**Respiratory System Notes Part 1**

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| **Notes** |
| **I. Overview**    A. Function:   * Brings about the \_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_ and\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ between the \_\_\_\_\_\_\_\_, \_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_   B. Organs   * Nose * Pharynx * Larynx * Trachea * Bronchi * Lungs – alveoli   C. Respiratory tract   * Pathway of air from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Air in the respiratory tract are:   + \_\_\_\_\_\_\_\_\_\_\_\_ – by hairs, cilia, and mucus   + \_\_\_\_\_\_\_\_\_\_\_ – by heat from the blood vessels   + \_\_\_\_\_\_\_\_\_\_\_ – by the wet surfaces in passageway * Necessary to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **II. Structure**  ***A. Upper Respiratory Tract – Nasal cavities, pharynx, glottis, larynx***  1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ separated by a septum of bone and cartilage * Function: Filter, warm, and moisten the air * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Cavities within bones surrounding the nasal cavity * Function of the sinuses   + Lighten the skull   + Act as resonance chambers for speech   + Produce mucus that drains into nasal cavity      * Mucous membrane lines nasal cavity * \_\_\_\_\_\_\_\_\_\_\_\_\_ moves mucous and trapped particles to the pharynx      * Contains lateral projections called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   + Increases air turbulence within the nasal cavity * The nasal cavity is separated from the oral cavity by the palate   + Anterior \_\_\_\_\_\_\_\_\_\_\_ palate (\_\_\_\_\_\_\_\_\_\_\_\_)   + Posterior \_\_\_\_\_\_\_\_\_\_\_ palate (\_\_\_\_\_\_\_\_\_\_\_\_)   2. \_\_\_\_\_\_\_\_\_\_\_\_\_ - throat   * Description: funnel-shaped passageway between the nasal cavity and larynx * Function: Connects \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ to the larynx * Three regions of the pharynx   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – superior region, passageway for air   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – where oral cavity joins pharynx, passageway for food and air   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – inferior region that opens to larynx * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – located in oropharynx   + A lymphatic tissue that protects against inhaled pathogens     3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Description: flap of tissue that sits at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from entering the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or windpipe, during swallowing   4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Description: Also called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contains the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Vocal cords are elastic tissues that vibrate producing sound as air travels through   + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the vocal cords is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   ***B. Lower Respiratory Tract – Trachea, bronchi, bronchioles, lungs, alveoli***  1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_     * Description: known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, flexible tube that connects larynx to bronchi * Function: directs air to bronchi * Held open by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hyaline cartilage * Trachea is lined with pseudostratified ciliated columnar epithelial cells * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mucus loaded with dust and other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_     2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Description: Left and right \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the trachea * Function: passageway of air to lungs * Bronchi enters the right and left lungs   + Bronchi subdivide into smaller and smaller branches called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Right bronchus is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than left   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Description: Smallest branches of the bronchi * Function: Bronchioles lead to the alveoli   4. \_\_\_\_\_\_\_\_\_\_\_   * Description: paired, cone-shaped organ that occupy the thoracic cavity * Function: contains alveolus where gas exchange occurs * \_\_\_\_\_\_\_ (superior portion) is near the \_\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_ (inferior portion) rests on the \_\_\_\_\_\_\_\_\_\_\_\_ * Each lung is divided into lobes by fissures   + Left lung – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   + Right lung – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Coverings of the lungs     lungsL   * + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ covers the lung   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lines the walls of the thoracic cavity   + Pleural fluid fills the area between layers of pleura to allow gliding     5. \_\_\_\_\_\_\_\_\_\_\_\_\_ (*singular: alveolus*)   * Description: Structures made up of \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ epithelium surrounded by blood capillaries * Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Respiratory membrane – extremely thin membrane that aids in the rapid exchange of gases * Gas crosses the respiratory membrane by \_\_\_\_\_\_\_\_\_\_\_   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ enters the blood   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ enters the alveoli   + Macrophages add protection   + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in alveoli prevents the lung from closing or collapsing   **III. Gas Exchange and Transport**   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – process of exchanging gases between the atmosphere and body cells   A. External Respiration     * Exchange of gases between \_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ in the lungs * Blood \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the lungs is oxygen-\_\_\_\_\_\_\_\_\_\_\_ and carbon dioxide-\_\_\_\_\_\_\_\_\_\_\_ * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   + The alveoli always has more oxygen than the blood   + Oxygen moves by diffusion from an area of high concentration to an area of low concentration * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Blood returning from tissues has higher concentrations of carbon dioxide than air in the alveoli * Pulmonary capillary blood gives up carbon dioxide * Blood \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the lungs is oxygen-\_\_\_\_\_\_\_\_\_\_\_ and carbon dioxide-\_\_\_\_\_\_\_\_\_\_\_   B. Internal Respiration   * Exchange of gases between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to what occurs in the lungs * Carbon dioxide diffuses out of tissue to blood * Oxygen diffuses from blood into tissue   C. Gas Transport   * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the blood * Inside red blood cells attached to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (oxyhemoglobin [HbO2]) * A small amount is dissolved in the plasma      * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the blood * Most is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as bicarbonate ion (HCO3–) * A small amount is carried inside red blood cells on hemoglobin, but at different binding sites than those of oxygen |

**Learning Goals**

1. Describe the function of the respiratory system.
2. Describe and give the function of each of the following structures, in order: nasal cavity, pharynx, epiglottis, larynx, trachea, bronchi, bronchioles, lungs, and alveoli.
3. Compare and contrast external respiration and internal respiration.