Four Types of Breathing

1. **Breathing-** This involves the _____.
2. **External Respiration-** This is the _____ between air and blood in the alveoli.
3. **Internal Respiration-** When the _____ and receives CO_2 to be carried away. (We will revisit in our study of circulation.)
4. **Cellular Respiration-** The mitochondria in cells use oxygen to break down sugar to produce _____ .

Inhalation:

- The lungs are sealed in two sacs, called _____, inside the chest cavity.
- At the bottom of the chest cavity is a large dome-shaped muscle known as the _____.
- When you inhale, the diaphragm _____. Muscles between the ribs also contract, raising the rib cage.
- These actions increase the _____ and create a partial vacuum inside the cavity.
- Atmospheric pressure fills the lungs as _____ the breathing passages.

Exhalation:

- During exhalation, both the rib cage and the diaphragm _____, decreasing the volume of the chest cavity and making air pressure in the chest cavity _____.

- Air _____ back out of the lungs.

- Exhalation is usually a _____, but to blow out a candle, speak, sing, or yell, you need more force than passive exhalation provides.

- The extra force is provided by _____ between the ribs and abdominal muscles, which contract vigorously as the diaphragm _____.

- Breathing works only because the chest cavity _____.

- If a wound punctures the chest—even if it does not affect the lungs directly—air may leak into the chest cavity and make breathing impossible. This is one reason chest wounds are always serious.

Control of Breathing:

- Breathing is controlled by the _____ (brain stem); it is an _____ process.
- When CO_2 levels get _____, the medulla oblongata sends a message to the rib cage muscles to contract.

Breathing and Homeostasis:

- You have some _____ over your breathing—when you swim or play an instrument, for example—but breathing is not purely _____.
- Your nervous system has _____ of your breathing muscles whether you are _____.
- _____ is initiated by the breathing center in the part of the brain stem called the medulla oblongata.
- _____ in or near the medulla and in some large blood vessels gather information about carbon dioxide levels in the body and send the information to the breathing center.
- When stimulated, the breathing center sends _____ that cause the diaphragm and chest muscles to contract, bringing air into the lungs.