid
Cell membrane
Centrioles



Matching

Answers

Centromere - E

Chromosome - B, G

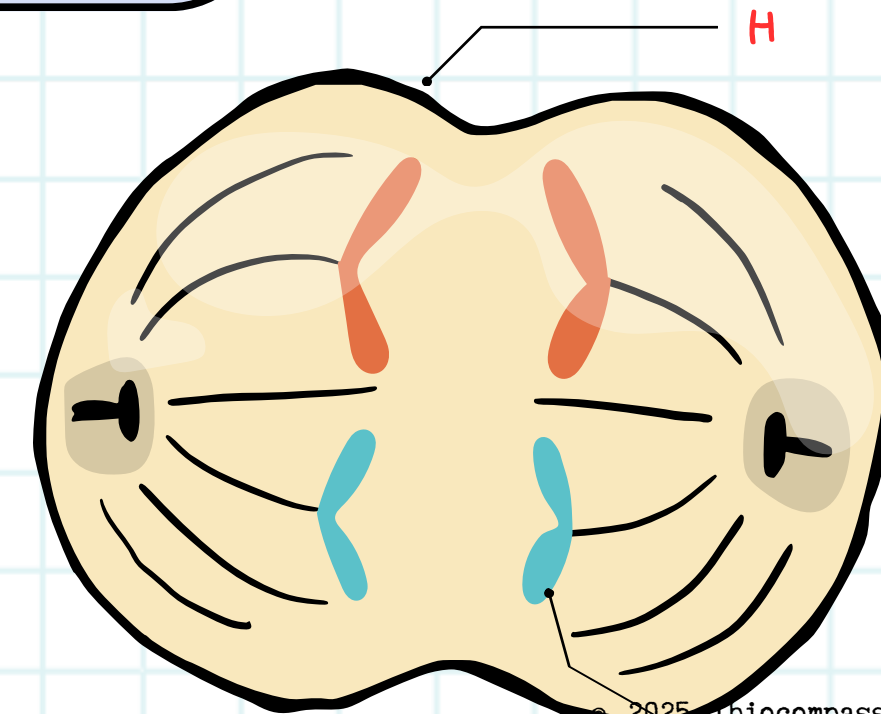
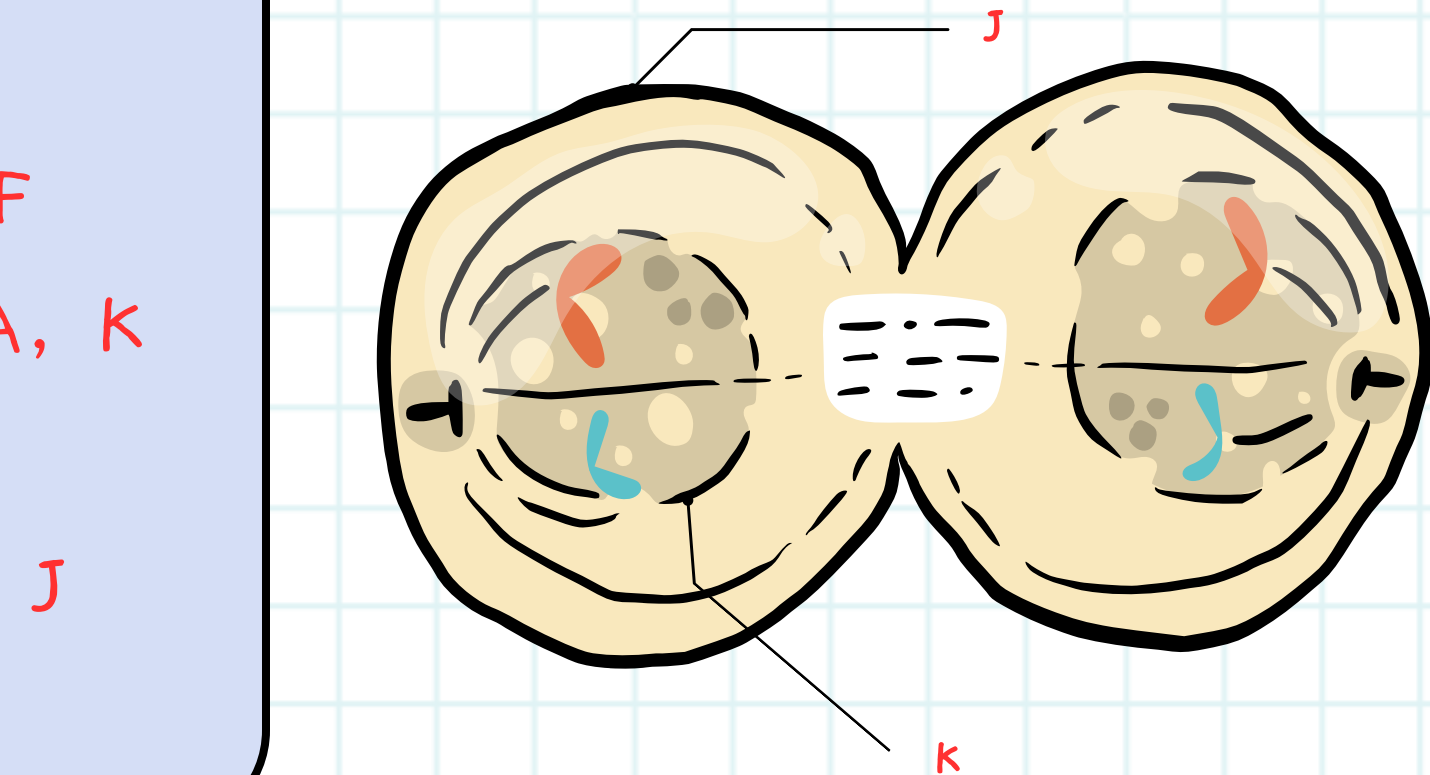
