Scientific models are built

- to help scientists **visualize things** that **cannot be observed directly**, i.e. to make up "**virtual reality**".

Like hypotheses and theories, scientific models are used

- to **explain observations** and **make prediction**.

Model building is based on

- **observation**, **measurements**, and **available scientific knowledge** (of the period)

- **Logical reasoning**, **insight**, **imagination** and **creativity**

- Logical reasoning, insight, imagination and creativity are involved.

Scientific models are **supported** as long as they can be used to give **satisfactory explanations** to observations.

Scientific models may **change over time**. When **new information** from **further experiments** are obtained, sometimes aided by **technological breakthrough**, or seeing the same data in a new angle, the old model will have to be **modified**, updated and tested again.

No. scientists having the same set of data may **not** come up with the **same conclusions**.

**Different scientists** might have **interpreted** the same set of data in **different ways** and came up with different cell membrane models.

A scientist’s **personal background** (experience) or **interest** may influence his / her decision (judgement).

Advancement in **scanning electron microscopy** (+ other techniques) has provided **new evidence** on the distribution of protein components in the cell membrane, (on the two sides, or penetrate through).

**NOS** = Nature of Science

**SI** = Scientific Investigation

**STSE** = Science, Technology, Society, Environment