

# Biology

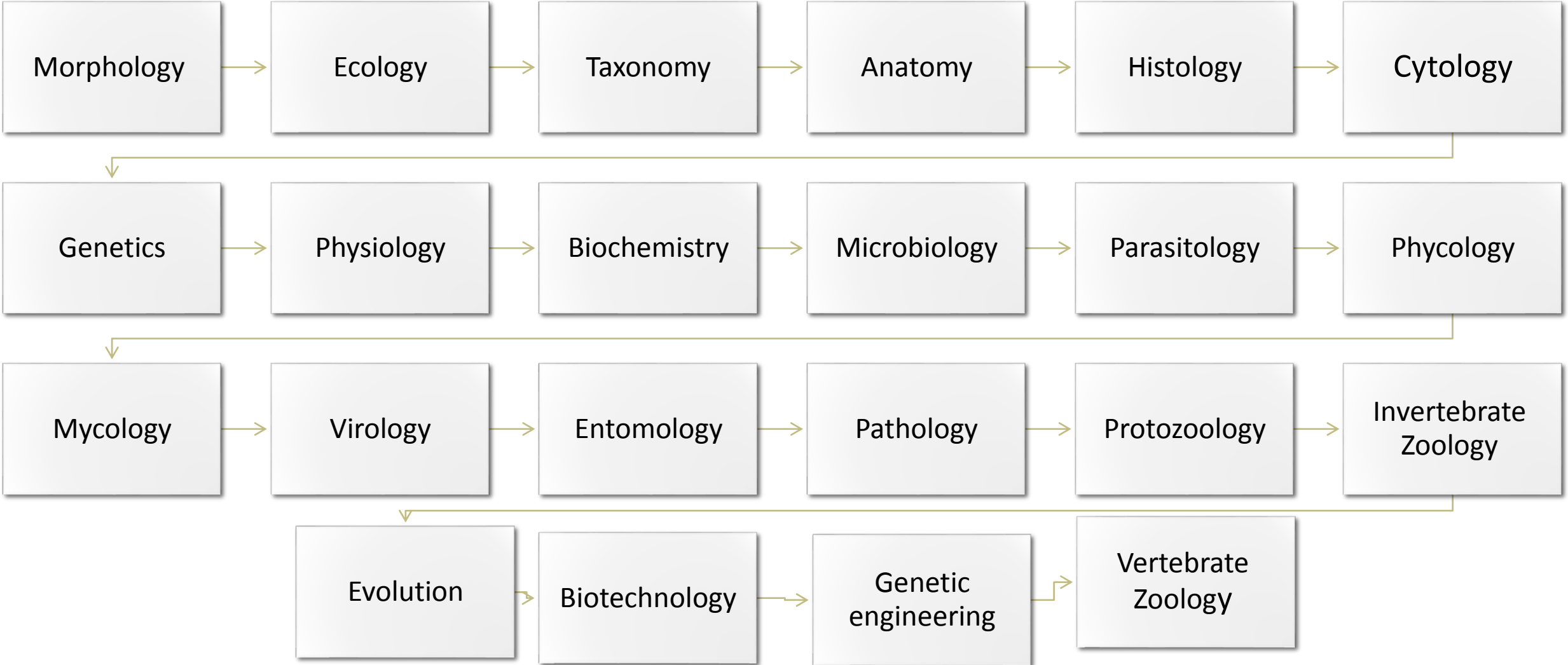
The word "Biology" is rendered in a large, dark blue, serif font. Each letter is intricately decorated with various biological motifs. The 'B' features a green vine and a brown turtle. The 'i' has a purple flower above it. The 'o' contains a detailed illustration of a human fetus in a womb. The 'l' is a yellow and green DNA double helix. The 'o' is partially obscured by a red ant. The 'g' has a green vine and a red cardinal perched on its top. The 'y' also has a green vine.

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# The importance of biology

- Improved understanding of the functions of living organisms.
- Improved understanding of the causes of disease.
- The search for a cure for diseases.
- Improved understanding of the environment.
- Better management of environmental problems.
- Improving food quality and production.