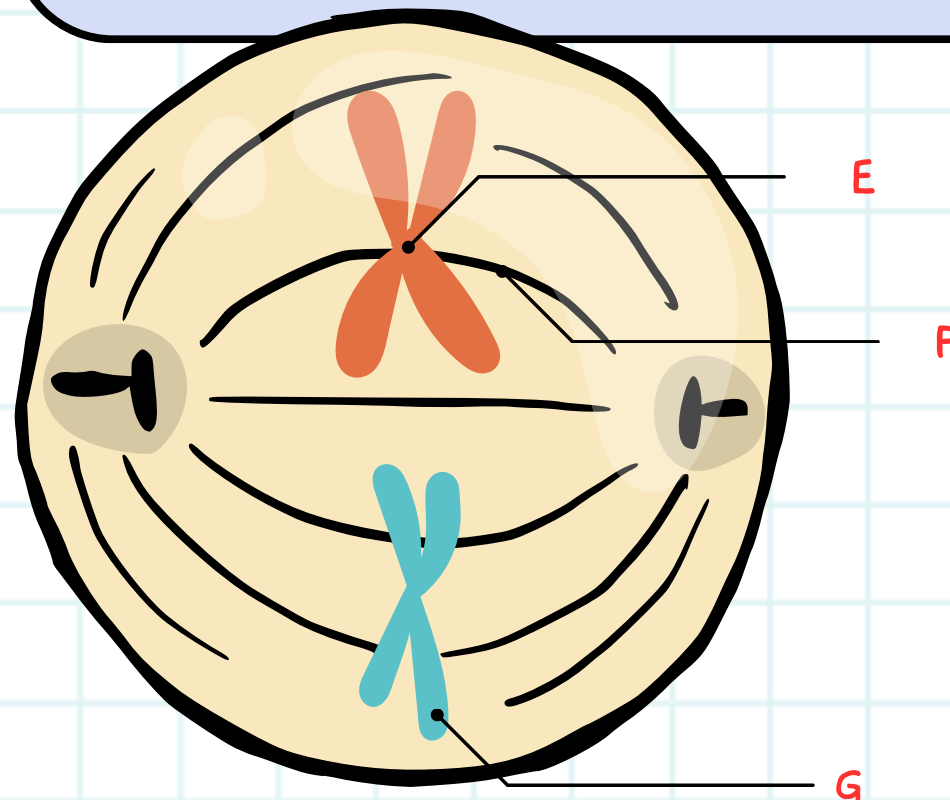
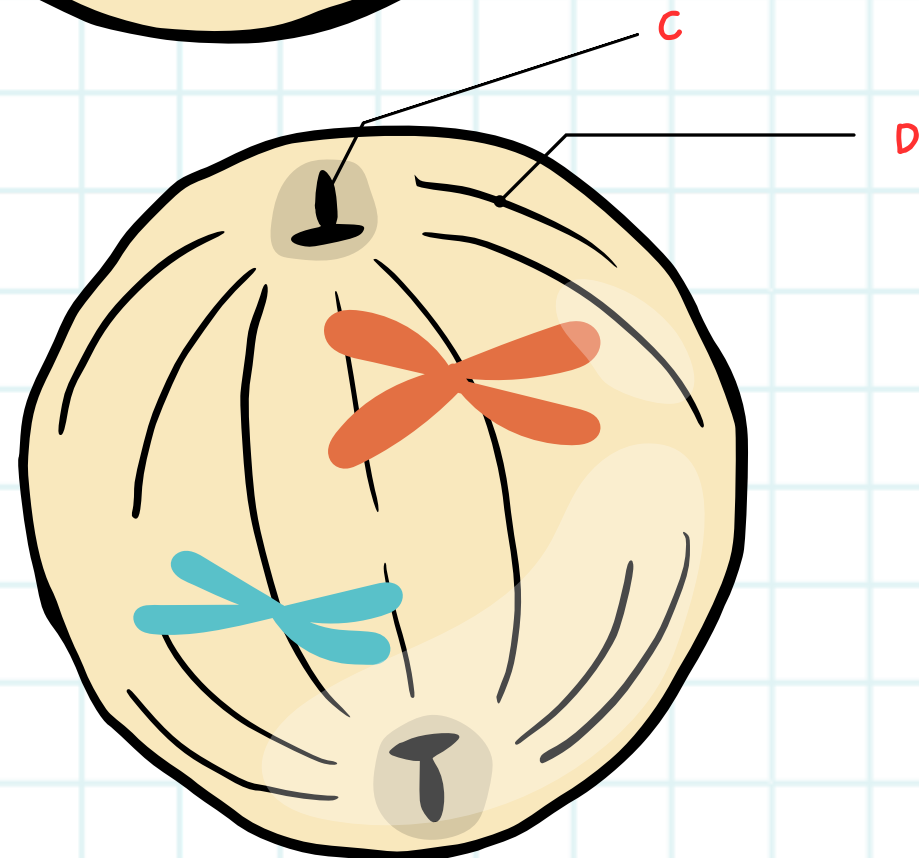
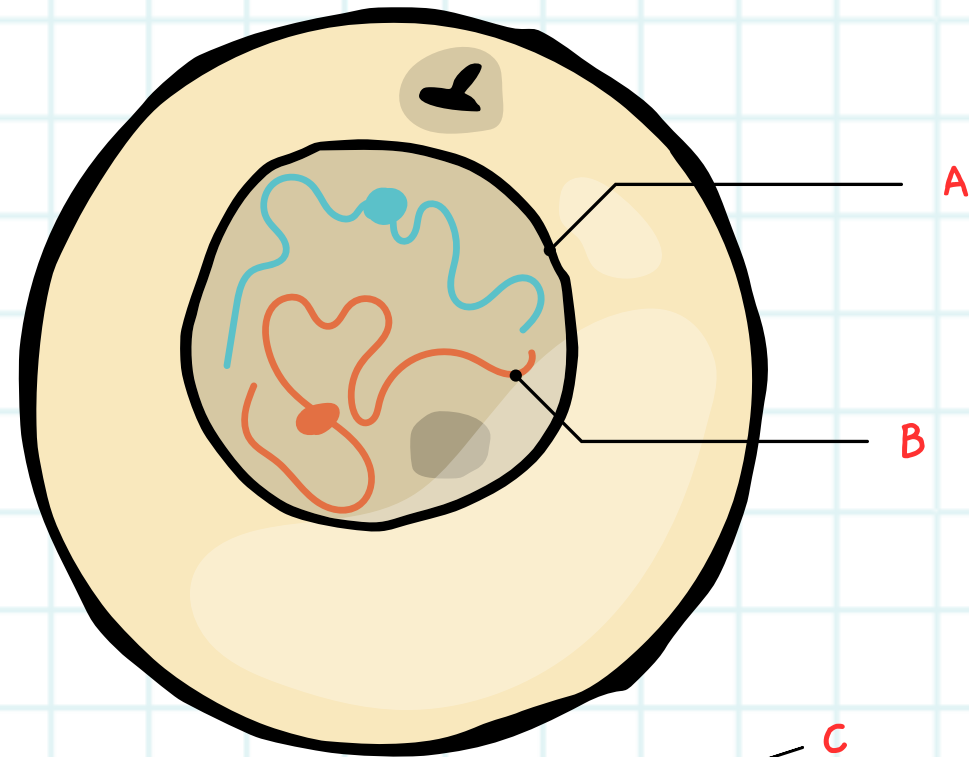
Spindle fiber - D, F

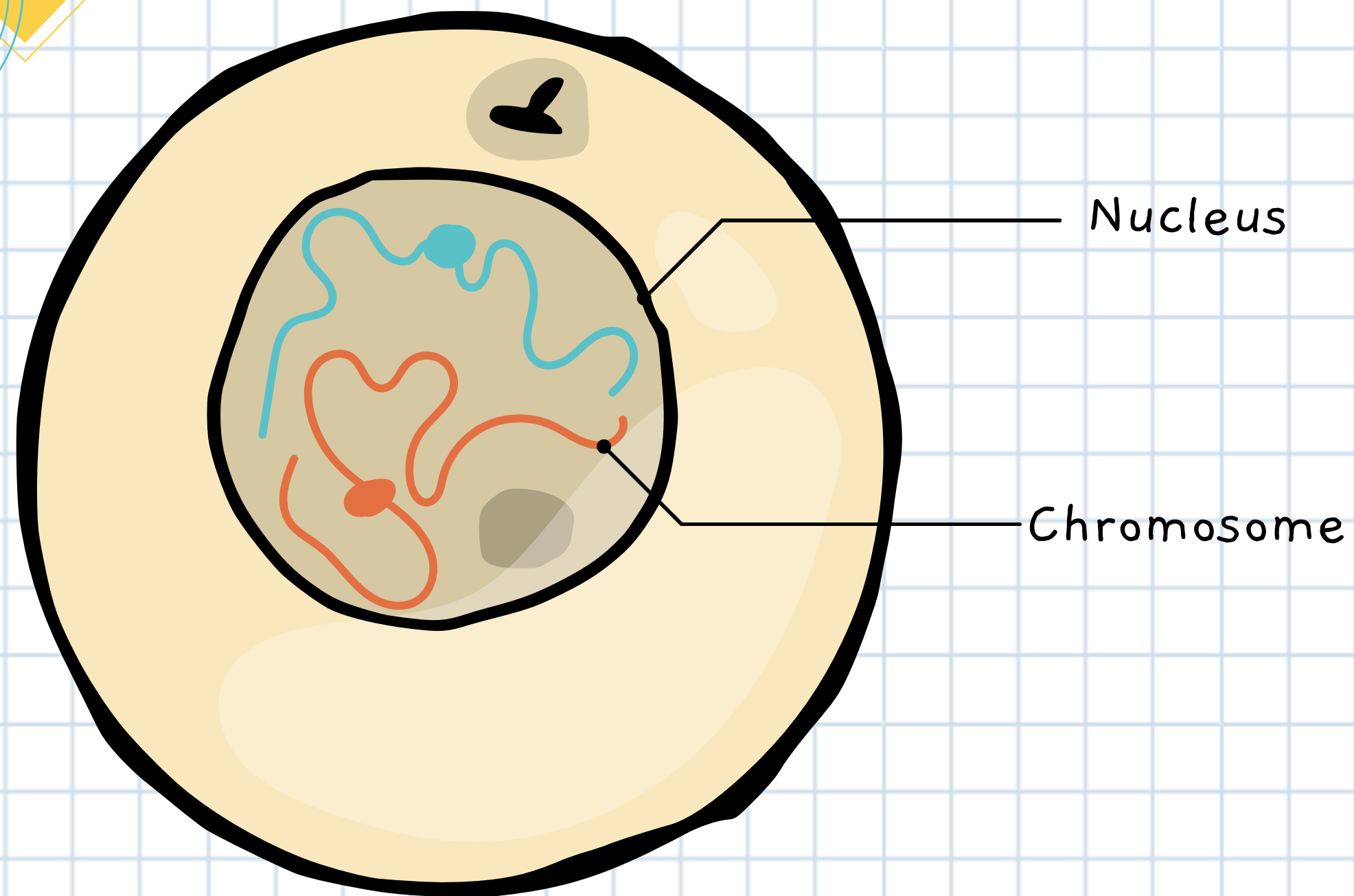
Nuclear membrane - A, K

Chromatid - I

Cell membrane - H, J

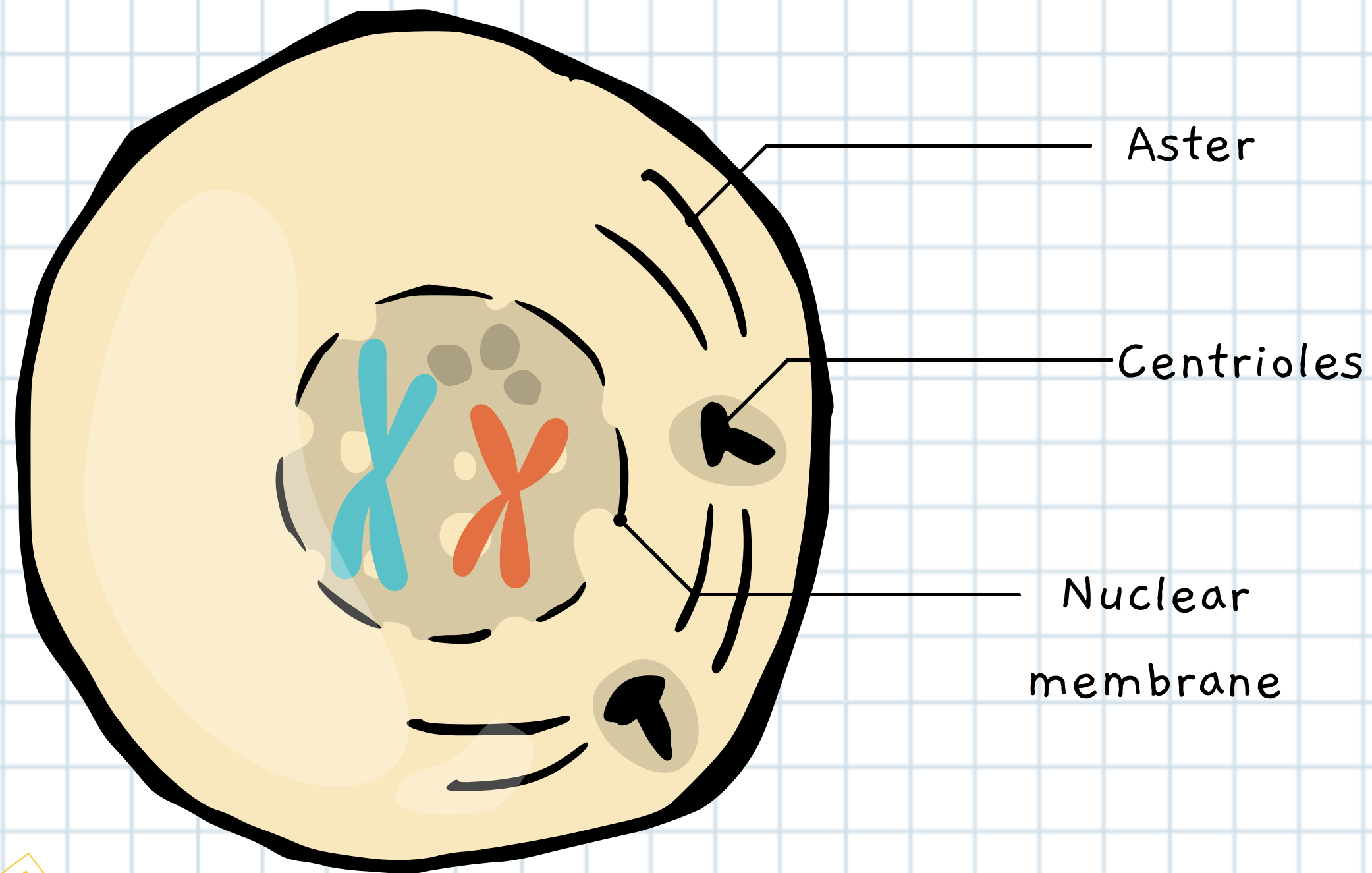
Centrioles - C





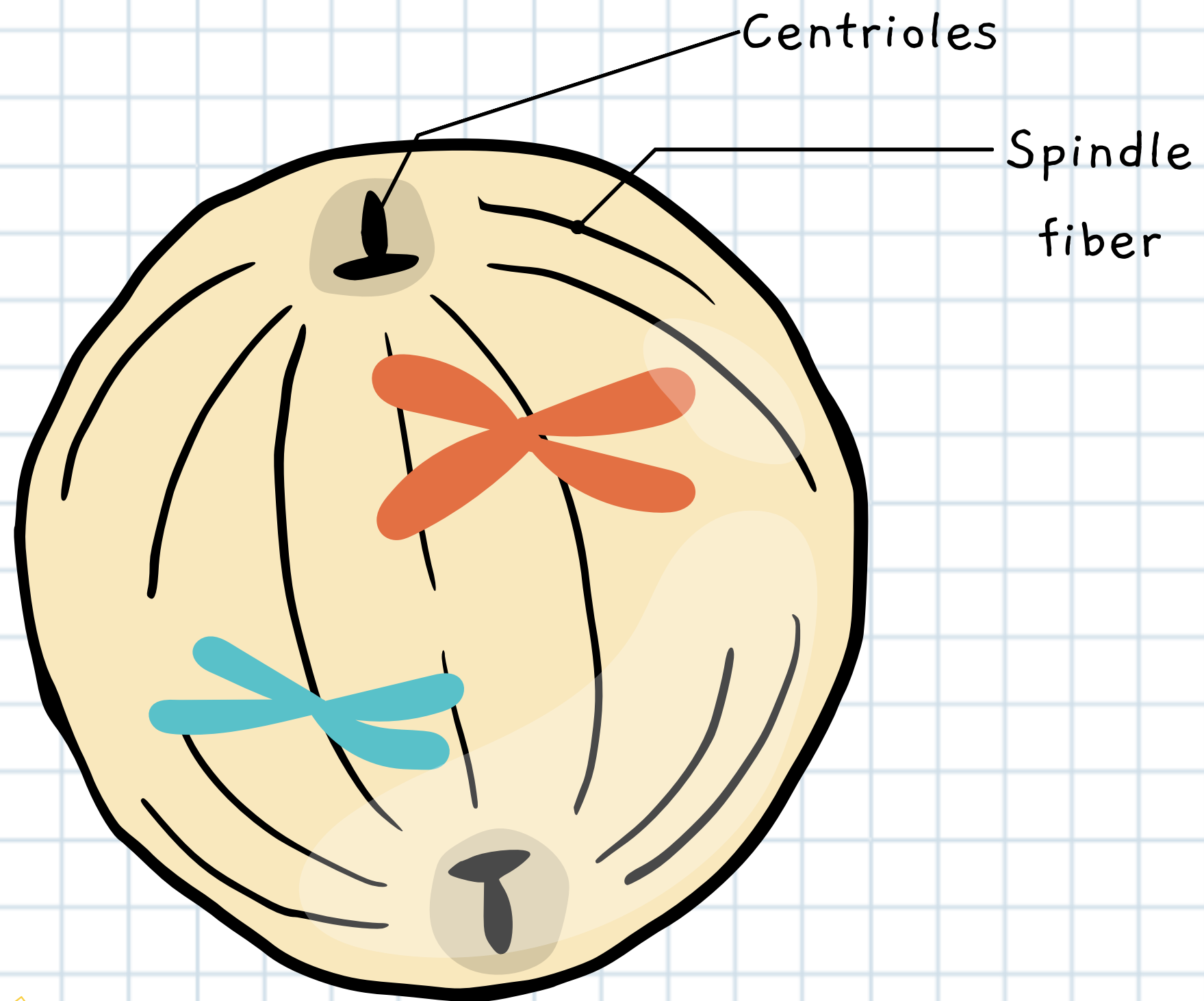
Interphase

A cell spends the most time in this phase. The DNA in the chromosomes copies itself ready for cell