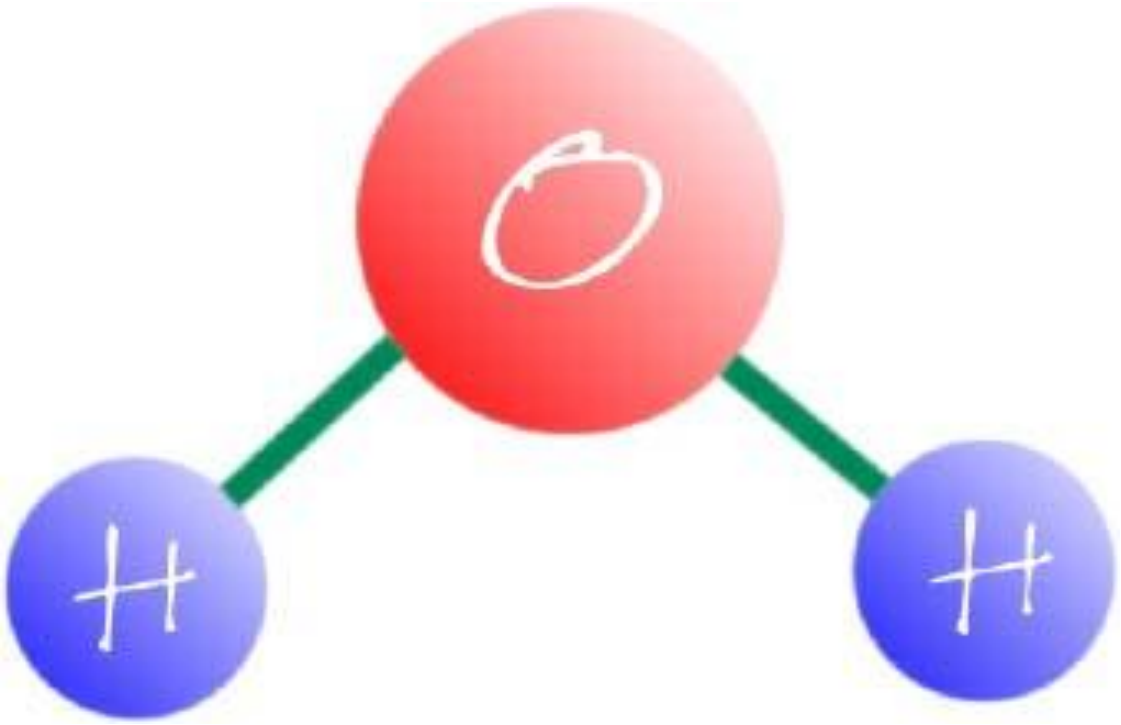
Water, Water, Everywhere

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…H_2O.



