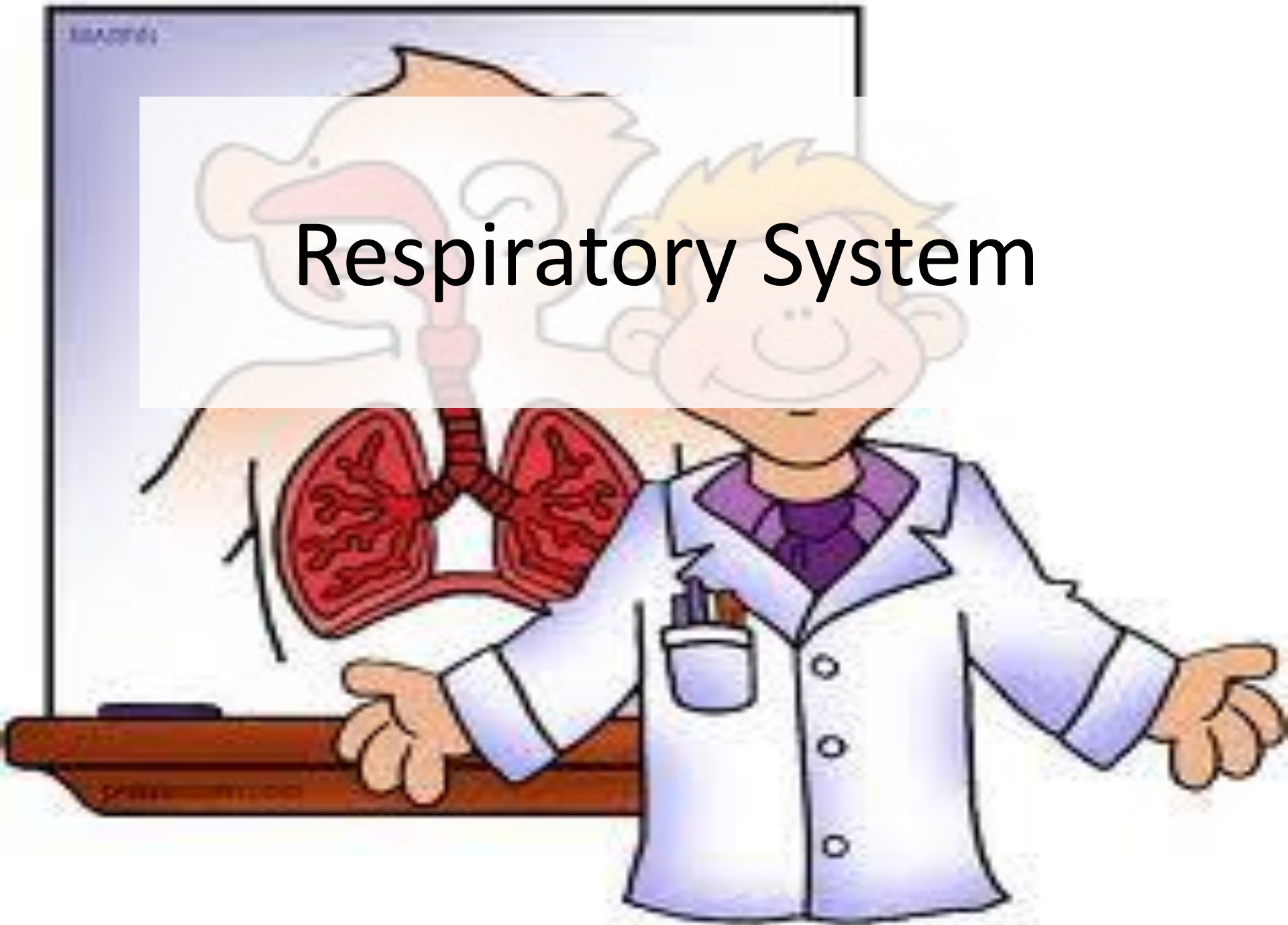
