

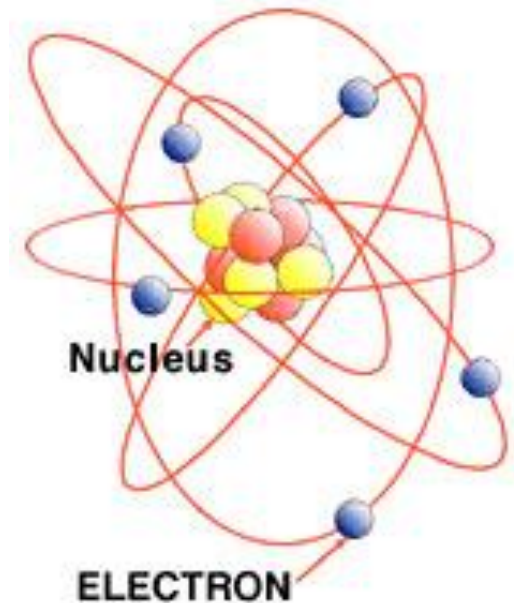
# Elements

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- An **element** is a substance that cannot be broken down by ordinary chemical reactions

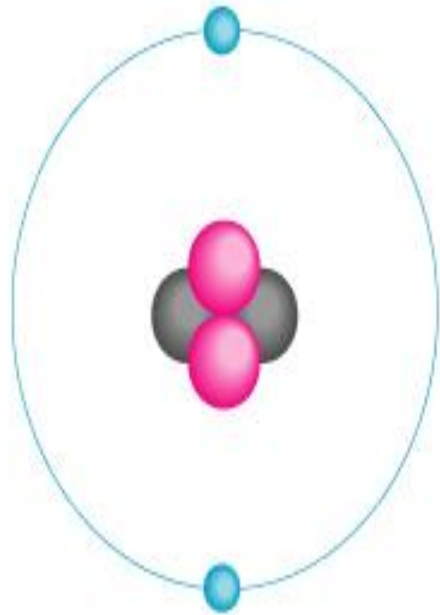
# The structure of the atom




- An atom is the smallest unit of matter that is **unique to a particular element.**

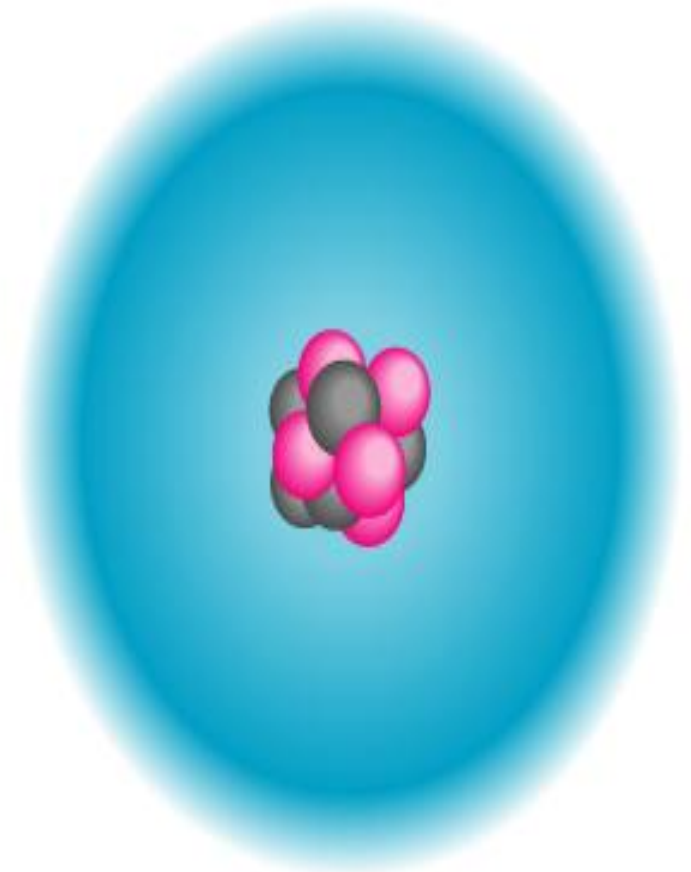
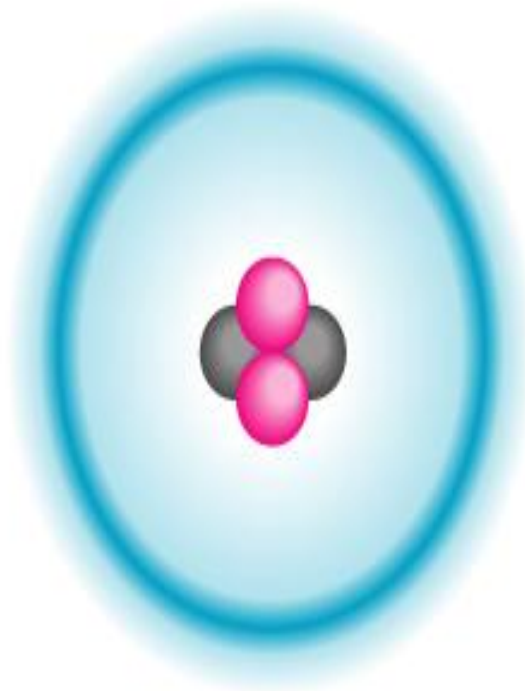





# Composed of...

- **Protons (p<sup>+</sup>):** part of atomic nucleus and have a **positive** charge
- **Neutrons (n):** part of nucleus, they are **neutral**
- **Electrons (e<sup>-</sup>):** have a **negative** charge. They move around the nucleus in a **cloud**.



