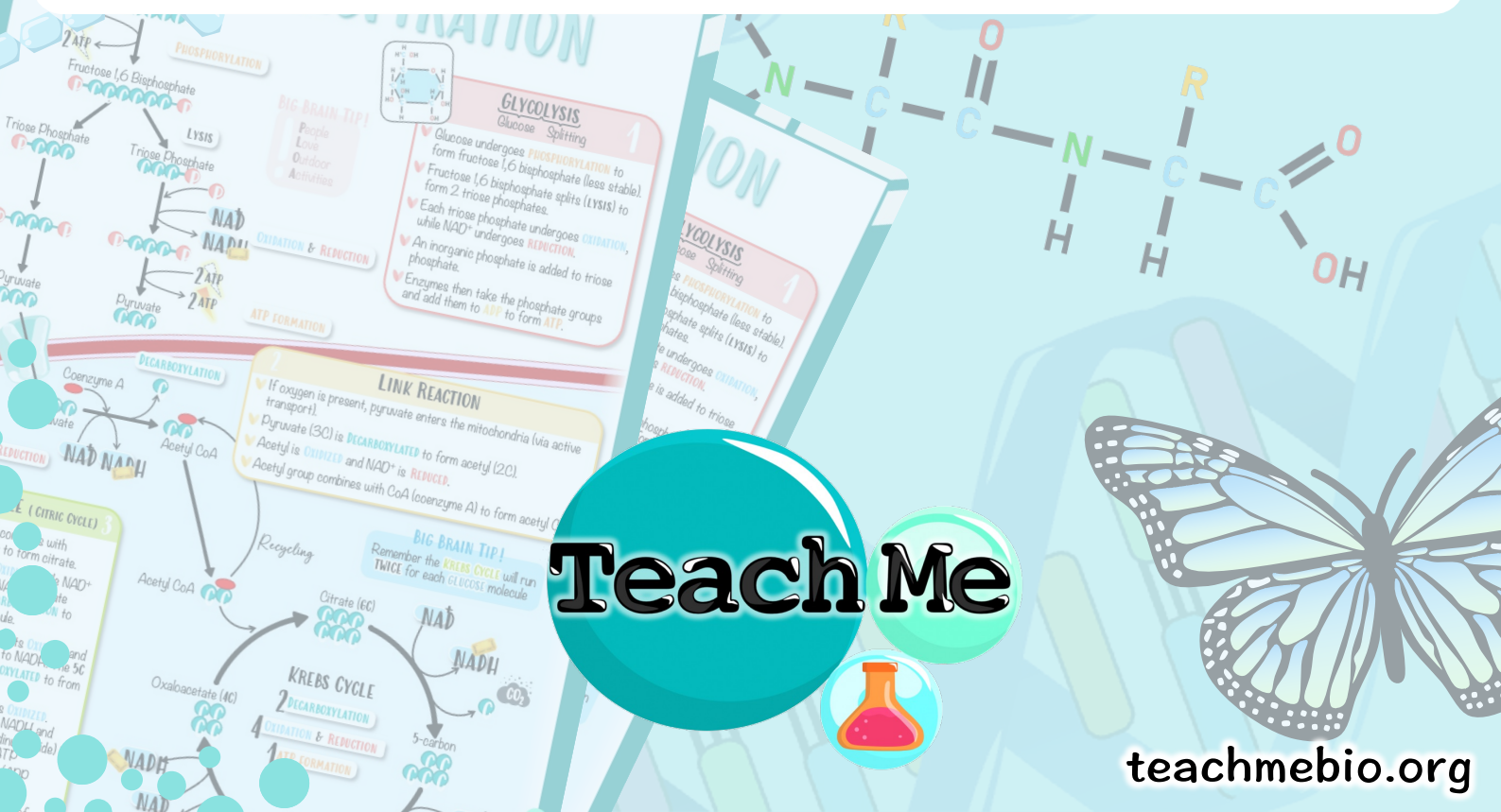


TeachMe

STUDY NOTES

UNIT 2 – CELLS

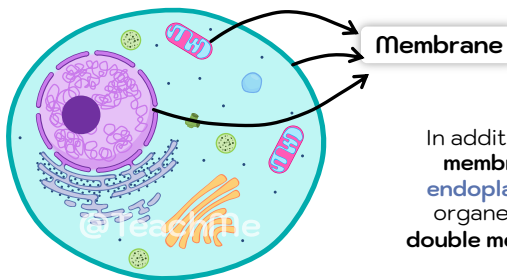
2.3 PLASMA MEMBRANE



Teach Me

PLASMA MEMBRANE

The cell membrane is a dynamic, **selectively permeable** structure found surrounding the cell and many organelles within it.



The cell membrane forms the boundary between the **intracellular** and **extracellular** environments, controlling what enters and leaves.

In addition to the outer cell membrane, **internal membranes** surround organelles such as the **endoplasmic reticulum**, **Golgi apparatus**. Some organelles, like the **nucleus**, are enclosed by a **double membrane** (nuclear envelope), consisting of two phospholipid bilayers.

Big Brain Tip!

Cell membrane Biological membrane
Phospholipid bilayer Plasma membrane
Cell surface membrane

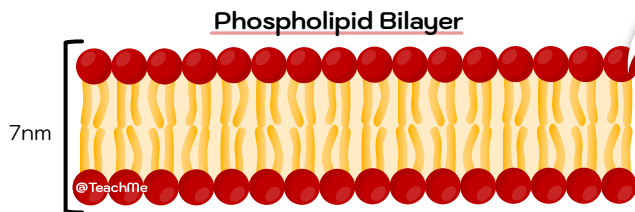
You may encounter various names for the cell membrane – they all mean the same thing, you can use them interchangeably!

NOTE!

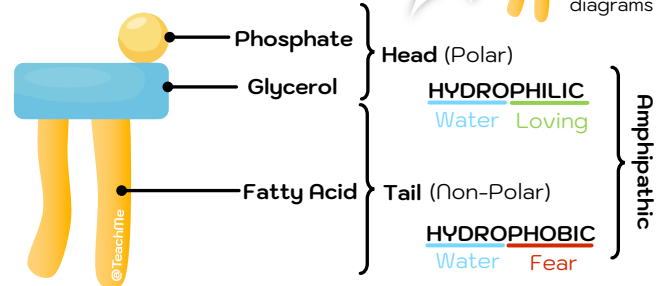
We simplify the head as a red circle in the diagrams

Cell membrane basic structure

The cell membrane is made up of **phospholipids**, which form the basic structure known as the **phospholipid bilayer**.



Phospholipid



This bilayer consists of **two layers** of phospholipids arranged with their hydrophilic heads facing outward and their hydrophobic tails facing inward because of the phospholipids' **amphipathic property**.

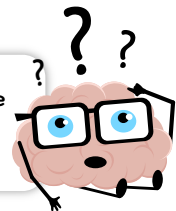
- Amphipathic property -

Meaning they have both a water-attracting (hydrophilic) region AND a water-repelling (hydrophobic) region.

Common Confusion!

Two layers of phospholipids.
Structure of cell membrane, Golgi membrane, endoplasmic reticulum membrane.

Double membrane – Nuclear envelope
Structure of the nuclear membrane (even the mitochondria)



How does the Phospholipid Bilayer form?

THE BIG IDEA:

Fatty acids tails (hydrophobic) = avoid contact with water.
Phosphate head (hydrophilic) = wants contact with water.