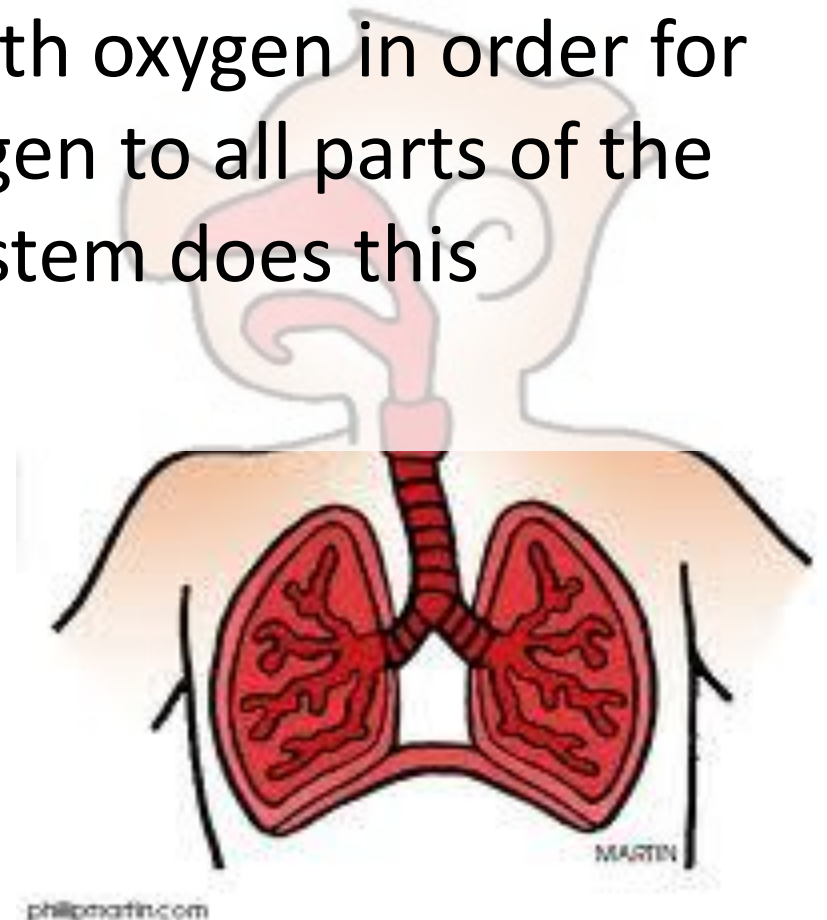


