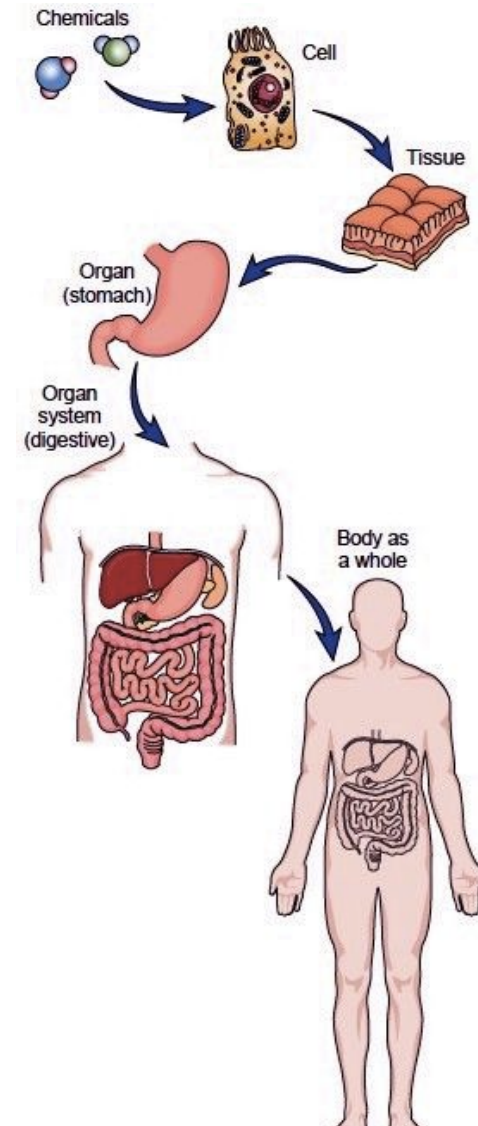


# Characteristics of Life-human



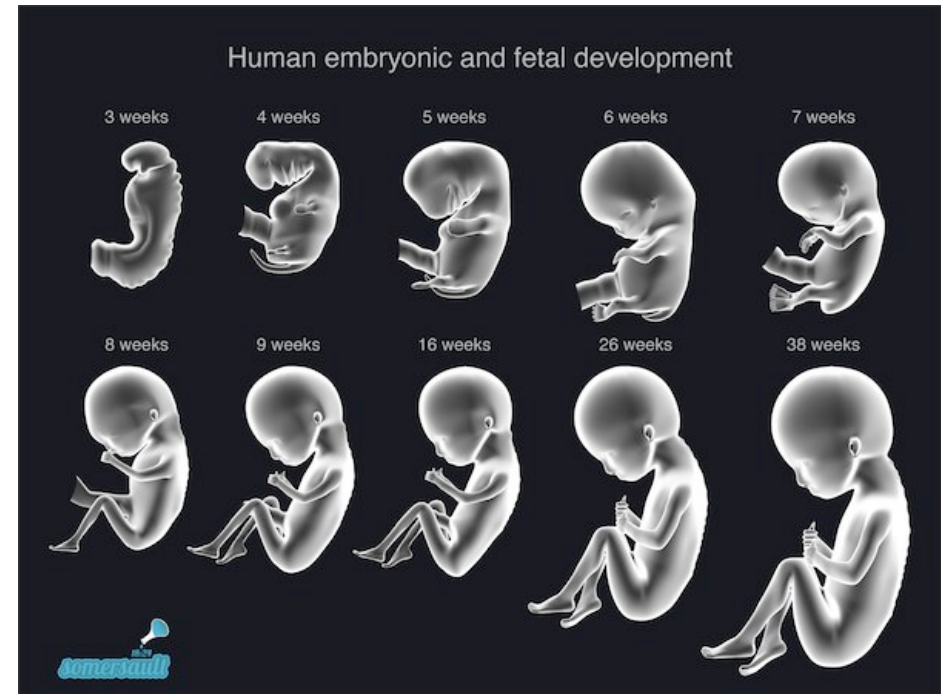
**Organization:** Living things must be able to organize simple substances into complex ones; cells are organized at several levels.



In humans, there are different levels of organization starting with the cell. Cells are organized into tissues, and tissues form organs. Organs are organized into organ systems such as the skeletal and muscular systems.

**Growth and development:** Cell enlargement - the increase in size of a cell. Cells grow to a certain size and then divide. An organism gets larger as the number of its cells increases.

- In humans, growth occurs from a one-celled zygote to an adult human



being. Humans grow at different rates at different stages in their lives. Growth is very rapid in the womb and in the first two years of life. Puberty is another stage when growth and development is rapid.