# Basic life science branches

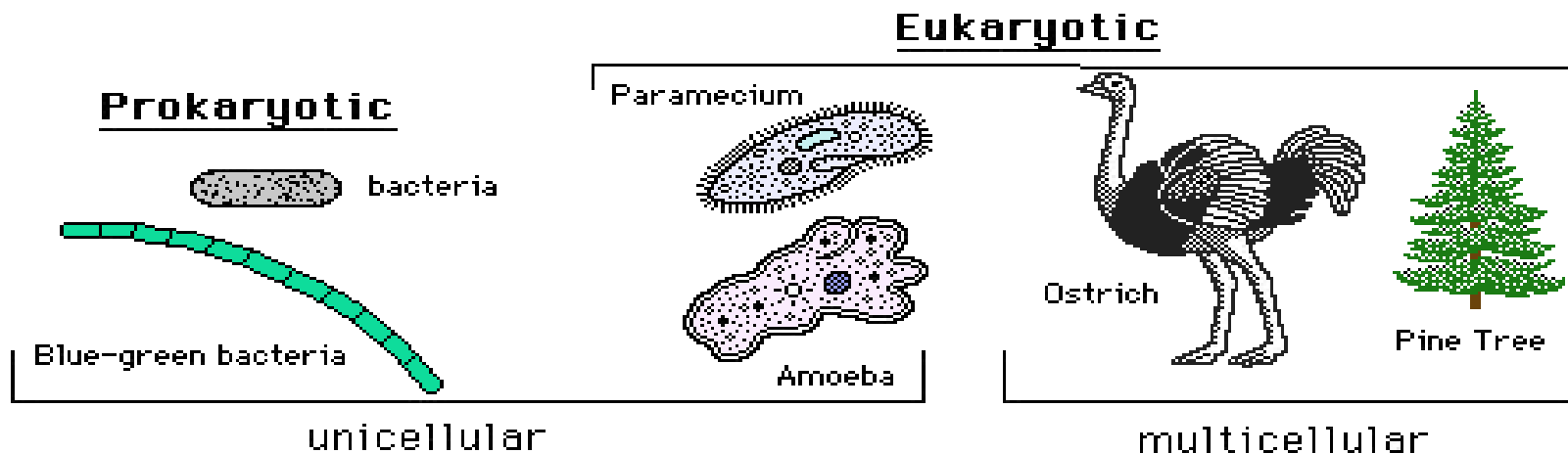


# Characteristics of Living Things

## ➤ An organized structure

Living things are an organized structure.

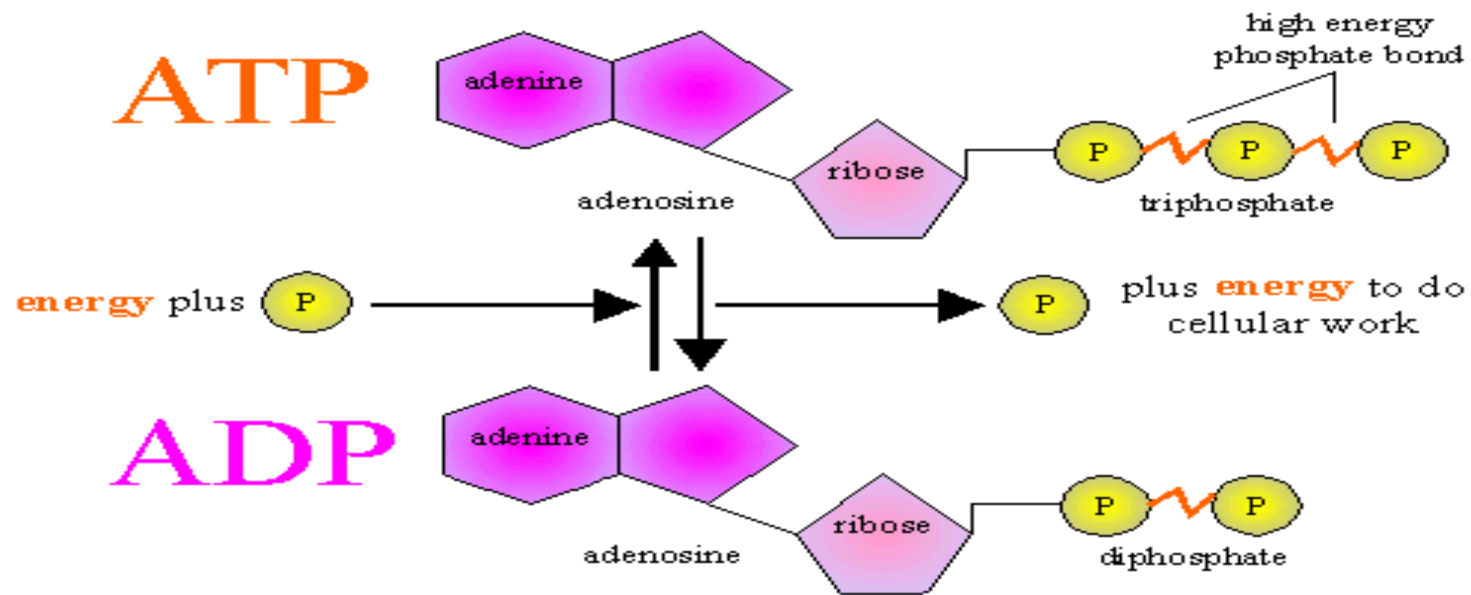
It may be a **single-celled** such as a bacterial cell, or **multicellular** such as animals and plants that are made up of several cells.