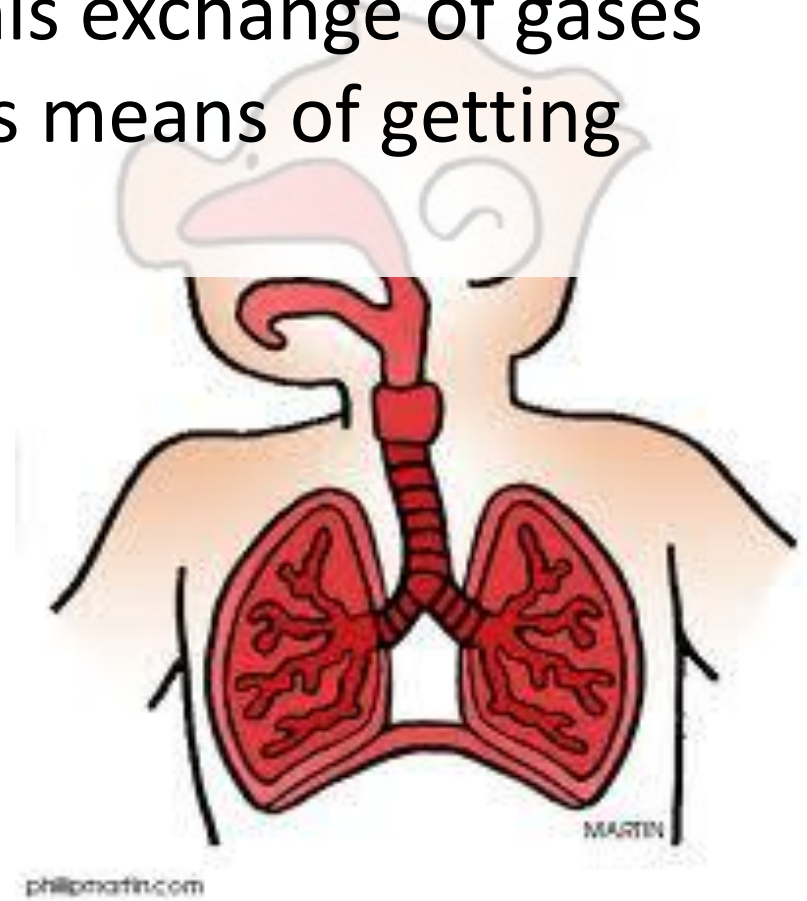
Respiratory System



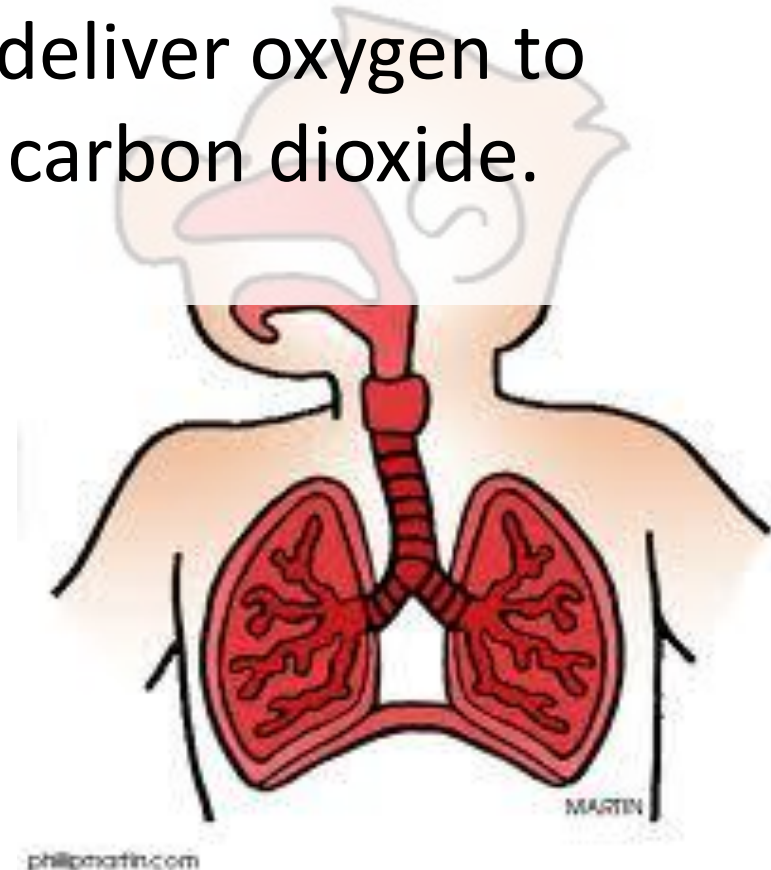
- The primary function of the respiratory system is to supply the blood with oxygen in order for the blood to deliver oxygen to all parts of the body. The respiratory system does this through breathing.



- When we breathe, we inhale oxygen and exhale carbon dioxide. This exchange of gases is the respiratory system's means of getting oxygen to the blood.



- Your respiratory system is made up of the organs in your body that help you to breathe. The goal of breathing is to deliver oxygen to the body and to take away carbon dioxide.



