

Water, Water, Everywhere

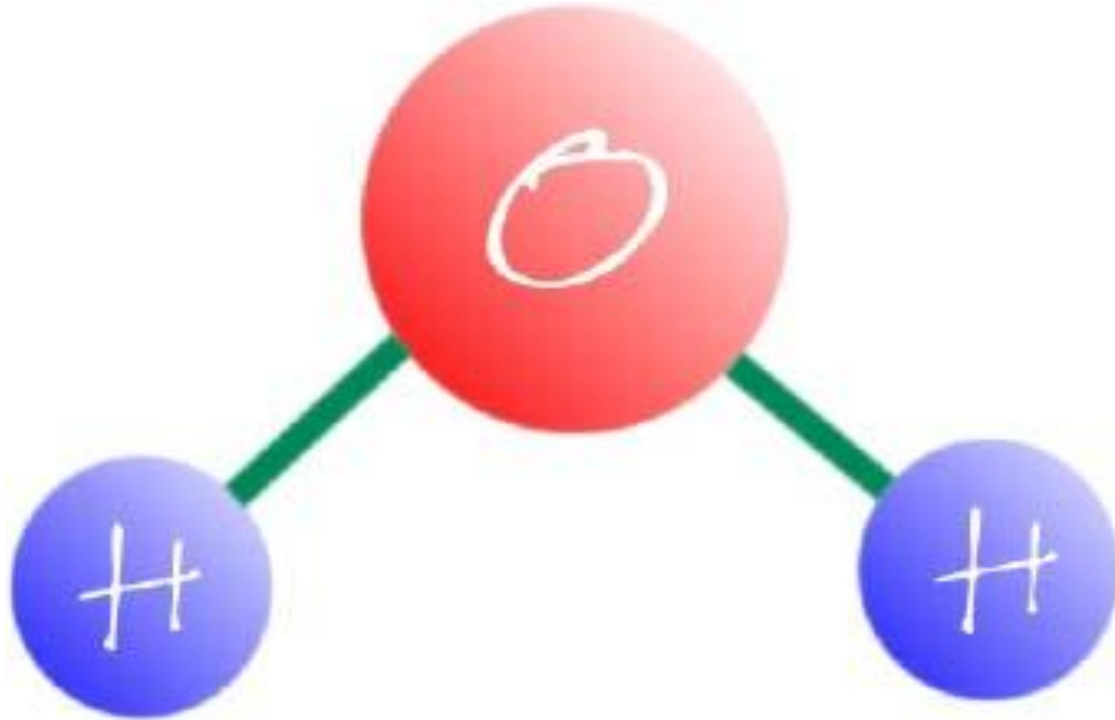


Water is important because:

- Most organisms have high water content (75 - 95%).
- Many organisms live in water.
- Most chemical reactions of life take place in water.

Water Structure

- A water molecule consists of 2 hydrogen and 1 oxygen atom, hence...H₂O.



