



## Semester I 2024/2025

Subject : Cell & Molecular Biology (SEBB 4173)  
Task : Tutorial 1 (Topic 1a & 1b – Cytoplasmic Membrane & Cell Wall)

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**Instruction:**

Students are required to discuss the questions below.

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CMB - CLO 1 - Tutorial and quiz - Differentiate the cytoplasmic membrane's structure and function and bacteria's cell wall.

### **Title: Understanding the Cytoplasmic Membrane and Cell Wall in Bacteria**

#### **Introduction:**

Bacterial cells are fascinating microorganisms with unique structures that play crucial roles in their survival and function. In this tutorial, we will explore and differentiate between two essential components of bacterial cells: the cytoplasmic membrane and the cell wall.

#### **Part 1: The Cytoplasmic Membrane**

*Definition:* The cytoplasmic membrane is a thin structure that completely surrounds the cell

*Structure:* Made up of phospholipid bilayer. The phospholipids contains hydrophilic head and hydrophobic tails

*Function:* Forms a critical barrier separating the inside of the cell from its environment  
Highly selective barrier, enable the cell to concentrate specific metabolites and excrete waste materials

#### **Part 2: The Cell Wall**

*Definition:* cell wall is a structural layer that surrounds some cell types, found immediately outside the cell membrane

*Structure:* The gram(-): a multilayered structure and quite complex.  
The gram(+): primarily a single type of molecule and is often much thicker.

*Function:* give shape and rigidity to cell

### Quiz Questions:

1. **What is the main structural component of the bacterial cell wall?**
  - a) Lipids
  - b) Proteins
  - c) Peptidoglycan
  - d) Carbohydrates
2. **Which of the following is a primary function of the cytoplasmic membrane in bacteria?**
  - a) Energy production
  - b) Structural support
  - c) Selective permeability
  - d) Protection against toxins
3. **True or False: The cytoplasmic membrane is a phospholipid bilayer.** TRUE
4. **Which bacterial group possesses an additional outer membrane outside the cell wall?**
  - a) Gram-positive bacteria
  - b) Gram-negative bacteria

### Answers: