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Subject : Cell & Molecular Biology (SEBB 4173)

Task : Tutorial 1 (Topic 1a & 1b – Cytoplasmic Membrane & Cell Wall)

Instruction:

Students are required to discuss the questions below.

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: A thin structure that completely surrounds the cell.

Structure: A fluid phospholipid bilayer embedded with protein. The phospholipids contain 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 & excrete waste materials

Part 2: The Cell Wall

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

Structure:

Function: Give shape and rigidity to the cell

Structure : Peptidoglycan , a thin sheet composed of sugars and amino acids

The gram (-): a multilayered structure and quite complex

The gram (+): primarily a single type of molecule and is often much thicker

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. ✓
4. Which bacterial group possesses an additional outer membrane outside the cell wall?
a) Gram-positive bacteria
☒ b) Gram-negative bacteria

Answers:

1. C

2. C

3. TRUE

4. B