2 When submerged (no air), the tails face inwards and the heads out towards the water – forming a water-tight structure: **the Micelle**



OR

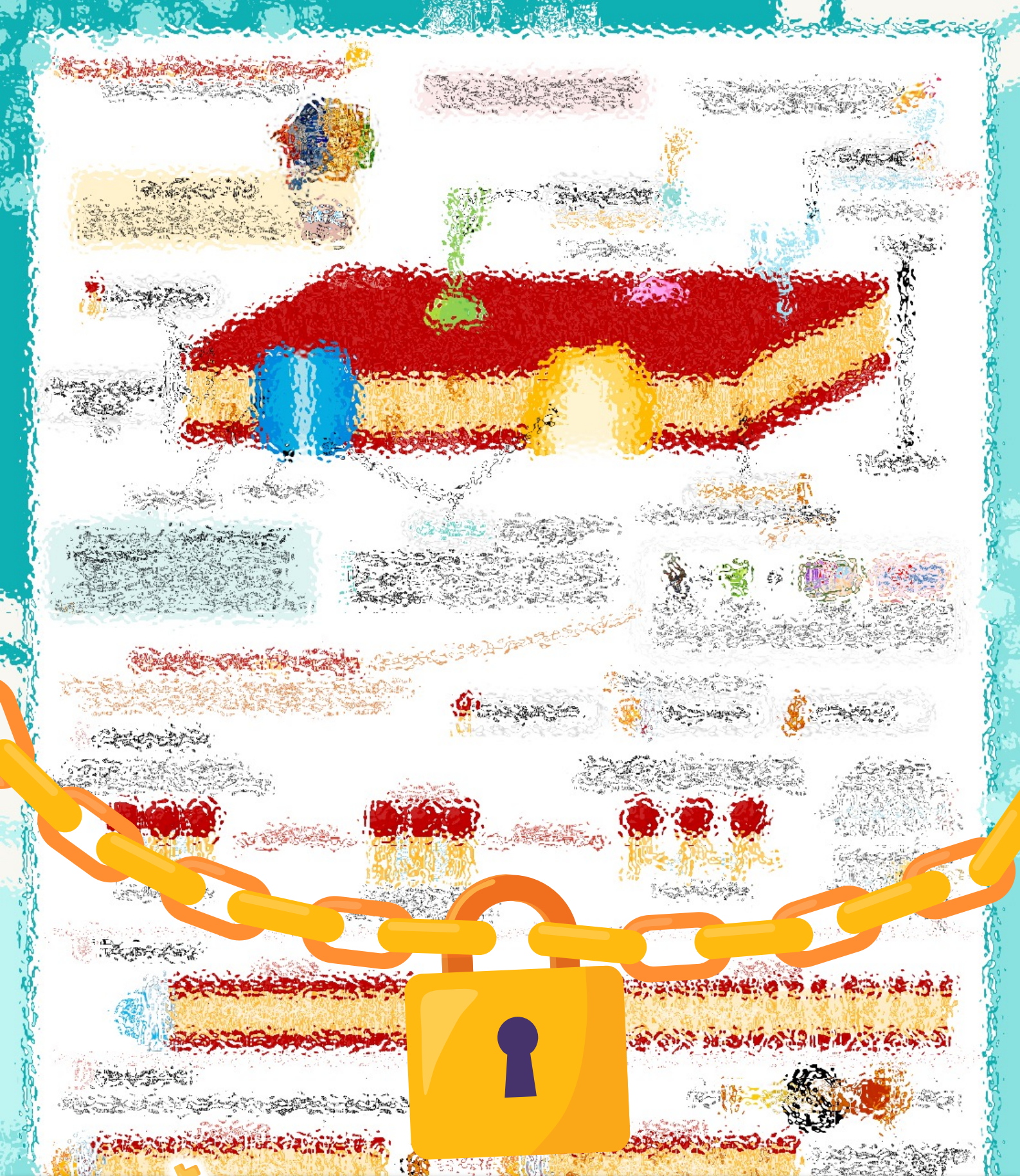
Phospholipid bilayer

3 When enough phospholipids are present, they arrange into two layers with hydrophobic tails facing each other and hydrophilic heads facing the water on both sides, forming: **the Phospholipid Bilayer**.