Polar covalent bonding

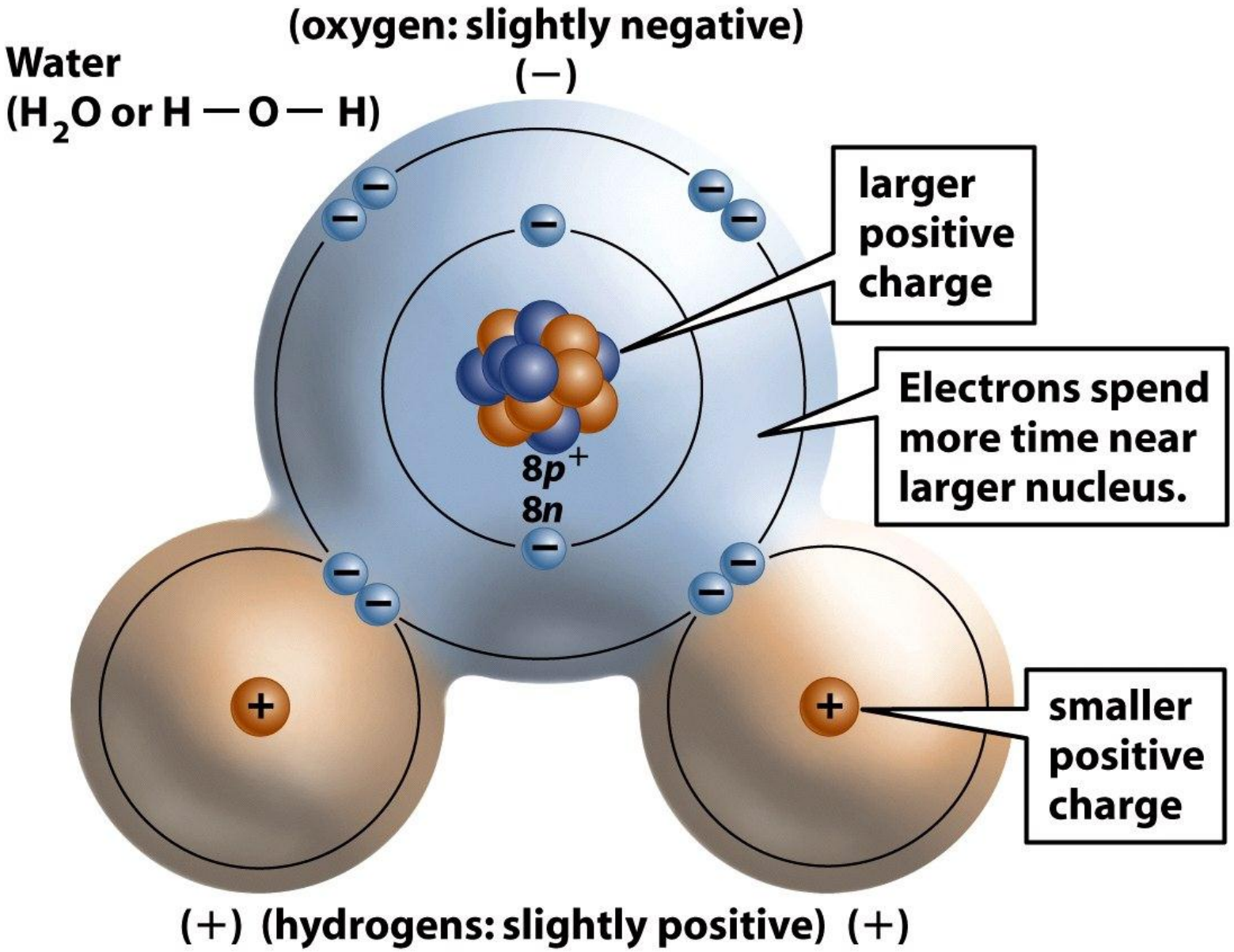


Figure 2-6b Biology: Life on Earth, 8/e

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

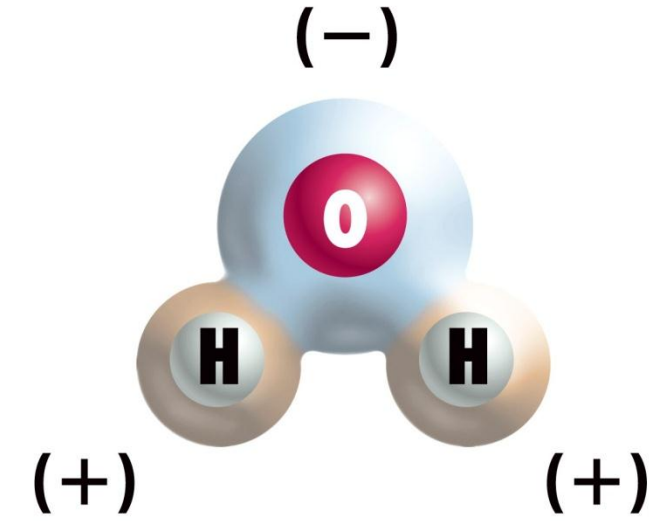
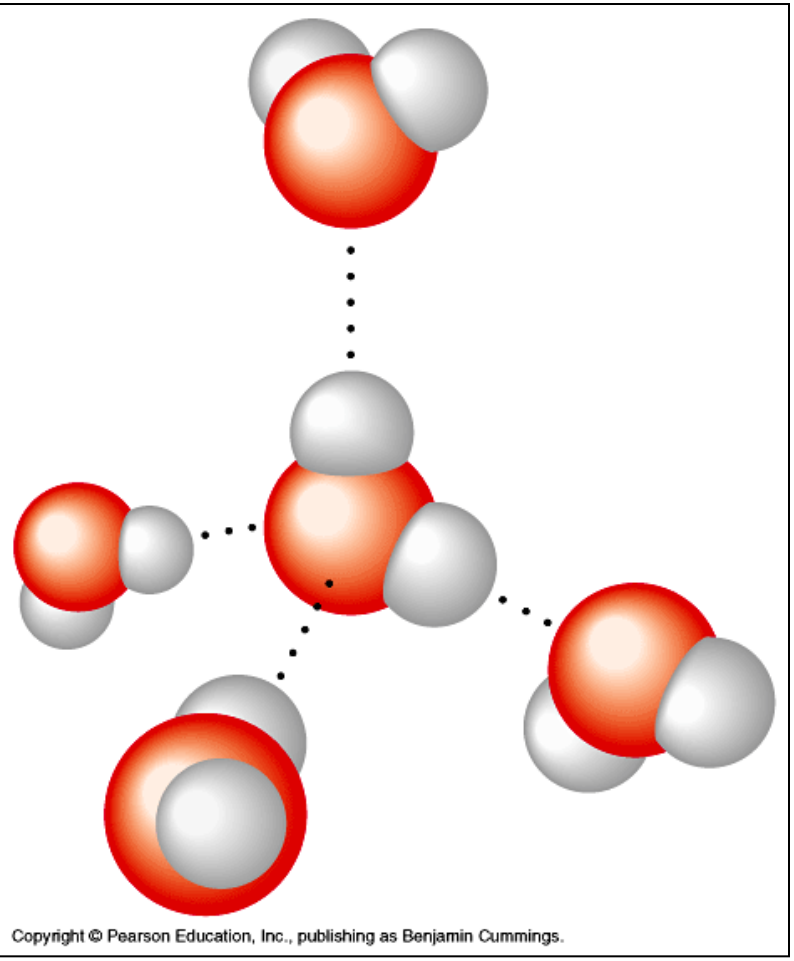


Figure 2-8 Biology: Life on Earth, 8/e

Water molecules can form hydrogen bonds



- Partly positive hydrogen atoms of one water molecule are attracted to the partially 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