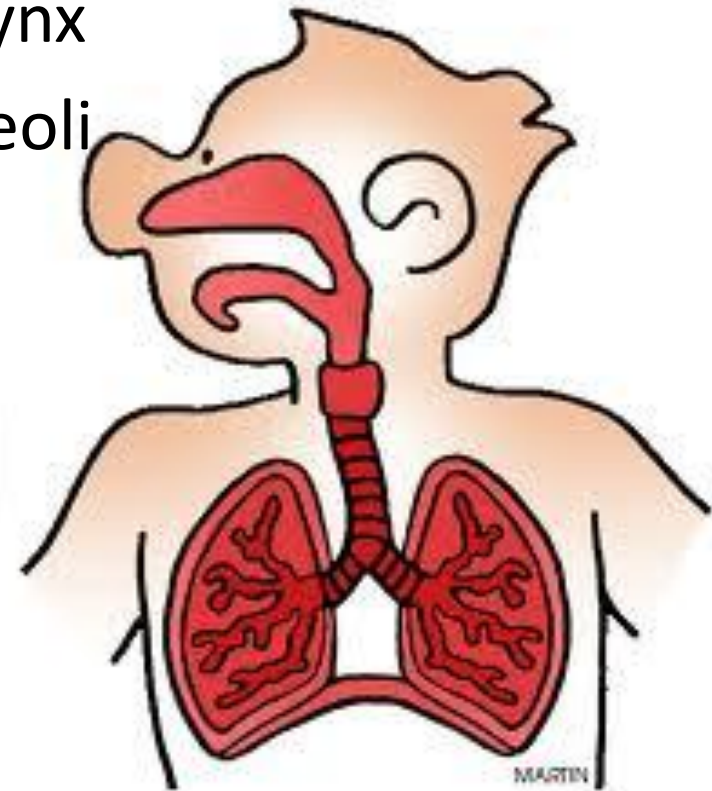
Parts of the respiratory system

- Main Parts of the Respiratory System :

1. Nose
2. Trachea
3. Bronchial Tubes
4. Lungs

- Other Parts:

- Pharynx
- Larynx
- Alveoli



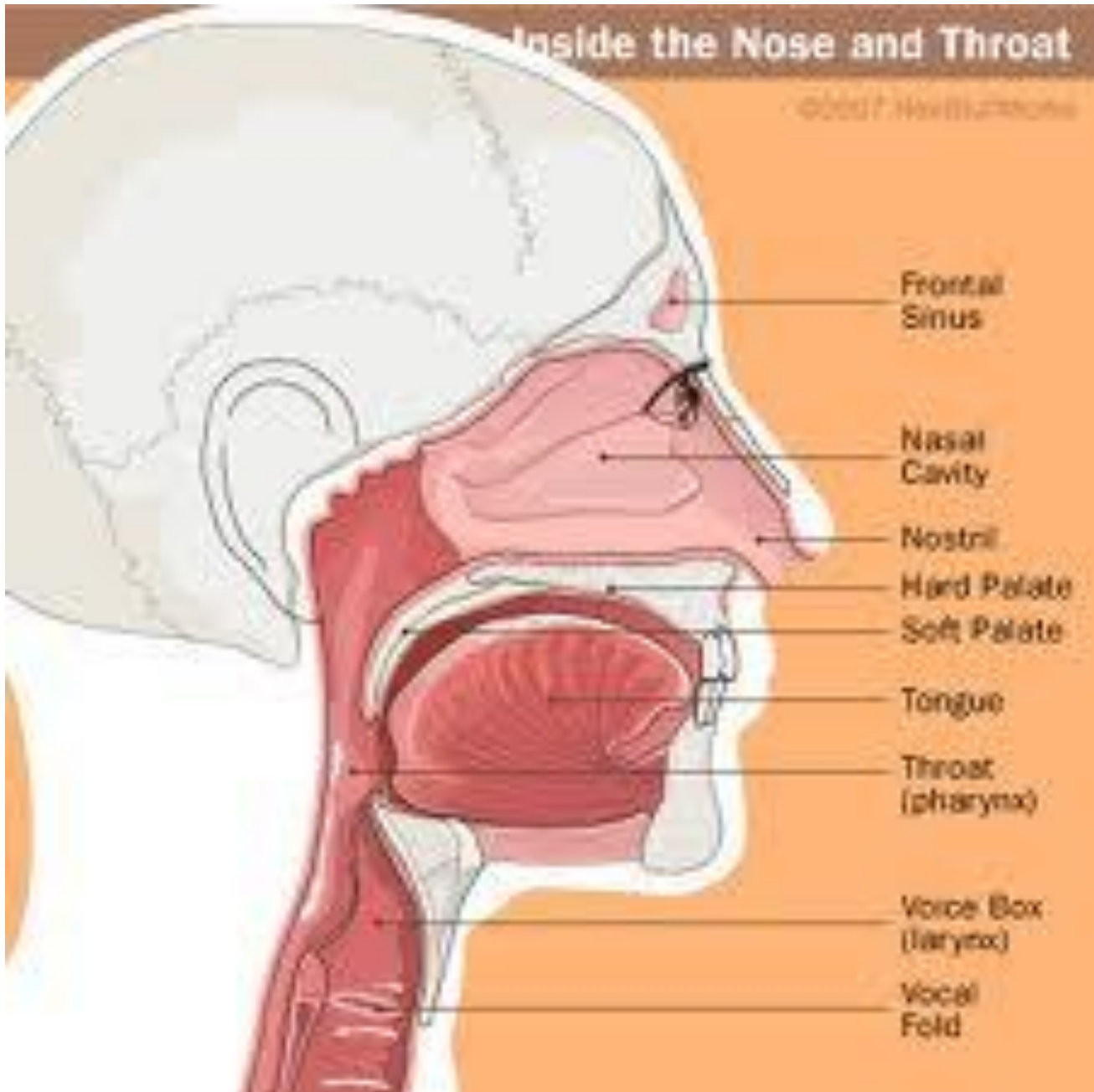
Nose

- The nose is responsible in smelling something.
- It has two openings called nostrils (lubang hidung). The air enters the nasal (rongga hidung) passages through the nostrils. The air that you breathe must be cleaned before reaching the lungs of the person.

