

An anatomical illustration of a human torso, showing the internal organs and the nervous system. The body is rendered in a light blue, semi-transparent style, revealing the heart, lungs, stomach, and intestines. The nervous system, including the brain, spinal cord, and peripheral nerves, is highlighted in a darker blue. The background is a light blue gradient.

Cell Theory

It's history and cell cycle

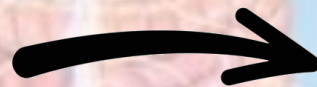
History of Cell Theory

An anatomical illustration of a human torso, showing the internal organs and the skeletal structure. The illustration is semi-transparent, allowing the underlying structures to be seen. The color palette is primarily blue for the skin and muscles, with various shades of red, pink, and orange for the internal organs. The spine is visible in the center, and the ribcage is clearly defined. The overall style is clean and educational.

- It was once believed that spontaneous generation could turn non-living things into simple living things.
- These observations were not made through the scientific method but by untested observation.

History of Cell Theory

- For example, it was once believed that if you left mouldy grain out, it would spontaneously turn into mice.
- Therefore it was concluded that mouldy grain turned into mice.
- Today we know that the thatched roofs used in the past would leak and the water would spoil the grain and attract the mice.



History of Cell Theory



- An example of spontaneous generation that did get tested was the belief that rotting meat would spontaneously turn into flies.
- In 1668, Francesco Redi did an experiment with flies and wide-mouth jars containing meat.
- He used two jars of meat; one was covered with a fine mesh and the other was left open.
- Flies could only get into the open jar and after a brief period of time, maggots and eventually flies were found in the open jar.



maggots

open container



formation of maggots
in meat



cork-sealed container



no formation of maggots
in meat

maggots



gauze-covered container



no formation of maggots
in meat

History of Cell Theory

An anatomical illustration of a human torso, showing the internal organs and muscles. The illustration is semi-transparent, allowing the text to be overlaid on it. The background is a light blue color.

- However, flies and maggots were not found in the jar covered by the mesh.
- He was able to conclude that the rotting meat in the covered jar did not spontaneously generate flies, whereas the open jar that had flies continued to have more flies over time.
- He was able to conclude that flies come from flies and not from rotting meat.
- Therefore, living things come from other living things; it was the first step into developing the cell theory.

History of Cell Theory



- Around the same time as Redi, Robert Hooke, using his new microscope, observed the structure of plant cell walls and he was the first to use the term 'cells'.
- In 1838, Matthias Schleiden and Theodore Schwann were looking at tissues with their microscopes.
- They were able to determine that all living things were made up of cells.

History of Cell Theory

An anatomical illustration of a human torso, showing the internal organs and the skeletal structure. The illustration is semi-transparent, allowing the underlying structures to be seen. The background is a light blue gradient.

They eventually developed the first cell theory:

1. All living things are composed of one or more cells.
2. Cells are the basic structural and functional units of life.

Modern Cell Theory

An anatomical illustration of a human torso, showing the internal organs and muscles. The illustration is semi-transparent, allowing the text to be overlaid. The background is a light blue gradient.

- It was through the earlier work of Redi, Hooke, Schleiden, and Schwann that Rudolf Virchow was able to complete the cell theory.
- Since he was a doctor of medicine, he was interested in human disease.
- Through the use of a microscope he was able to observe cells dividing.

