Chapter 3: Cell Processes and Energy

Section 4: Respiration

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Main Ideas

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| What events occur during respiration?   | During respiration, cells break down simple food molecules such as sugar and release the energy they contain.Respiration has two meanings:  1. Breathing brings air into and out of  the lungs.  2. Respiration takes place inside the cells and is called cellular respiration.  |
| What is fermentation?  | An energy-releasing process that does not require oxygen. |
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Key Terms

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| **Respiration** | The process by which cells obtain energyfrom glucose.There are two stages of respiration:Stage 1: In the cytoplasm of the organism’s cells molecules of  glucose are broken down into  smaller molecules. Oxygen is not involved and only a small mount  of energy is releasedStage 2: In the mitochondria small  molecules are broken down into  even smaller molecules. This  process requires oxygen and  releases a great deal of energy.Mitochondria = power house of the cellS |
| Respiration equation  | C H O + 6O -----6CO + 6H O = energyNotice that the **respiration equation** is the *inverse* of the **photosynthetic equation.** |
| Fermentation   | Provides energy for cells without using oxygen.It releases much less energy than cellular respiration. |
| Alcoholic fermentation    | When yeast and some other single-celled organisms break down sugars. Alcohol is one of the products. This is important to bakers and brewers who depend on such anaerobic processes. |
| Lactic Acid Fermentation  | This is due to hard exercise. When an athlete’s muscles run out of oxygen fermentation occurs. This will supply your body cells with energy. One product of this type of reaction is lactic acid.This causes muscle cramping and soreness. |