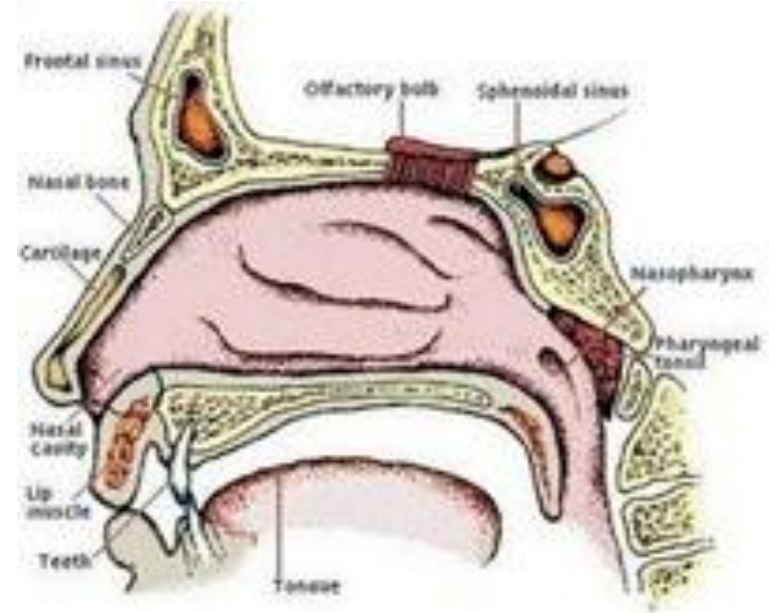


Inside the Nose and Throat

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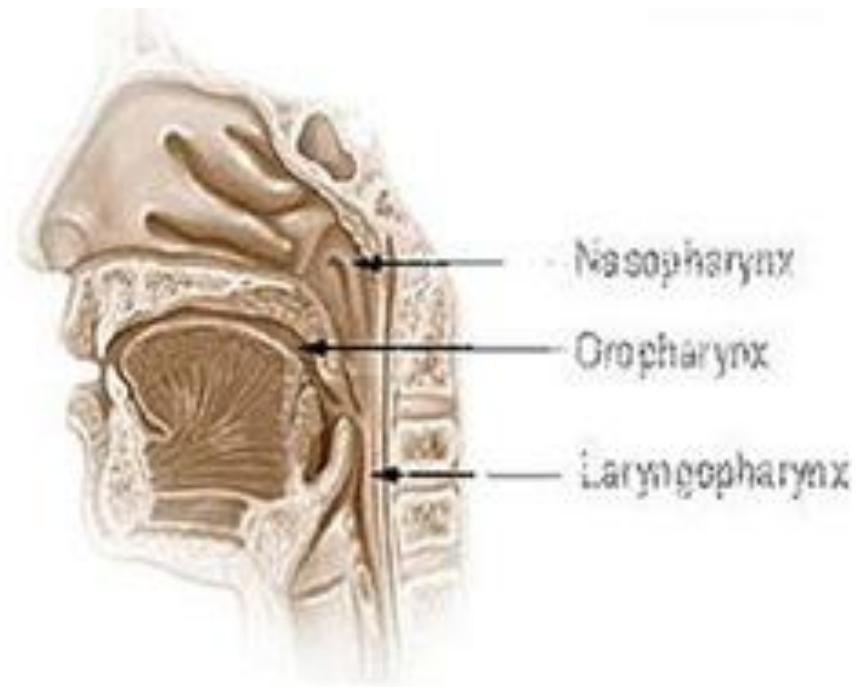


- **Cilia** are tiny hairs that is responsible for protecting a person from germs. The cilia filter the smaller particles of dust and dirt.
- **Mucous membrane (selaput lendir)** is a moist tissue lining in the nose that also catches particles of dirt. It also warms and moistens the incoming air. There is also tiny blood vessel that also warm and moisten the passing air inside the nose.



The Pharynx

- The clean air travels from the nasal passages to the pharynx.
- The pharynx is located at the back of the throat.



