

What is Biology ?



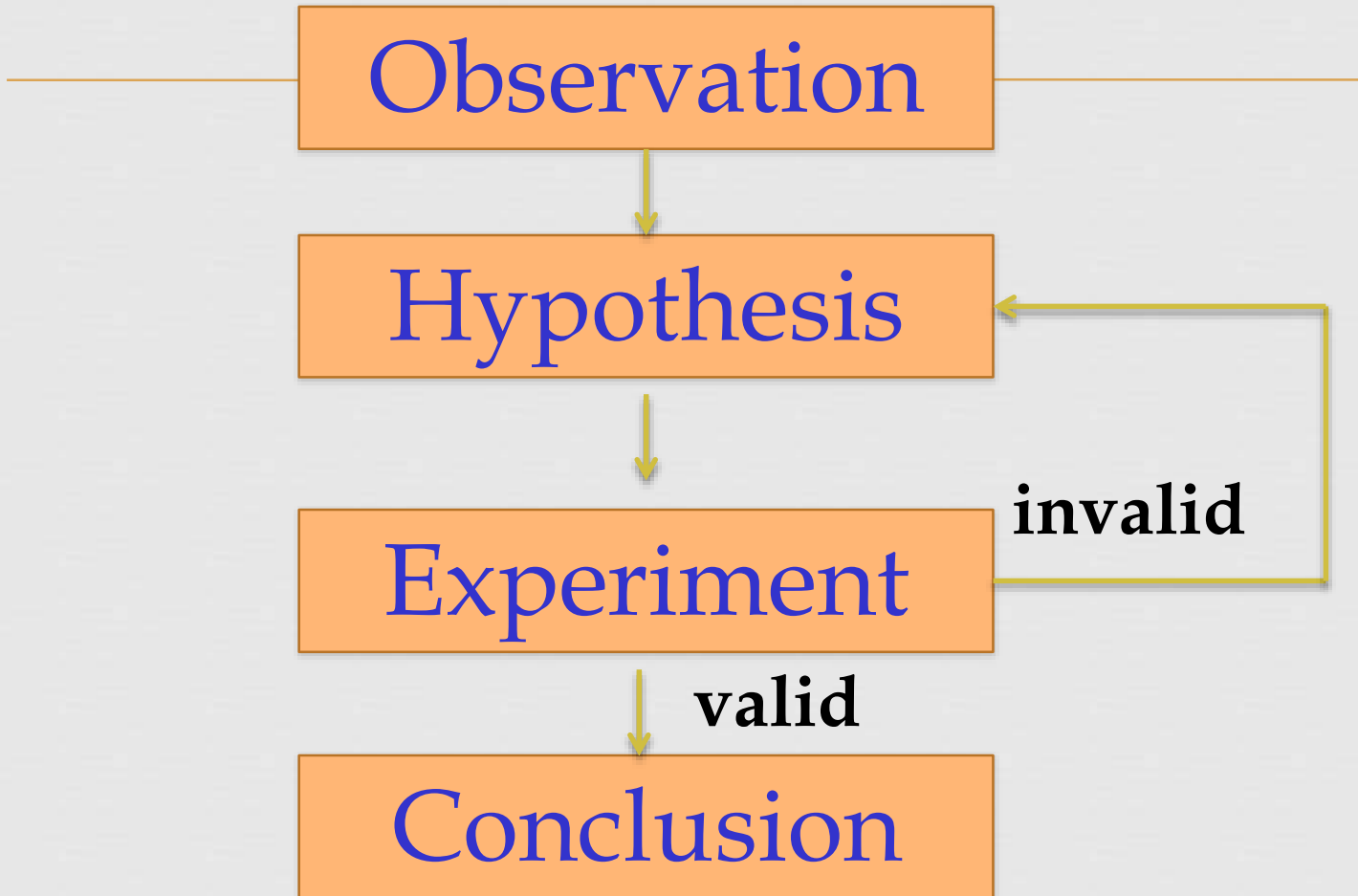
- **The study of Living Things**
 - **Bio = life**
 - **logy = knowledge**
 - **(study of)**

How to Study Biology ?



- **So many new words !**
- **know some common prefix and suffix**
- **eg. photosynthesis**
 - **photo = light**
 - **synthesis = to combine together**
 - **∴ to combine some elements together by using the energy from sunlight**

Scientific Methods



Laboratory Safety



- ❧ **Biology laboratory is dangerous because it may contain:**
 - ❧ **dangerous chemicals (such as acids, carcinogen)**
 - ❧ **dangerous materials (such as hot water & hot objects)**
 - ❧ **easy broken glassware**
 - ❧ **bacteria contamination**

Working in Laboratory (Rules)



- ❧ **Do not enter the laboratory unless your teacher is present**
- ❧ **Do not touch anything that is not a part of your experiment**
- ❧ **Work quietly on your own experiment. Do not run around or play in the laboratory**
- ❧ **Follow the instructions given by your teacher and make sure you know what to do before starting any experiment**

Working in Laboratory (Rules)



- Eating & drinking are forbidden in the laboratory
- Be clean and tidy. Clean up all apparatus after you have finished your experiment. Do not throw solid wastes down the sink
- Report all accidents, breakages, cuts, burns or splashes to your teacher immediately
- Care should be taken in dissecting specimens. Sterilize them both before & after use

Working in Laboratory (Rules)



- Always wear eye goggles whenever there is any risk to the eyes
- Wear rubber gloves when working with living animals
- Wash your hands after any experiments, especially if the experiments involve the use of chemicals & living organisms

Basic characteristics of living things



1. Nutrition

The taking in of nutrients which are organic substances and mineral ions, containing raw materials or energy for growth and tissue repair, absorbing and assimilating them.

Basic characteristics of living things



☞ Organisms take substances from their environment and use them to provide energy or materials to make new cells.

☞ Take food for energy, growth and repair



Basic characteristics of living things



2. Respiration

The chemical reactions that break down nutrient molecules in living cells to release energy.

Basic characteristics of living things



- ⌘ All organisms break down glucose and other substances inside their cells, to release energy that they can use.
- ⌘ Gaseous exchange (breathing)
- ⌘ Oxidation of food to produce energy



Basic characteristics of living things



3. Excretion

Removal from organisms of toxic materials , the waste products of metabolism (chemical reactions in cells including respiration) and substances in excess of requirements.

Basic characteristics of living things



- ☞ All organisms produce unwanted or toxic waste products as a result of their metabolic reactions, and these must be removed from the body.
- ☞ Removal of metabolic wastes (not faeces)



Basic characteristics of living things



4. Growth

A permanent increase in size and dry mass by an increase in cell number or cell size or both.

Basic characteristics of living things



☞ All organisms begin small and get larger, by the growth of their cells and by adding new cells to their bodies.

☞ Increase in size and complexity



Basic characteristics of living things



5. Reproduction

The process that make more of the same kind of organism.

Basic characteristics of living things



☞ Organisms are able to make new organisms of the same species as themselves.

☞ Produce babies of the same species



Basic characteristics of living things



6. Movement

An action by an organism or part of an organism causing a change of position or place.

Basic characteristics of living things



☞ All organisms are able to move to some extent. Most animals can move their whole body from place to place , and plants can slowly move parts of themselves.

☞ **Animals:** Whole organism moves from place to place

☞ **Plants:** Only part of its organ can move about



Basic characteristics of living things



7. Sensitivity

The ability to detect or sense changes in the environment (stimuli) and to make responses.

Basic characteristics of living things



☞ All organisms pick up information about changes in their environment, and react to the changes.

☞ Respond to stimuli