# Reproduction: the production of offspring by a sexual or asexual process.

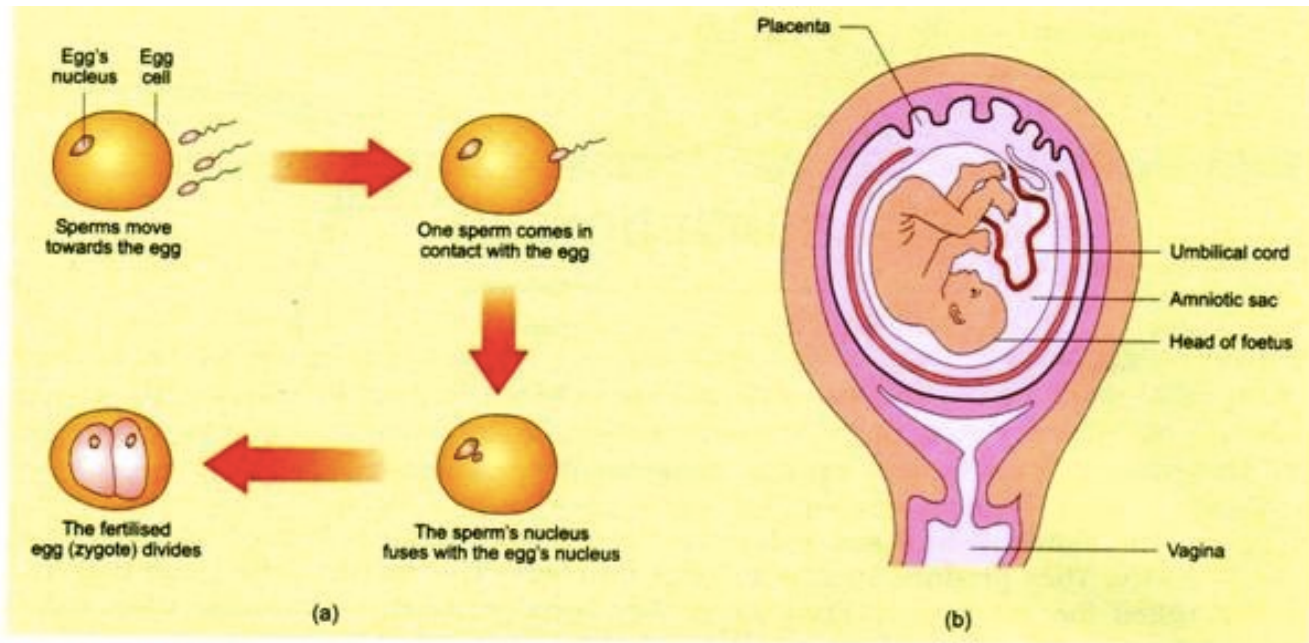


Fig. 4.4 (a) After fertilisation, the zygote divides. (b) The embryo attaches itself to the uterine wall and grows until the baby is ready to be born.

- In humans, sexual reproduction involves the fusion of specialized haploid sex cells. The fusion of sperm and egg cell is called fertilization. Fertilization results in the formation of a diploid zygote from which a new individual develops

**Response to stimuli:** a thing or event that evokes a specific functional reaction in an organ or tissue.

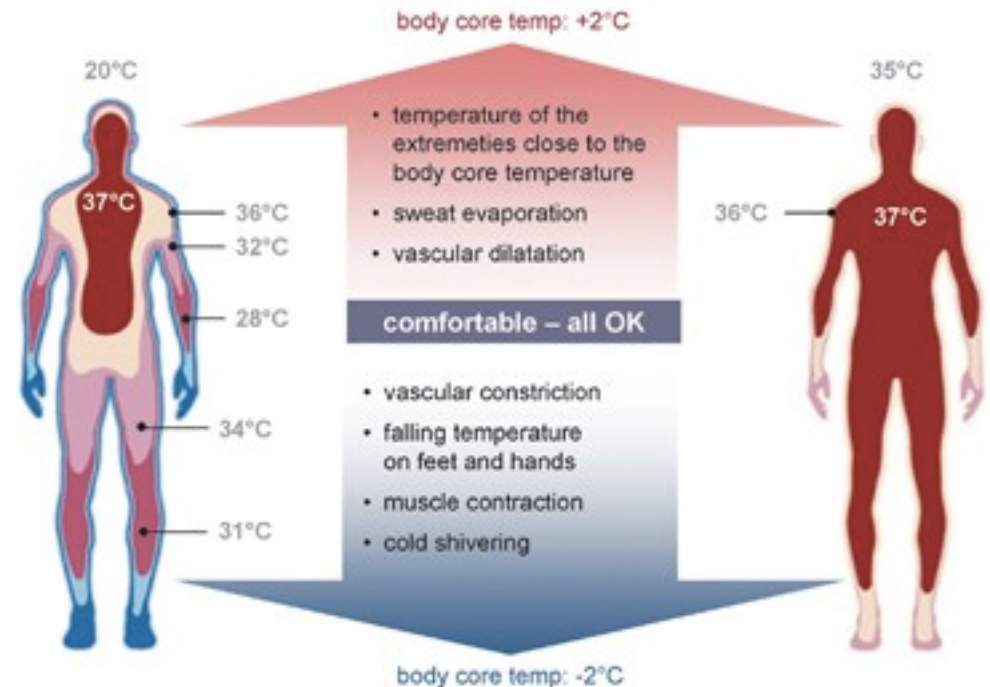
- Humans respond to a stimulus in order to keep themselves in favorable conditions.
- Examples of this include:
- Moving to somewhere warmer if they are too cold
- Moving towards food if they are hungry
- Moving away from danger to protect themselves





**Homeostasis:** the tendency toward a relatively stable equilibrium between interdependent elements, especially as maintained by physiological processes.

- In humans, normal body temperature is 37 degrees C or 98.6 degrees F. Temperatures way above or below these normal levels cause serious complications. The body controls temperature by producing heat or releasing excess heat.



**Energy:** generating energy (ATP) from nutrients to maintain their internal order. Energy is utilized in chemical reactions.



- Humans obtain energy from three classes of fuel molecules: carbohydrates, lipids, and proteins.
- Food energy is chemical energy that animals (including humans) derive from their food and molecular oxygen through the process of cellular respiration.

# Definitions:

- **Asexual reproduction:** reproduction by which offspring arise from a single organism, and inherit the genes of that parent only
- **Sexual reproduction:** the production of new living organisms by combining genetic information from two individuals of different types (sexes)
- **Metabolism:** the chemical processes that occur within a living organism in order to maintain life.
- **Stimulus:** a thing or event that evokes a specific functional reaction in an organ or tissue.