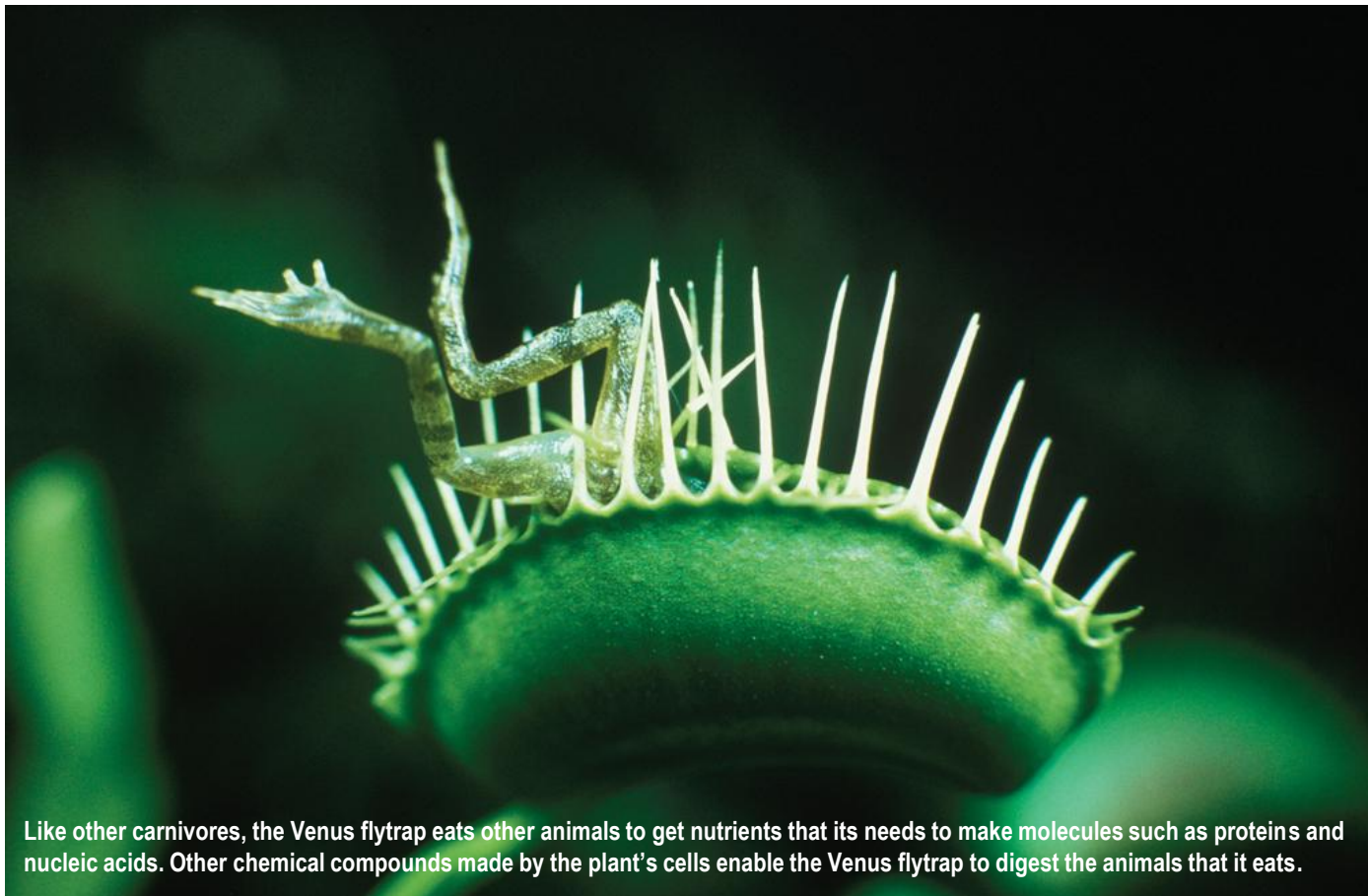


2.1 Atoms, Ions, and Molecules

KEY CONCEPT

All living things are based on atoms and their interactions.

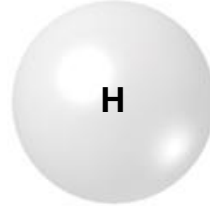


2.1 Atoms, Ions, and Molecules

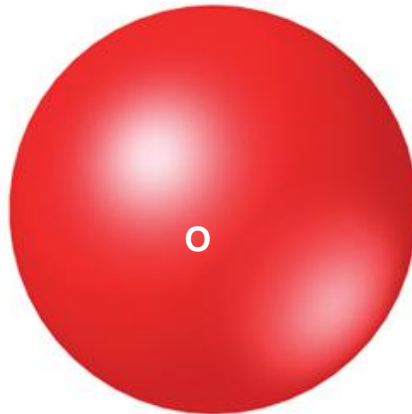
▶ Living things consist of atoms of different elements.

- An **atom** is the smallest basic unit of matter.
- An **element** is one type of atom.

Hydrogen atom (H)

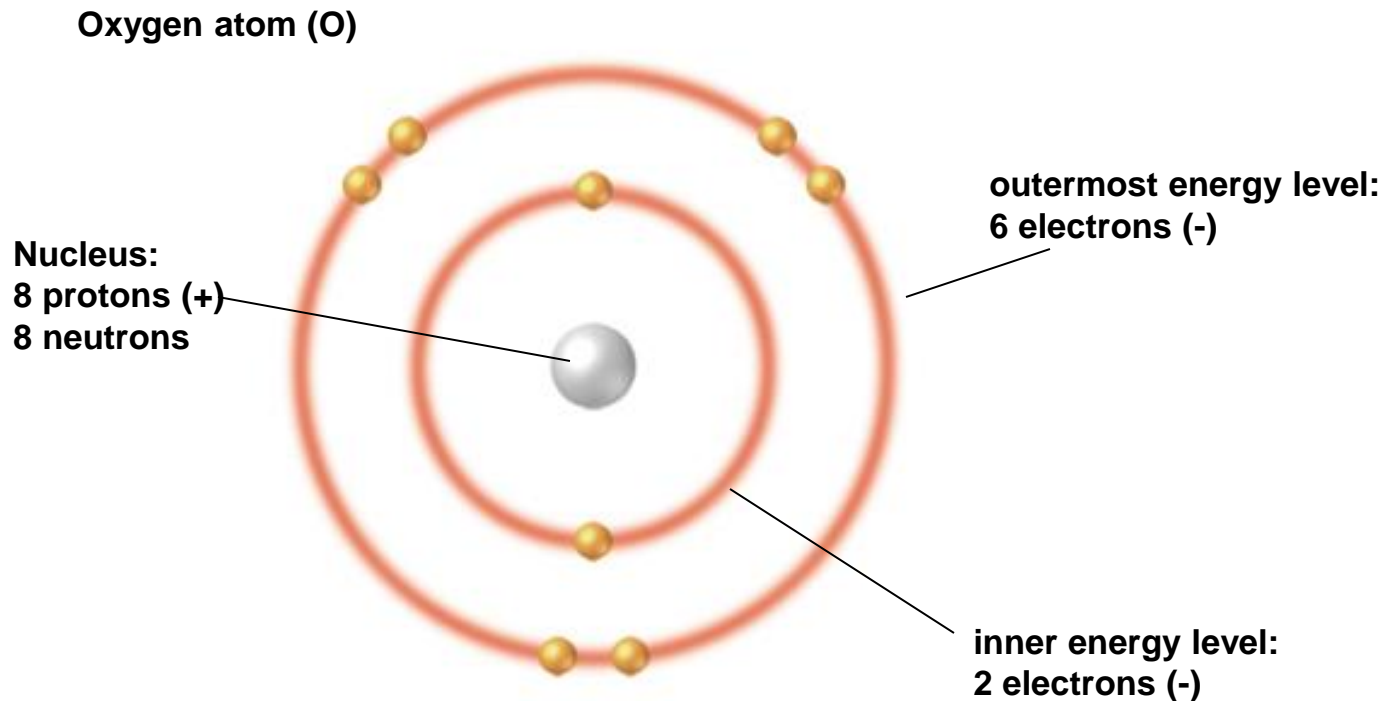


Oxygen atom (O)



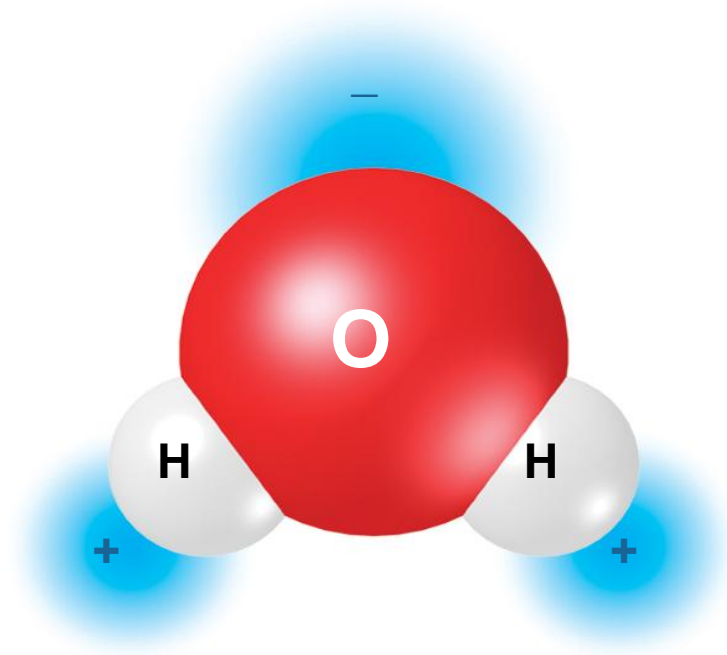
2.1 Atoms, Ions, and Molecules

- An atom has a nucleus and electrons.
 - The **nucleus** has protons and neutrons.
 - **Electrons** are in energy levels outside nucleus.



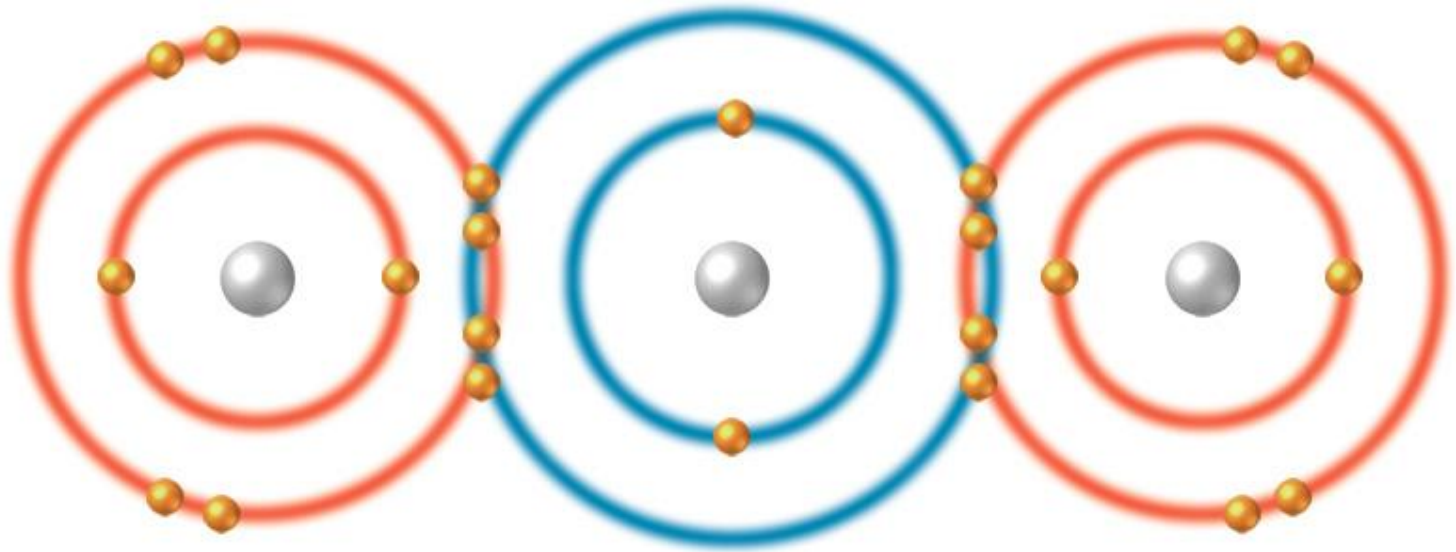
2.1 Atoms, Ions, and Molecules

- A **compound** is made of atoms of different elements bonded together.
 - water (H_2O)



2.1 Atoms, Ions, and Molecules

- A compound is made of atoms of different elements bonded together.
 - water (H_2O)
 - carbon dioxide (CO_2)



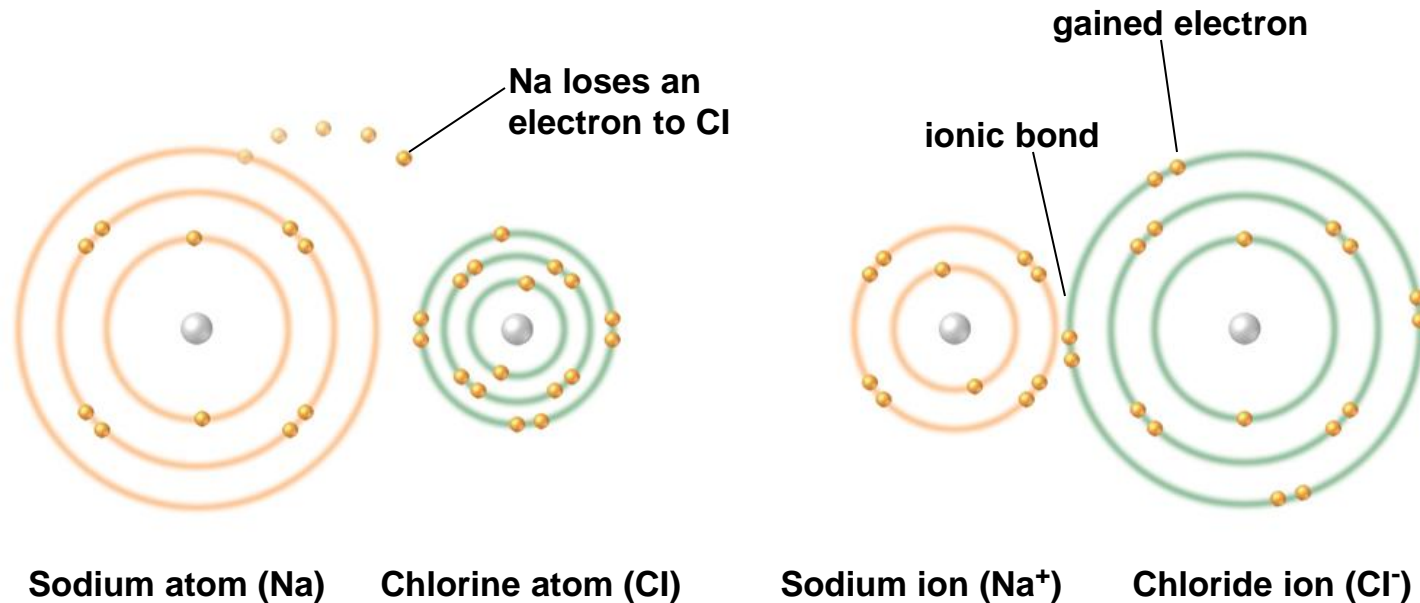
2.1 Atoms, Ions, and Molecules

- A compound is made of atoms of different elements bonded together.
 - water (H_2O)
 - carbon dioxide (CO_2)
 - many other carbon-based compounds in living things

2.1 Atoms, Ions, and Molecules

▶ Ions form when atoms gain or lose electrons.

- An **ion** is an atom that has gained or lost one or more electrons.
 - positive ions
 - negative ions
- **Ionic bonds** form between oppositely charged ions.



2.1 Atoms, Ions, and Molecules

- ▶ **Atoms share pairs of electrons in covalent bonds.**
 - A **covalent bond** forms when atoms share a pair of electrons.
 - multiple covalent bonds
 - diatomic molecules

