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# Introduction

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# Physiology-Introduction

## PHYSIOLOGY – Origin of the world and the study

- The word “physiology” was first used By Greeks around 600BC
- Most of the early concepts were on human physiology
- Till the 18<sup>th</sup> century the concept and discoveries of physiology were treated only as anatomical
- only in 19<sup>th</sup> century Physiology began to develop as a distinct discipline.
- Physiology may be defined as the branch of biology that deals with life process.



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# Water as a biological medium

Water covers 71% of the earth's surface and is vital for all known forms of life .

Oceans hold 97% of surface water, glaciers and polar ice caps 2.4%, and other land surface water such as rivers , lakes and ponds 0.6%.

Water is a major component of cells, typically forming between 70 and 95% of the mass of the cell.



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# The Hydrological Cycle or water cycle

Evaporation

Transpiration

Condensation

Precipitation

Collection



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# Water as a Habitat

A large mass of water can surround the organisms, providing a protective shield

It also makes it easier for life by providing support and buoyancy to organisms

Water's good solvency and mobility favour the supply of nutrients to organisms

A large mass also has a fairly constant temperature, due to the high specific heat capacity of water.



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# Chemical and physical properties

The major chemical and physical properties of water are:

- Water is a liquid at standard temperature and pressure.
- Water is transparent thus aquatic plants can live in water .
- Water is a good solvent and is often referred to as the universal solvent .
- Pure water has a low electrical conductivity



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The boiling point of water (and all other liquids) is dependent on the barometric pressure .

The maximum density of water occurs at 3.98 °C

Water is miscible with many liquids, such as ethanol , in all proportions, forming a single homogeneous liquid.



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# Biological Characteristics of Water

The biological characteristics of a water body refer to a variety of living organisms that can be found in water.

## **The Biological importance of water as a solvent and as a medium for living organisms**

- All cells contain a minimum of 85% of water, with most fluids inside and outside of the cell likely to have at least 90% water.
- Water is the medium in which all chemical reactions in the body take place.





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# Water as a *Major Cell Constituent*

The water is found mainly in the protoplasm, and here it plays vital roles in many functions, for example in ***metabolism*** in all organisms, and ***photosynthesis*** and ***support*** in plants.