

Name \_\_\_\_\_

## Unveiling the Secrets of Cell Membranes: Guardians of Cellular Integrity

### Open-Ended Response Answer Key

1. Cell membranes are composed primarily of lipids and proteins arranged in a fluid mosaic model. The lipid bilayer consists of phospholipids with hydrophilic heads and hydrophobic tails, with embedded proteins serving various functions.
2. Cell membranes contribute to maintaining homeostasis within the cell by regulating the passage of substances, such as ions, nutrients, and waste products, in and out of the cell to ensure optimal conditions for cellular activities.
3. Cell membrane biology is important in medicine for understanding the mechanisms underlying diseases, developing targeted therapies, and designing drug delivery systems.
4. Potential applications of understanding cell membrane function in biotechnology include drug delivery systems, gene therapy approaches, and the development of biosensors for detecting biomolecules.