Modern Cell Theory



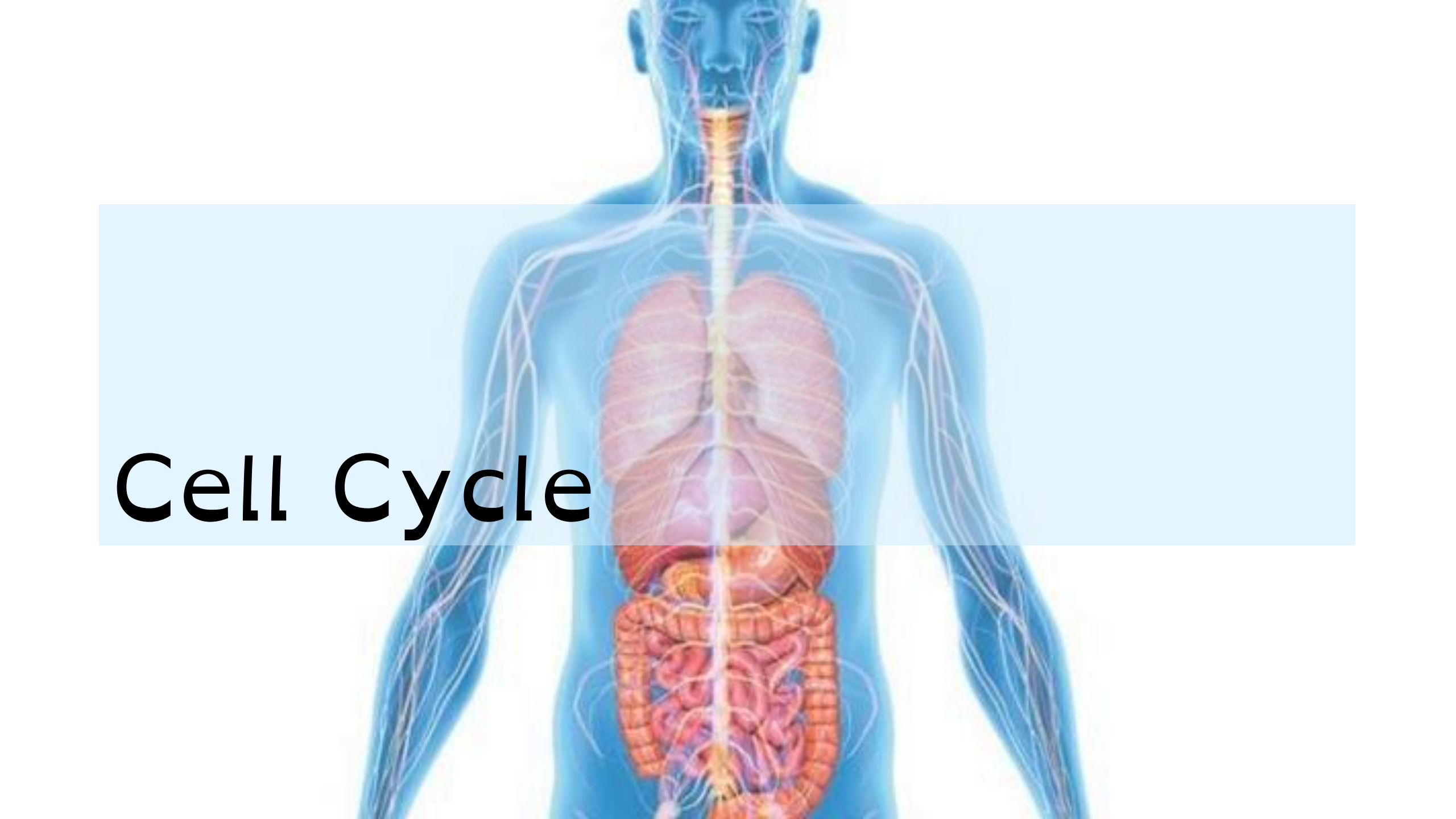
He further modified the cell theory to create the modern cell theory that now states:

1. All living things are composed of one or more cells.
2. Cells are the basic structural and functional units of life.
3. All cells come from the division of other cells.



THE WACKY HISTORY OF CELL THEORY



An anatomical illustration of a human torso from the neck to the waist. The body is rendered in a semi-transparent blue color, revealing internal organs. The lungs are shown in a reddish-pink hue, the heart is a darker red, and the digestive system, including the stomach and intestines, is depicted in various shades of red and orange. A network of white and light blue lines represents the nervous system, with a central spinal column and branching nerves extending to the arms and head. The background is a light, solid blue.

