

CHAPTER 8. EUKARYOTIC CELL MEMBRANES-I

Unlike prokaryotes, eukaryotic cells also possess internal membranes that encase their organelles and control the exchange of essential cell components.

In eukaryotes the organelles of the inner membrane system include: the nuclear membrane, the endoplasmic reticulum, the Golgi apparatus, lysosomes, vesicles, endosomes, and plasma (cell) membrane among others.

Some of these internal **membrane-bound organelles**, such as the nucleus and the endoplasmic reticulum, have direct connections to one another.

Mitochondria are separated from the cytoplasm by the outer and inner mitochondrial membrane. The outer membrane is porous and freely traversed by ions and small uncharged molecules .

By contrast, the inner membrane is a tight diffusion barrier to all ions and molecules. These can only get across with the aid of specific membrane transport proteins, each of which is selective for a particular ion or molecule. As a result of its ion selectivity, an electrochemical membrane potential of about 180 mV builds up across the inner mitochondrial membrane. The inner membrane is where oxidative phosphorylation takes place in a suite of membrane protein complexes that create the electrochemical gradient across the inner membrane, or use it for ATP synthesis