division. The chromosomes then become thicker and start to coil.



Early Prophase

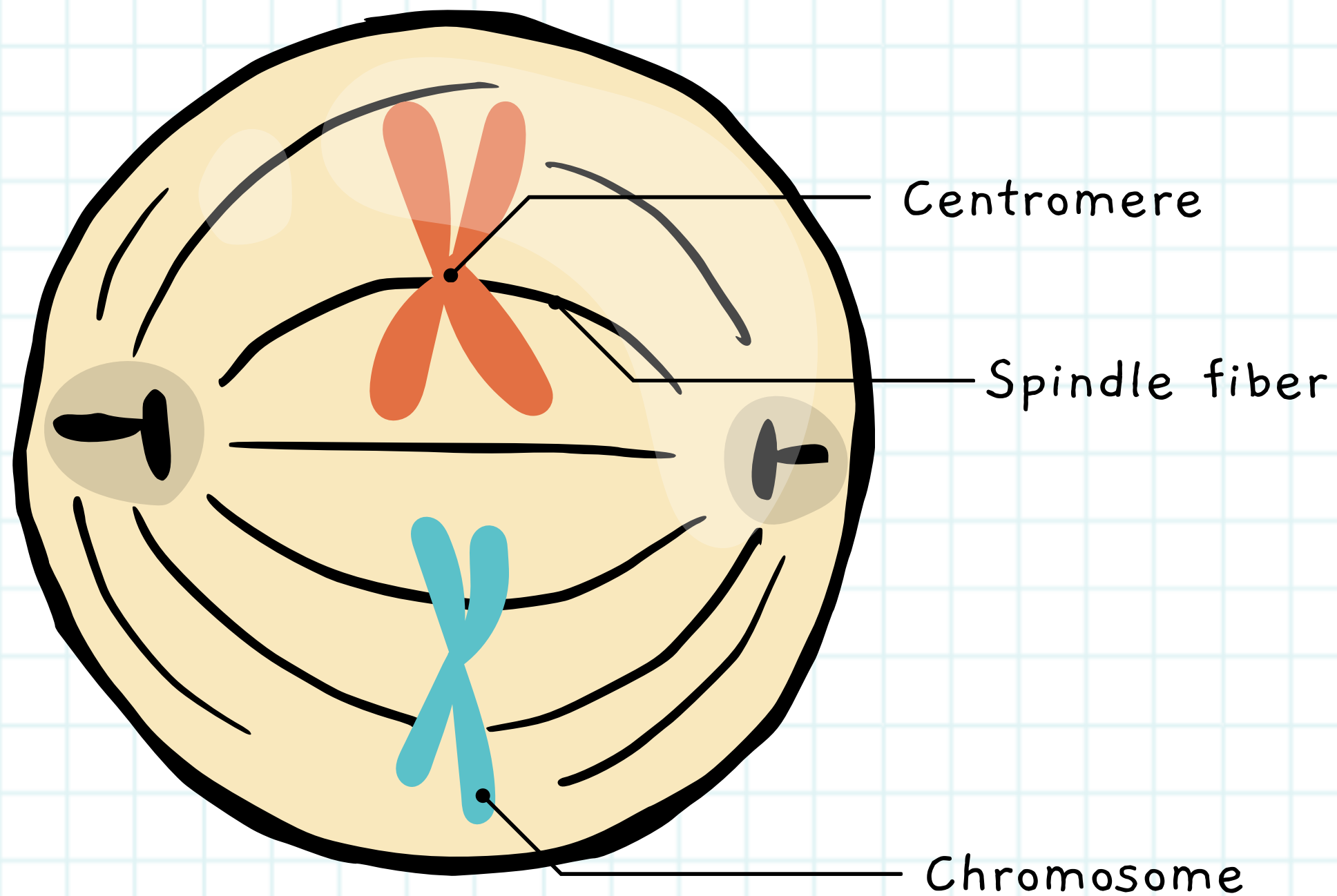
Cylindrical organelles called centrioles divide into two. They move apart and form asters. Asters help align and group chromosomes in cell division. The nuclear membrane then starts to disintegrate.