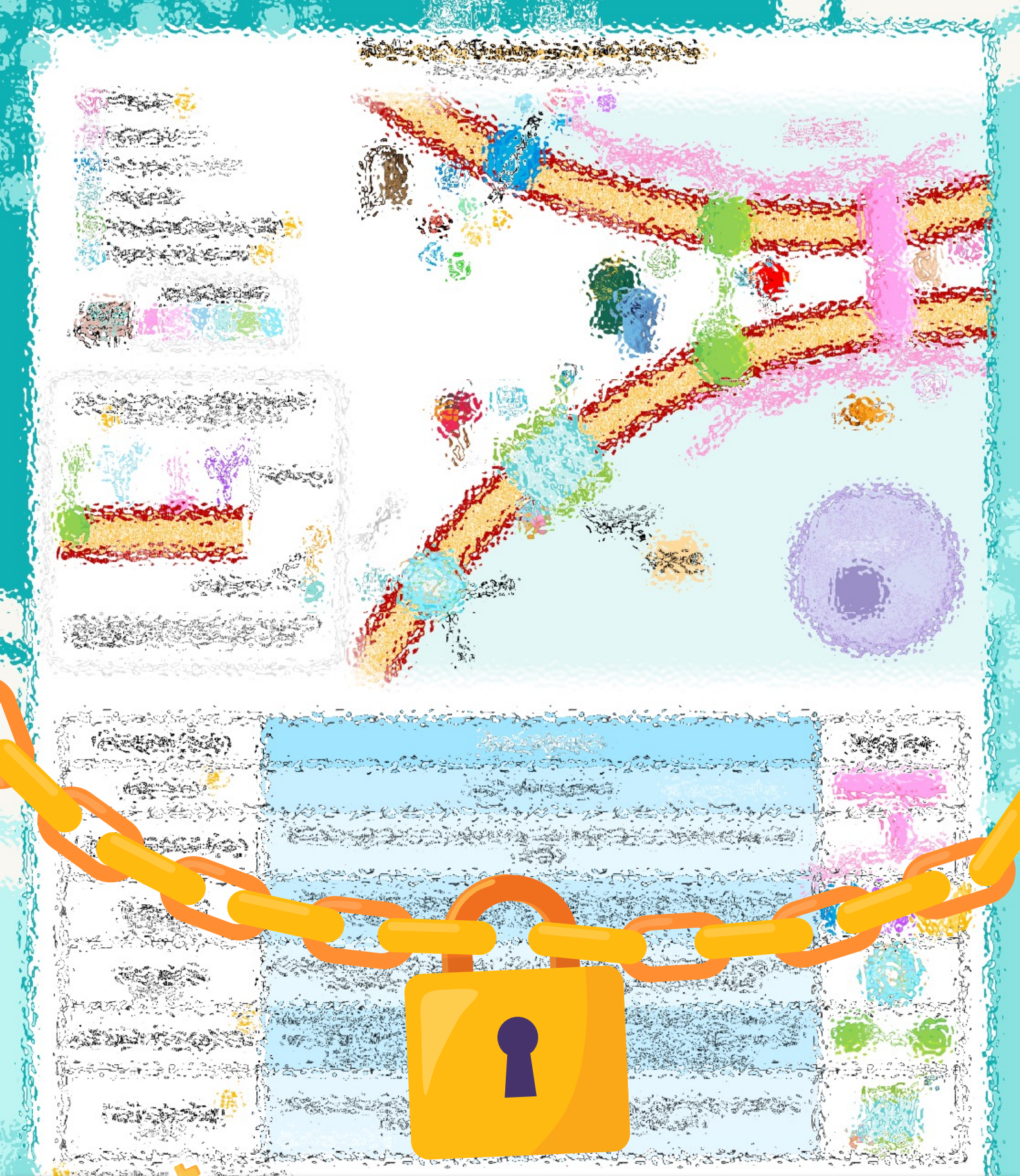
In reality, the cell membrane is not composed of phospholipids alone, but also contains embedded proteins, cholesterol, and carbohydrate chains, all of which contribute to the various functions of the cell membrane.