## ➤ Energy-requiring

Living things require energy for survival.

Energy is essential as it fuels numerous metabolic activities of a cell.



## ➤ Reproductive capacity

A living thing is capable of reproducing.

There are two ways by which living things can reproduce copies of themselves:

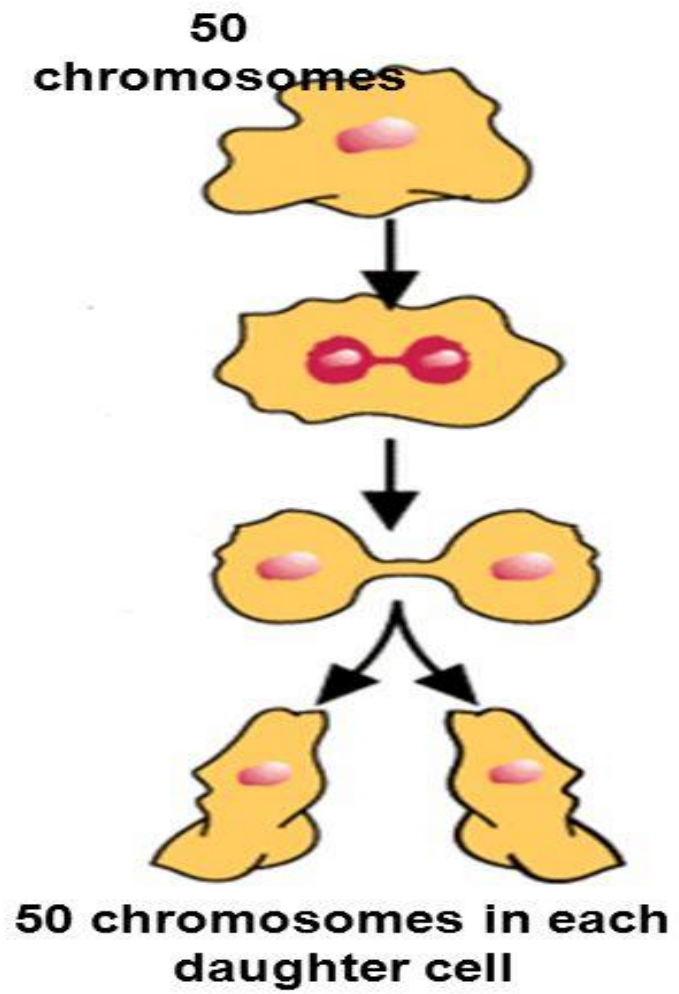
- **sexual reproduction**

male and female sex cells of the two parents unite and form a zygote that will develop eventually into a being of their own kind.