Late

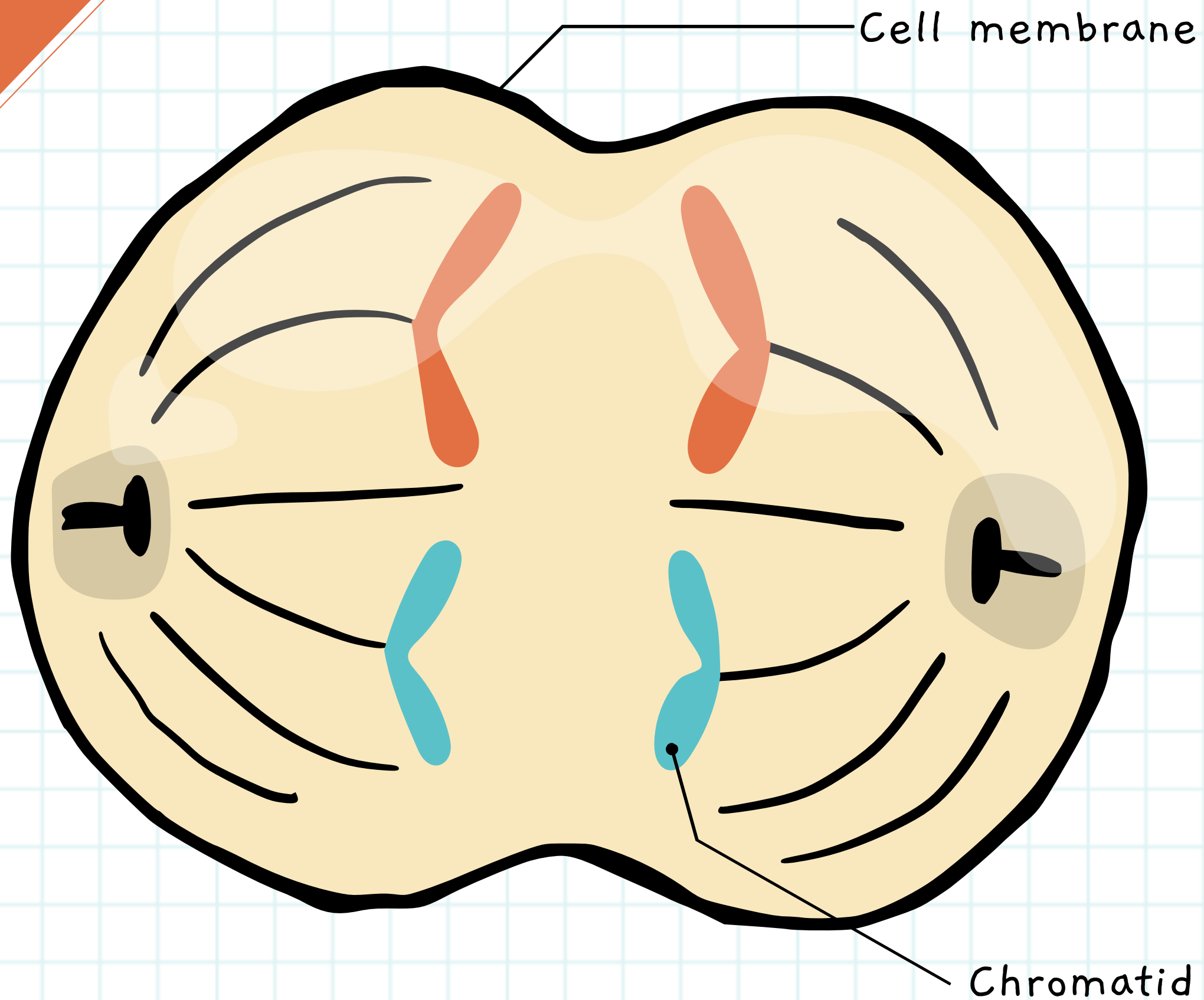
Prophase

The asters and centrioles are now on different poles. The nuclear membrane has disappeared.