2  Protons  
2  Neutrons } Nucleus  
2  Electrons



6  Protons  
6  Neutrons } Nucleus  
6  Electrons

# Atoms

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- Atoms are electrically neutral because they have an equal number of positive protons as negative electrons

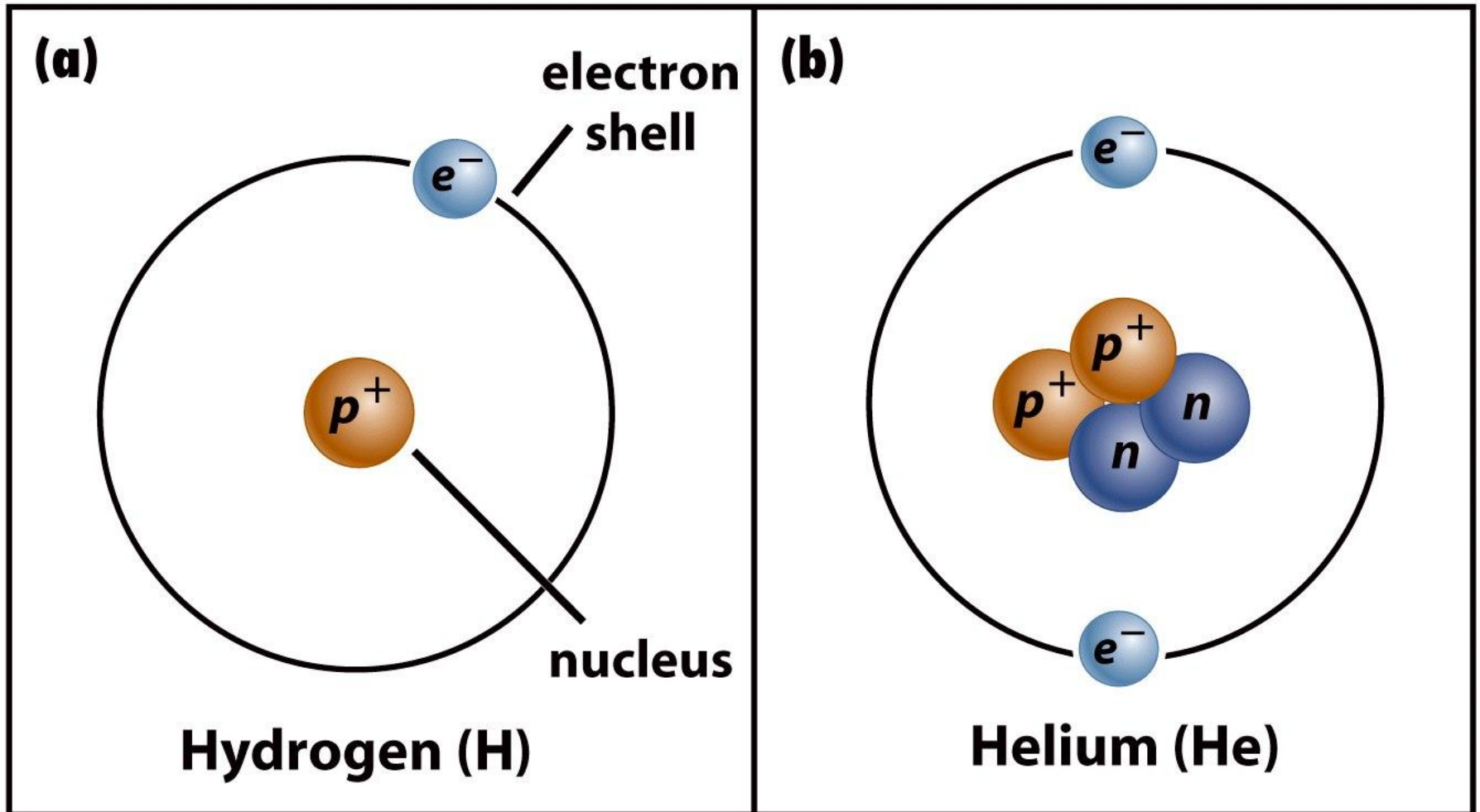


Figure 2-1 Biology: Life on Earth, 8/e  
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# Atomic Number

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- The atomic number (number of protons) is the defining value for an element
  - All atoms of an element have the same atomic number
  - e.g. Carbon has 6 protons, nitrogen has 7

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- Roles of the nucleus and the electrons
    - The nucleus provides stability
    - The electrons interact with other atoms (e.g. form bonds) and capture and release energy.