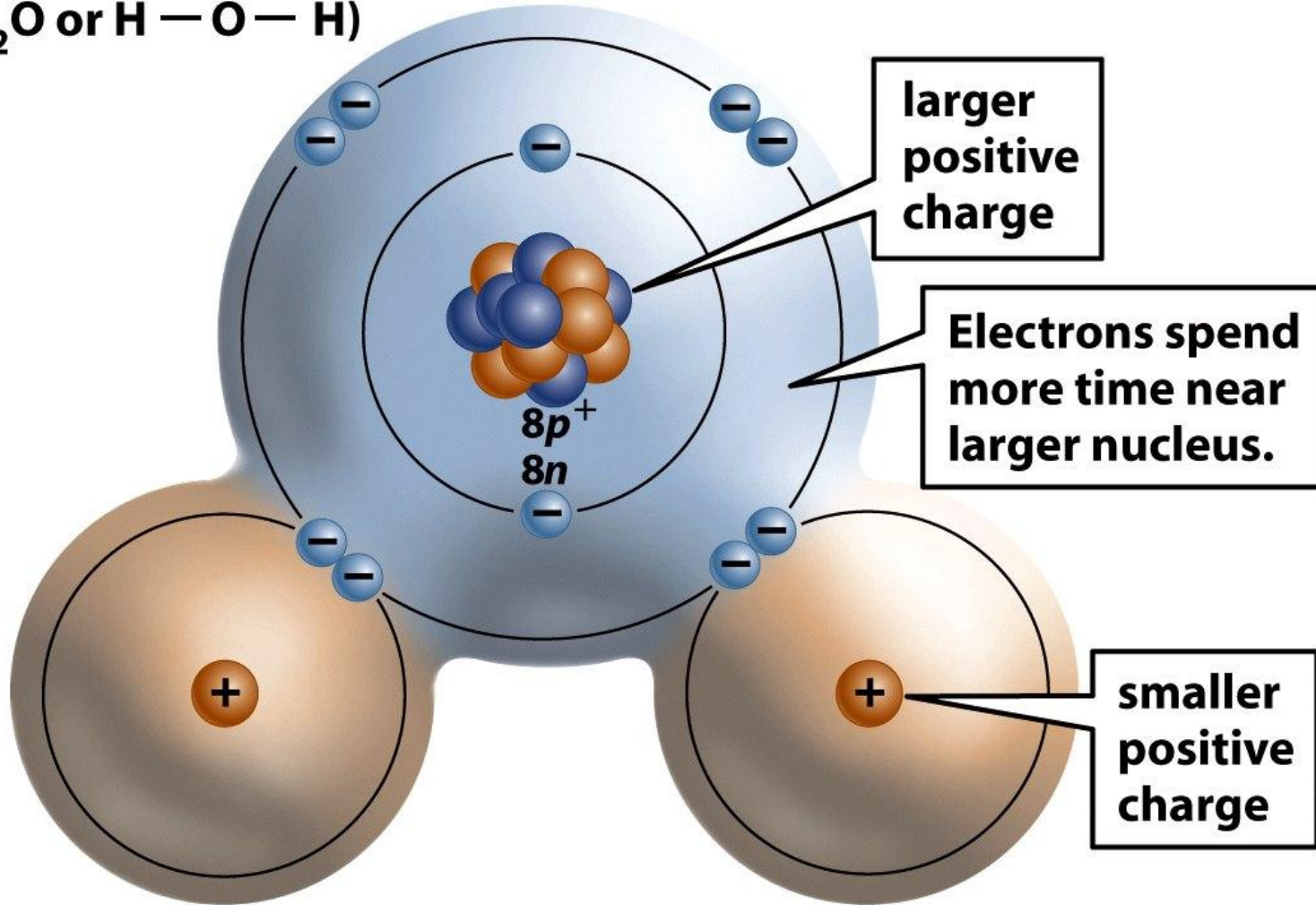
Polar covalent bonding

Water

(H_2O or $\text{H}-\text{O}-\text{H}$)

(oxygen: slightly negative)

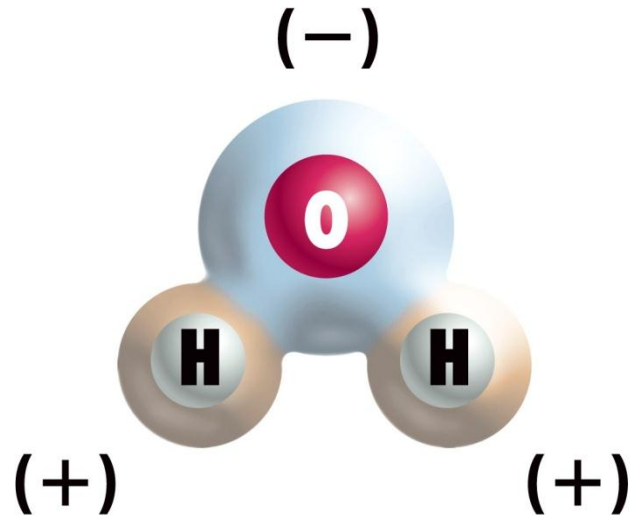
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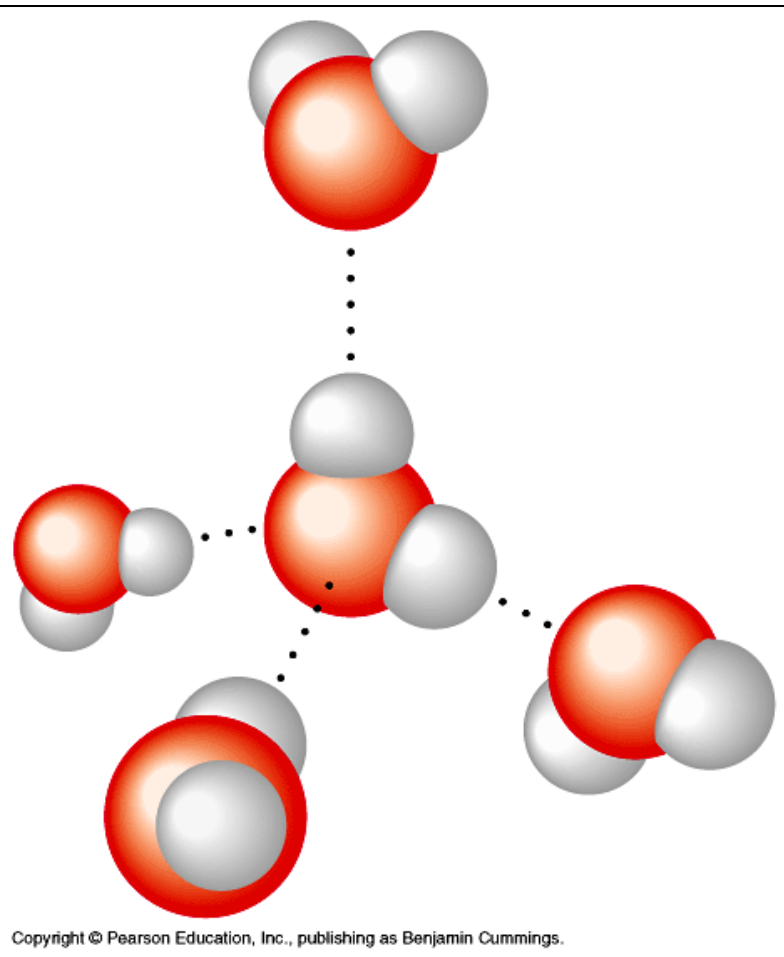
(+) (hydrogens: slightly positive) (+)

Water molecules are polar

- The e are shared unequally, creating an unequal distribution of charge.
- The oxygen atom has more protons so it attracts the shared electrons more of the time
- Results in:
 - The hydrogen's have a partial positive charge
 - The oxygen has a partial negative charge



Water molecules can form **hydrogen bonds**



- Partly positive hydrogen atoms of one water molecule are attracted to the partly negative oxygen atom of another water molecule
- The bonds are made and broken quickly as the molecules move, however the large numbers of bonds contribute to the stability of water