Part of Pharynx

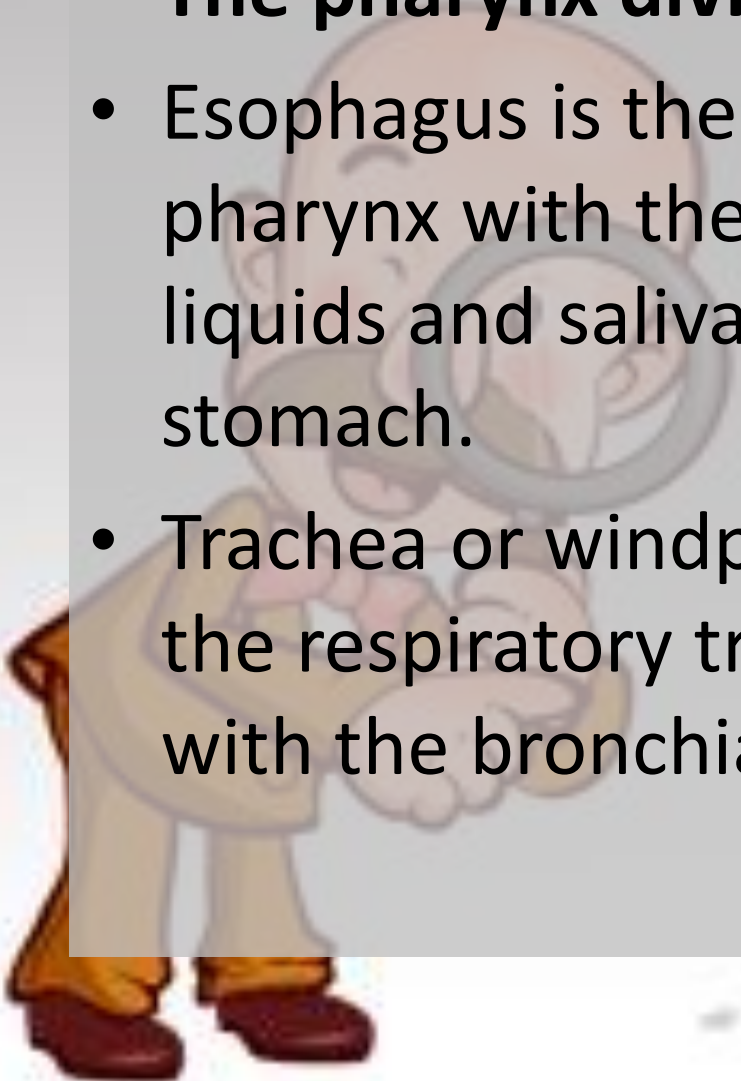
1. Nasopharynx

It is the widest part of the pharynx.

2. Oropharynx

The oropharynx lies behind the mouth and tongue.

3. Laryngopharynx

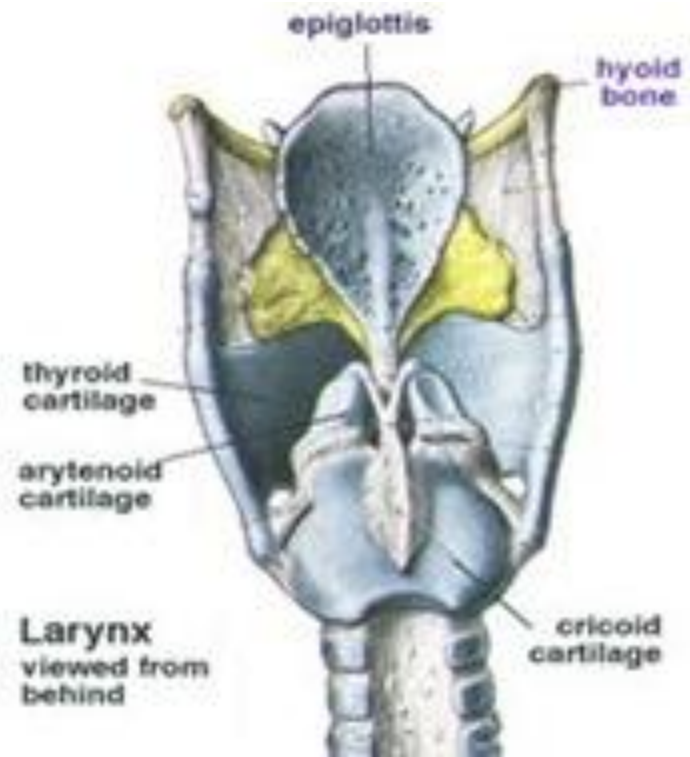
- 
- A cartoon character with a large nose and a magnifying glass over his eye, wearing a yellow shirt and brown pants, is looking at the text. The character is positioned on the left side of the slide, with his magnifying glass focused on the first bullet point.
- **The pharynx divides into two tubes:**
 - Esophagus is the tube that connects the pharynx with the stomach. It carries food, liquids and saliva from your mouth to the stomach.
 - Trachea or windpipe is a bony tube portion of the respiratory tract that connects the larynx with the bronchial parts of the lungs.

