

The plasma membrane

- Controls what goes in and out of the cell
 - Has many other functions
- Has a very unique construction
 - Phospholipid bilayer
 - Membrane proteins
 - Carbohydrates
 - Cholesterol

The history of the plasma membrane

- In 1935, H. Davson and J. Danielli proposed the idea that the membrane is made up by a phospholipid bilayer coated on both sides by a layer of globular protein
 - *Davson - Danielli model*
- In 1972, this model was falsified by S. J. Singer and G. L. Nicolson. They found that:
 - Not all membranes are identical and symmetrical
 - Membranes with different functions have different compositions and structure
 - This can be seen by electron micrograph
 - Proteins are non-polar and would not interface with water (polar)
 - It's unlikely to appear as a layer on the polar "heads" of the phospholipids
 - Proteins stay between the non-polar "tails"
 - Very few proteins are polar
- More evolved electron micrograph and their studies on cells' action in different environments and solutions gave birth to a new membrane model
 - The *fluid mosaic model* or the *Singer-Nicolson model*
 - Proteins are inserted in a fluid layer of phospholipids

The phospholipid bilayer

- The plasma membrane is made up of *phospholipids*
- Each phospholipid is made of three-carbon compound named *glycerol*
 - The molecules have *hydrophilic a head*
 - One carbon is attached to a highly polar organic alcohol that includes a bond to a phosphate group
 - It is *polar*, due to the organic alcohol => soluble in water
 - And two *hydrophobic tails*