**SBI 3U - The Respiratory System**

Learning Target #2c: I can describe how the structures and functions of specific systems in the body work together to maintain homeostasis in the respiratory system.

Why We Breathe



Cellular Respiration: the chemical processes in the mitochondria of the cell of creating energy (ATP) by taking in oxygen and glucose, cleaving or breaking down this glucose and releasing chemical dioxide and water.

We know that our body works best in an environment of 21% oxygen, 78% nitrogen and 0.03% carbon dioxide.

Cellular Respiration is roughly 36% efficient for every 1 molecule of glucose. The rest is released as thermal energy.

Function of the Respiratory System:

1. 2) 3)

Structures of the Respiratory System

|  |  |  |
| --- | --- | --- |
| Name | Structure | Function |
| Nasal Passages |  |  |
| Pharynx |  |  |
| Epiglottis |  |  |
| Trachea |  |  |
| Bronchi/Bronchioles |  |  |
| Alveoli |  |  |
| Diaphragm |  |  |
| Pleural Membrane |  |  |
| Intercostal Muscles |  |  |

Gas Exchange v. Ventilation

Breathing is autonomic based on feedback mechanisms from oxygen and carbon dioxide sensors in the brain – you don’t have to think about it! Homeostasis!

**Gas Exchange**:

**Ventilation**:

SBI3U – The Respiratory System continued…..

Mechanics of Breathing Volume v. Pressure

Inhaling and Exhaling

|  |  |  |
| --- | --- | --- |
| Structure & Process  | Inhaling | Exhaling |
| Intercostal Muscles & Diaphram |  |  |
| Chest Cavity |  |  |
| Air Movement |  |  |

\*\*Diffusion: Air exchange happens through passive transport known as diffusion. This type of transport does not require energy, molecules move randomly and molecules move from an area of \_\_\_\_\_\_\_\_\_\_ concentration to \_\_\_\_\_\_\_\_\_ concentration.

**Disorders of the Respiratory System**

Learning Target #4: I can defend how various illnesses/disorders can affect homeostasis in the body and how they can be prevented.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | General Definition of Disorder | Causes of Disorder | Symptoms of Disorder | Available Treatments |
| Asthma |  |  |  |  |
| COPD – Emphysema |  |  |  |  |
| COPD - Bronchitis |  |  |  |  |
| Influenza (Swine Flu) |  |  |  |  |
| Tuberculosis |  |  |  |  |
| Pneumonia |  |  |  |  |
| Cystic Fibrosis |  |  |  |  |