See next page →

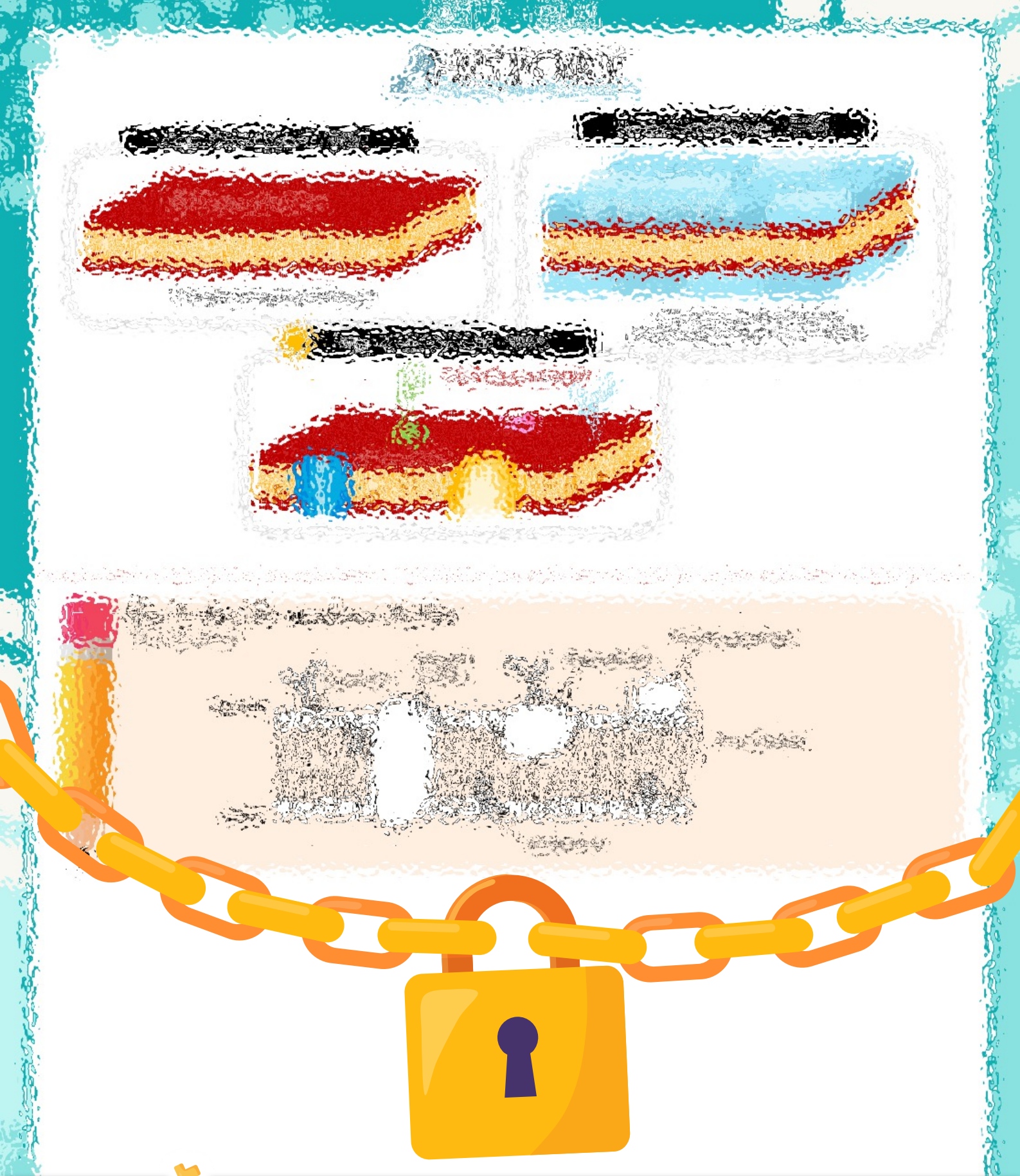




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UNIT 1

Unit 1: Introduction to Biology

Biology is the study of life and living organisms. It explores the characteristics, functions, and interactions of organisms with their environment. This unit covers the fundamental principles of biology, including the cell theory, the flow of genetic information, and the processes of evolution.

The study of biology is essential for understanding the natural world and the human body. It provides a foundation for many other scientific disciplines and has numerous practical applications in fields such as medicine, agriculture, and environmental science.



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