Cell Cycle

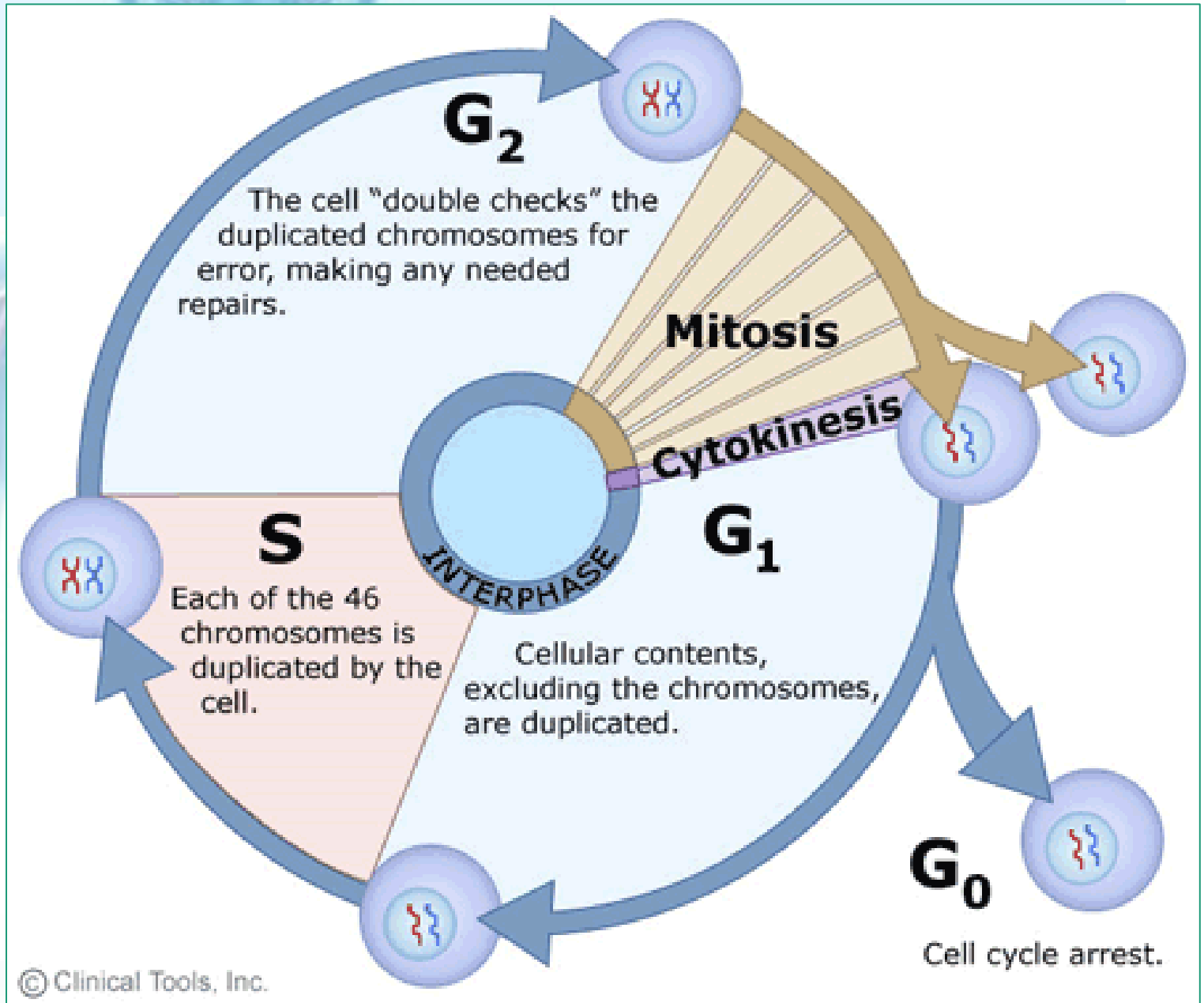
Cell Cycle



- The entire life of the cell is called the cell cycle.
- Within the human body the cell cycle happens in every cell, except nerve cells after the age of three.
- In plant cells, the cell cycle occurs in specialized parts called meristem located in the tips of roots and shoots.

Cell Cycle

- The cell cycle can last about 24 hours.
- There are two major phases in the cell cycle, interphase and mitosis.
- The period between divisions is known as interphase and takes the majority of time.
- The second part is cell division or mitosis and lasts about one hour.



Cell Cycle

- All animal cells undergo a process by which they duplicate to create new cells. This process is what we refer to as the cell cycle - Mitosis.
- During the cell cycle, the cell grows, performs its specialized functions and then creates an exact copy of itself.
- This is a very important process, because this is how we grow and how our tissues get repaired.