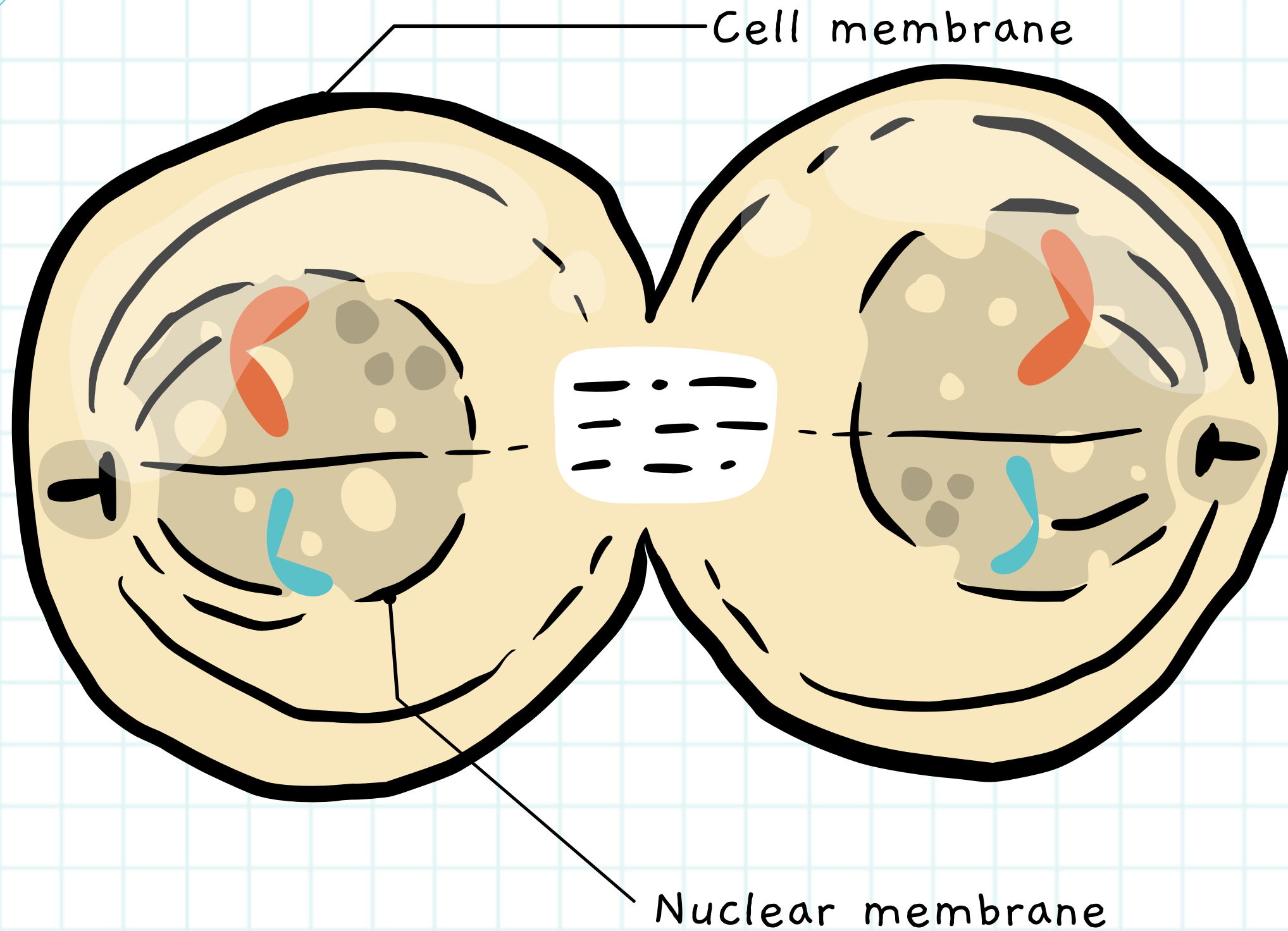
Metaphase

Microscopic protein structures called spindle fibers, pull the chromosomes by their centromeres (the centre of a chromosome) so they line up in the middle.



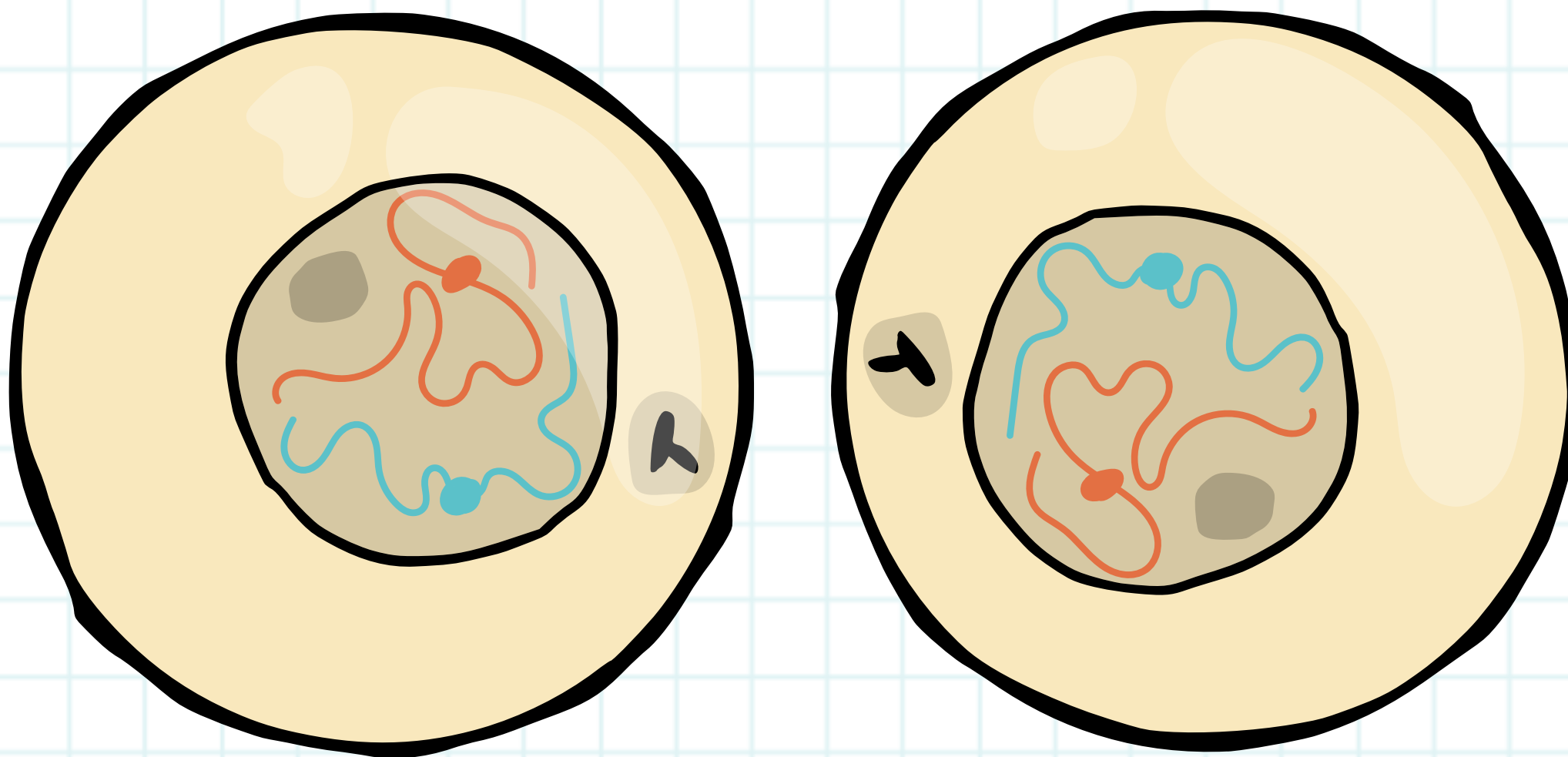
Anaphase

The centromeres split and half of the chromatids (chromatids are divided chromosomes) move to one pole and half to the other. The cell membrane begins to pinch at the center.