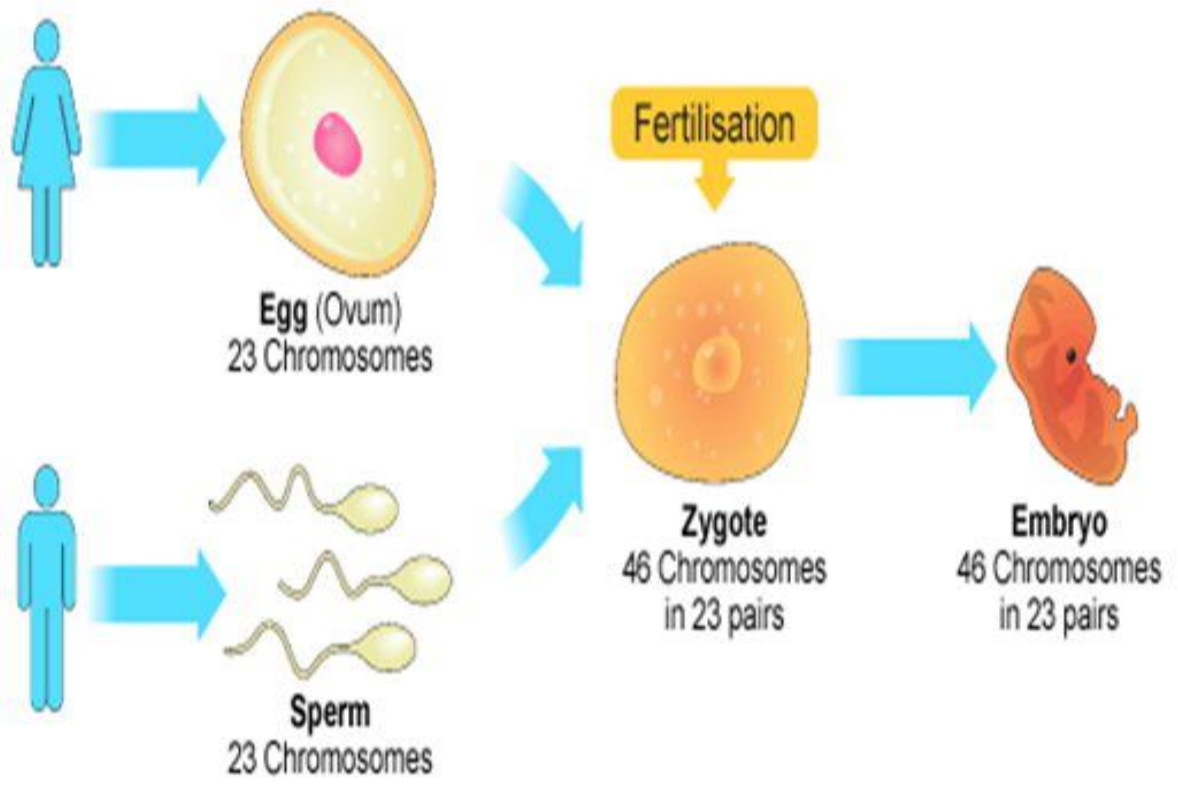
- **asexual reproduction**

Asexual reproduction, in contrast, is a mode of reproduction that does not involve sex cells. The offspring comes from only one parent.

# Asexual Reproduction



# Sexual Reproduction





## ➤ Growth

- At the cellular level, growth may refer to an increase in number or to an increase in size.
- The increase in the number of cells is through cell division.
- The stem cells of animals and the meristematic cells of plants divide to give rise to new cells.
- As for the increase in cell size, it is attributed often to the increase in cytoplasmic mass.



## ➤ Metabolism

**Metabolism** : refers to the various processes that are responsible for the keeping up of the living state of a cell or an organism.

**Examples** of those involved in cell growth, respiration, reproduction, response to stimuli, sustenance, bio molecular syntheses, waste elimination, and other homeostatic processes.

## ➤ Movement

Since a living thing can detect stimuli from its surroundings, it can respond accordingly.

### For example

- animals move to forage, escape predators
- plants have a rather limited form of movement.



## ➤ Death

A living thing has life and this life ends eventually.

**Senescence** refers to biological aging.

It is when living things gradually deteriorate over the course of their life.