Cell Cycle and Mitosis

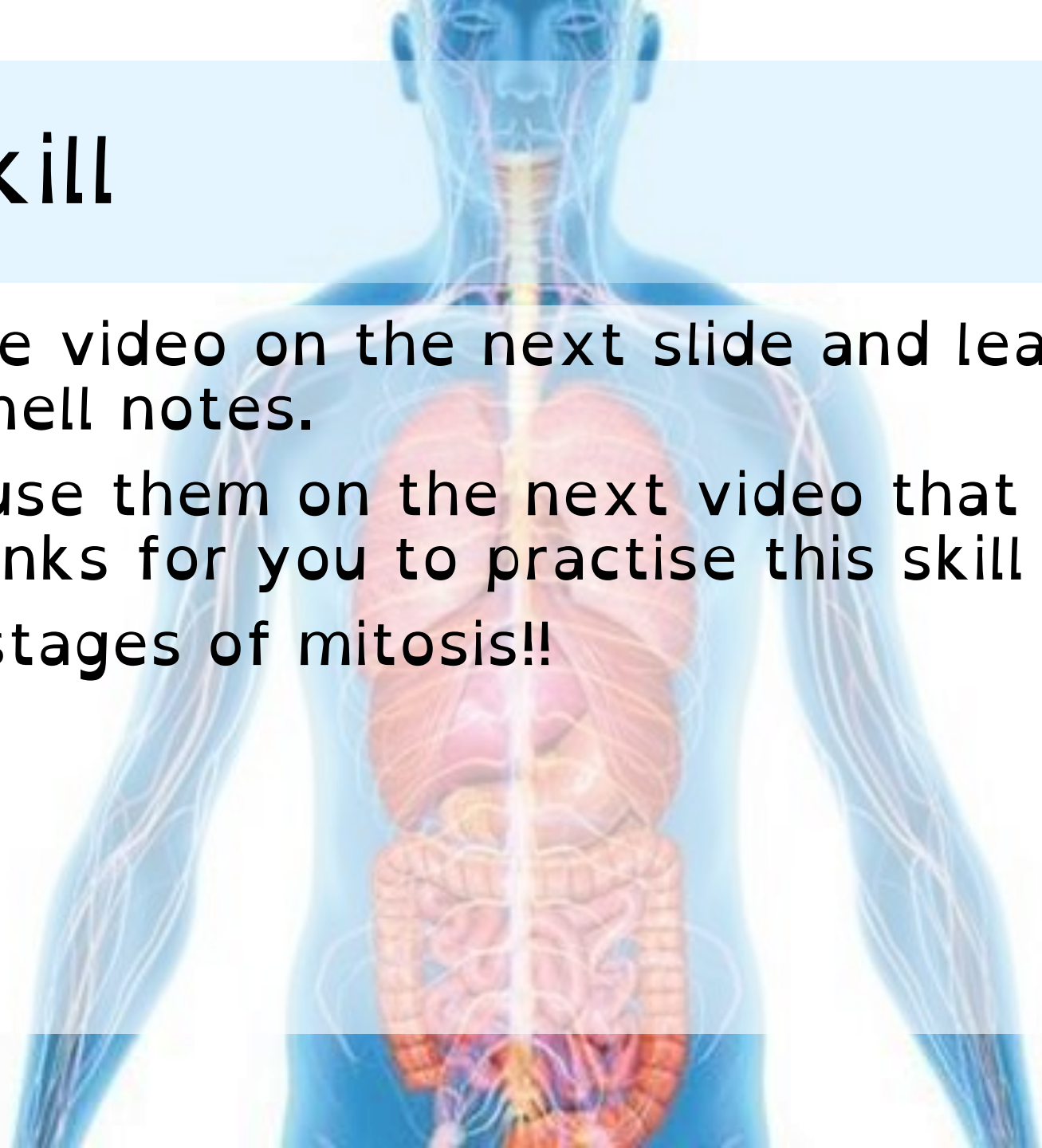



The cell cycle consists of three stages:

- 1. Interphase, which is where cells grow, perform their functions and replicate DNA;
 - 2. Mitosis, which is the process of cell division;
 - 3. Cytokinesis, which is the final splitting into two genetically identical cells.
- Since Mitosis is a complex process, it is broken down into four phases: Prophase, Metaphase, Anaphase and Telophase.

New Skill

- Watch the video on the next slide and learn how to take Cornell notes.
- You will use them on the next video that is set in small chunks for you to practise this skill
- It is the stages of mitosis!!





How To Take Cornell Notes



Mitosis

with the Amoeba Sisters




Title: Mitosis

Key Points	Details
<ul style="list-style-type: none">- Growing- Repairing- Mitosis is cells dividing	<ul style="list-style-type: none">- Bandage heals cut- Nails get longer- Body growing- Mitosis is in common with all of these things- Making more cells- Repairing cells

Summary

Mitosis is cell division. It is important for my body to grow and repair itself.



Are you able to identify the cells when they were in Interphase, Mitosis and Cytokinesis?

**ACTUAL FOOTAGE
CELL DIVISION
MITOSIS**

The image shows a microscopic view of cells in a green liquid medium. A central cell is in the process of mitosis, with a visible nucleus and spindle fibers. Other cells are in various stages of the cell cycle, including interphase and cytokinesis. The text 'ACTUAL FOOTAGE CELL DIVISION MITOSIS' is overlaid on the left side of the image.

Task

- Login into [Explorellearning.com](https://explorellearning.com)
- Use your board email account and password (it is the easiest to remember for the future).
- Complete the Cell Cycle Gizmo.

ZRBCQT ▼
Class Enrollment Code