Telophase

The cell membrane constricts further and two nuclear membranes form around the separated groups.



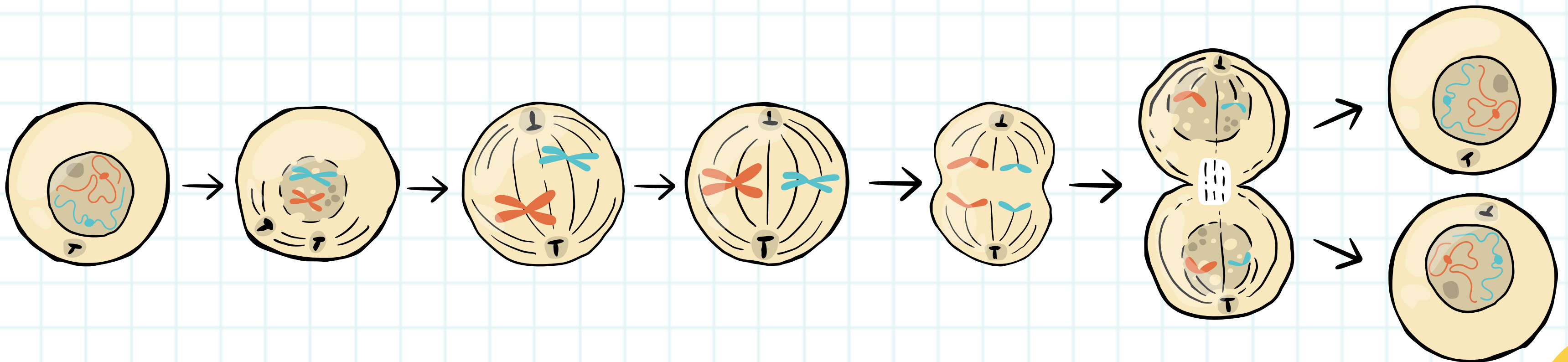
Cytokinesis

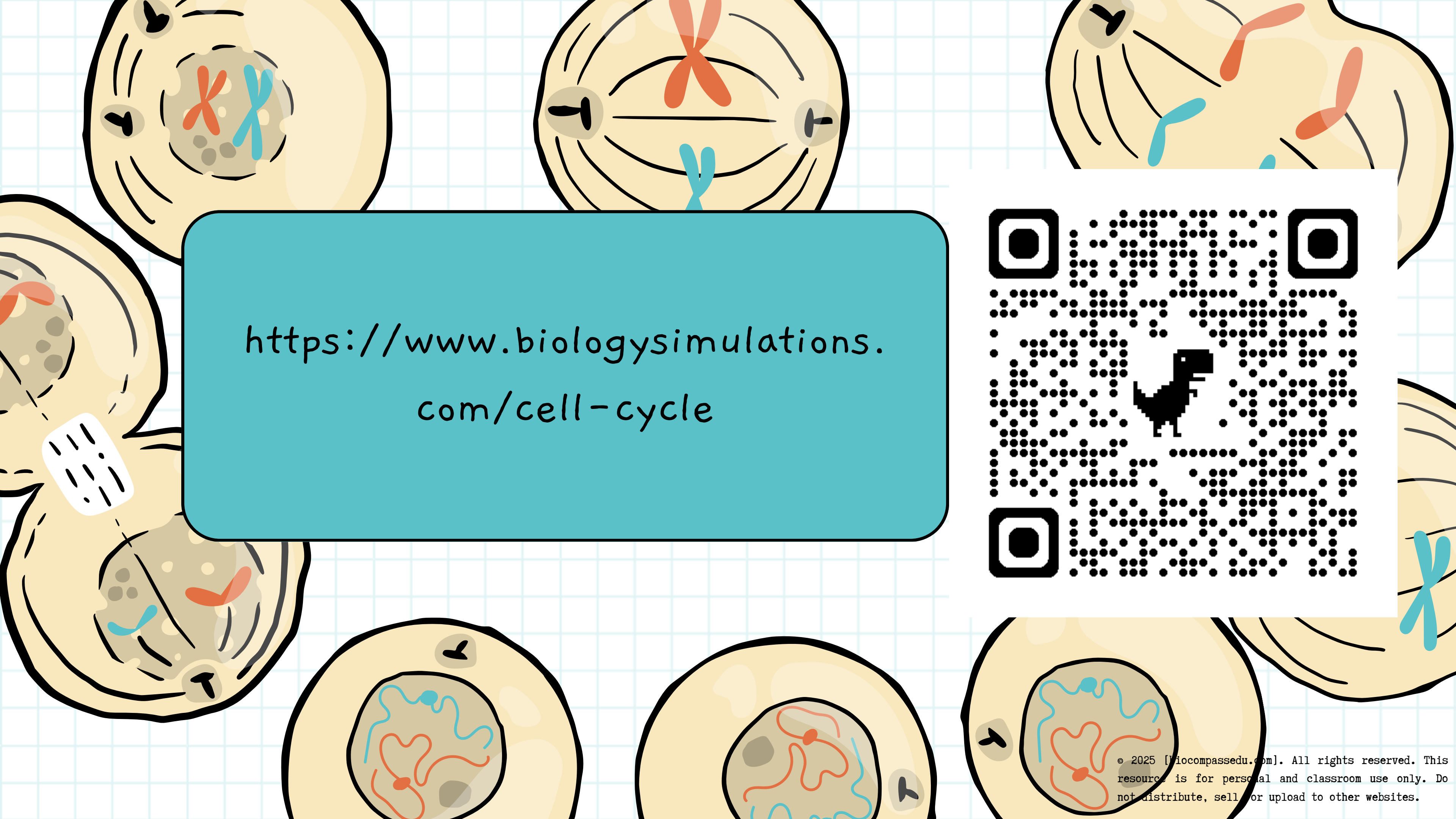
The cell membrane pinches in completely and mitosis is complete. Two daughter cells now exist. They both are genetically identical with the same number of chromosomes.

The phases of mitosis

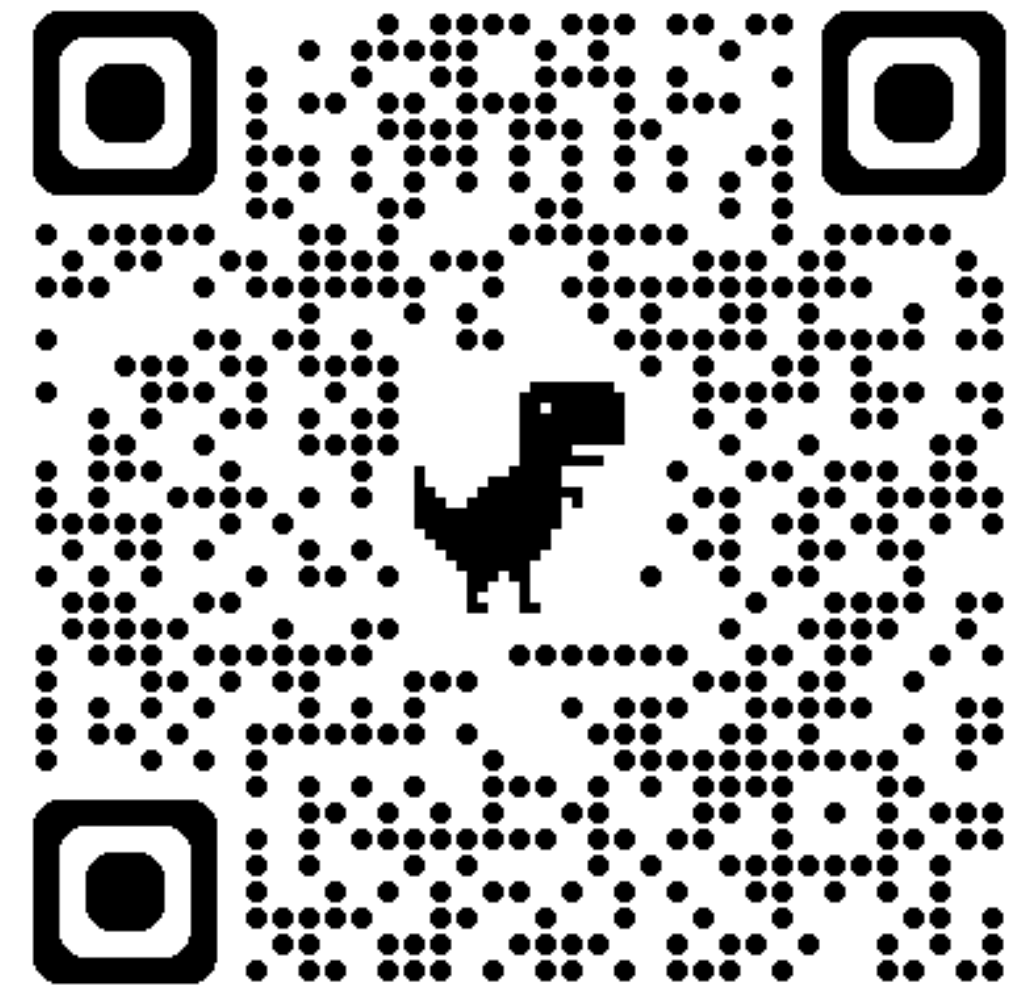
Tip!

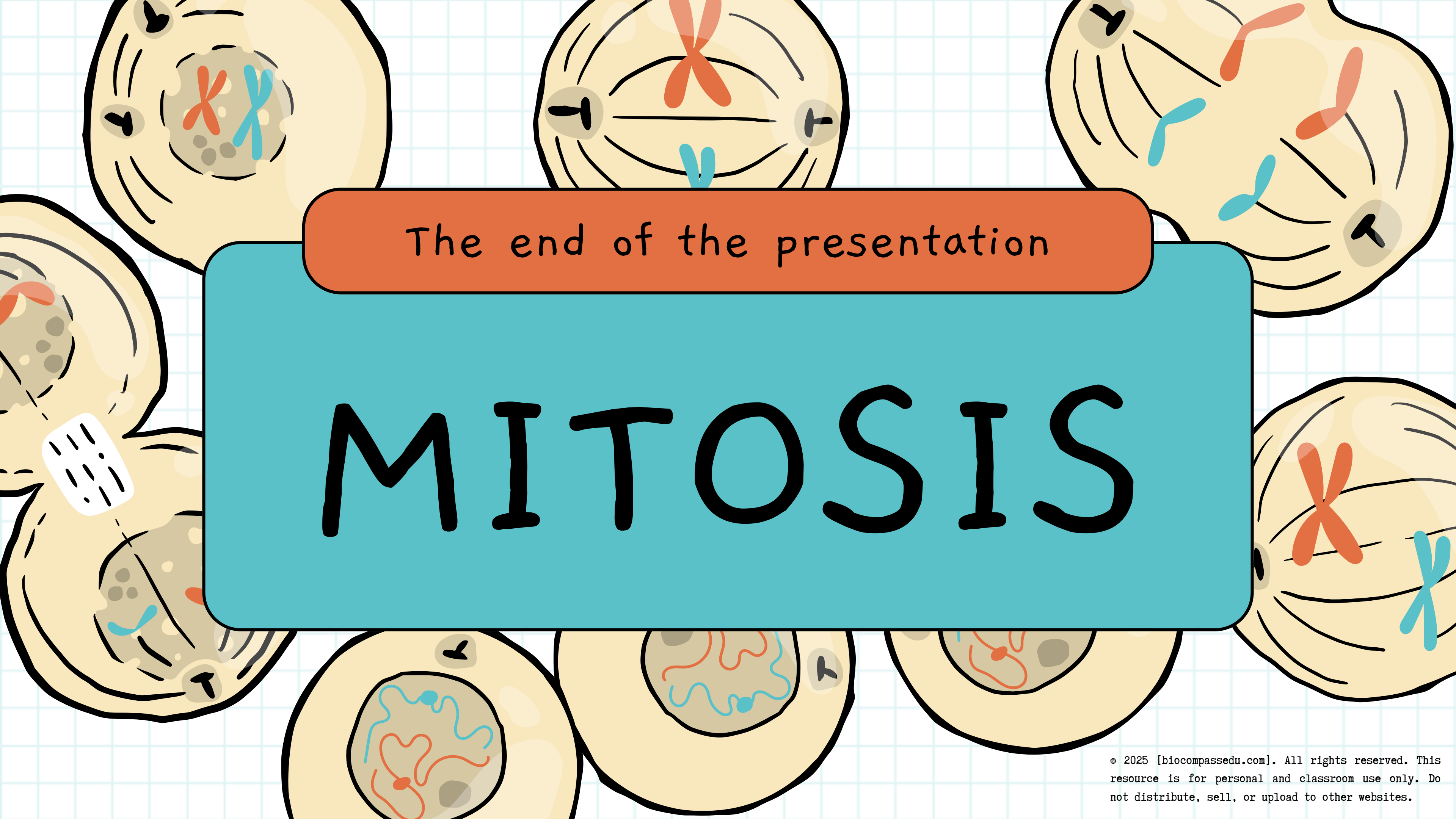
Only two chromosomes are shown in the cell but in reality there are 23 pairs of chromosomes in a human cell.



The background of the entire image is a light blue grid. Scattered across this grid are several hand-drawn illustrations of cells in various stages of the cell cycle. Some cells show chromosomes (represented as X-shapes in red and blue) and spindle fibers. Other cells show a nucleus with chromatin. One cell on the left has a white rectangular label with black dashed lines. A QR code is positioned on the right side of the image.

<https://www.biologysimulations.com/cell-cycle>





The end of the presentation

MITOSIS