

CELL MEMBRANE & NUCLEUS

Structural Overview and Functional Analysis

The Cell Membrane

- **COMPOSITION** Phospholipid bilayer with embedded proteins and cholesterol.
 - **SEMI-PERMEABILITY** Regulates the passage of ions, nutrients, and waste products.
 - **PROTECTION** Acts as a physical barrier separating cytoplasm from extracellular fluid.
 - **COMMUNICATION** Contains receptors for cell signaling and identification.
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The Nucleus

- **NUCLEAR ENVELOPE** Double membrane perforated with pores for resource exchange.
 - **GENETIC STORAGE** Houses Chromatin (DNA and proteins) for heredity.
 - **NUCLEOLUS** Dense region responsible for ribosome synthesis.
 - **CONTROL CENTER** Orchestrates growth, metabolism, and cell division.
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