- Epiglottis is the flap cartilage located at the bottom of the pharynx. It opens and closes the trachea. It prevents the food from going to the trachea by closing it during swallowing. The epiglottis is open to allow the flow of air in the breathing process most of the time

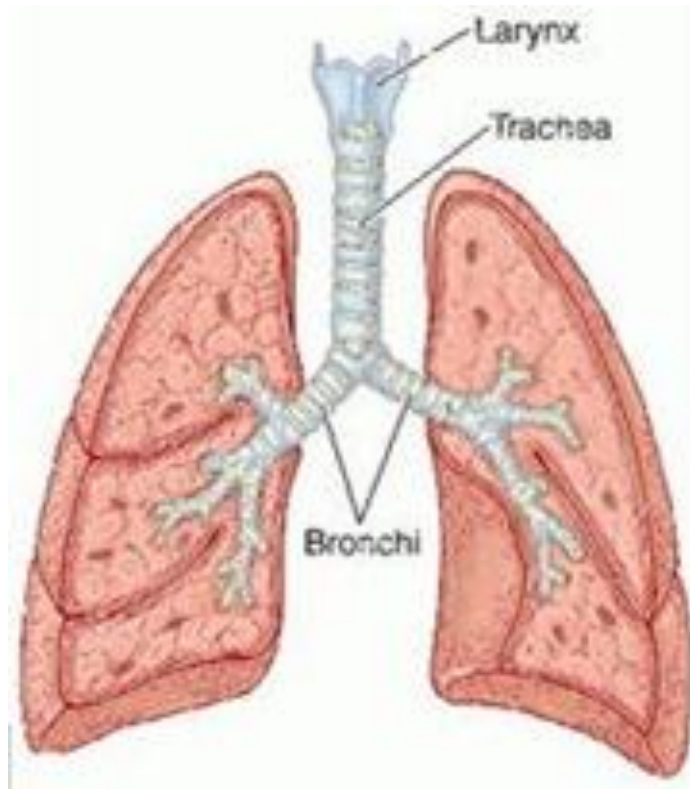


The Larynx

- From the pharynx, the clean air moves down to the larynx.
- The Larynx or voice box is located between the pharynx and the trachea. Humans use the larynx to breathe, talk, and swallow.
- The larynx contains the vocal cords that vibrate when air passes through them.

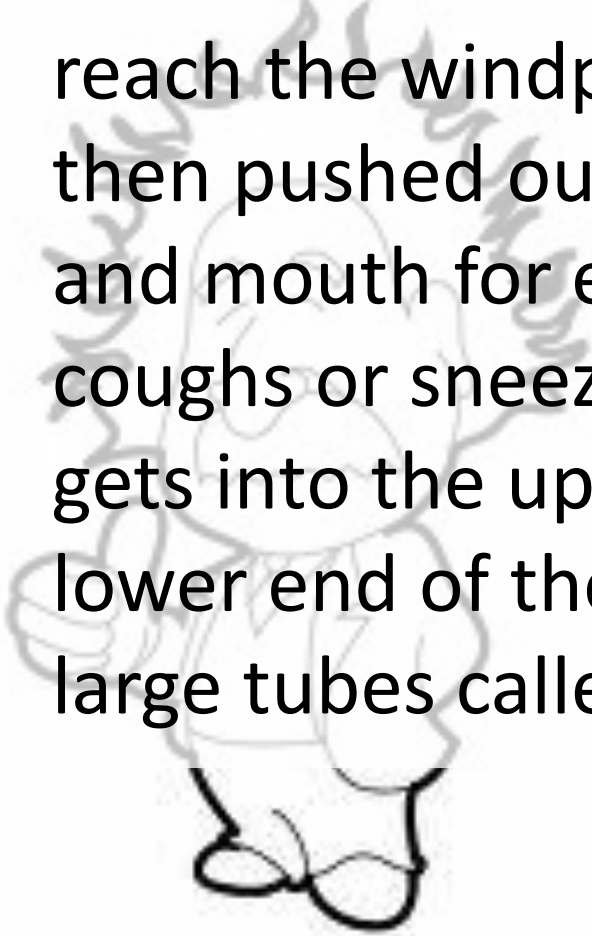


The Trachea or Windpipe



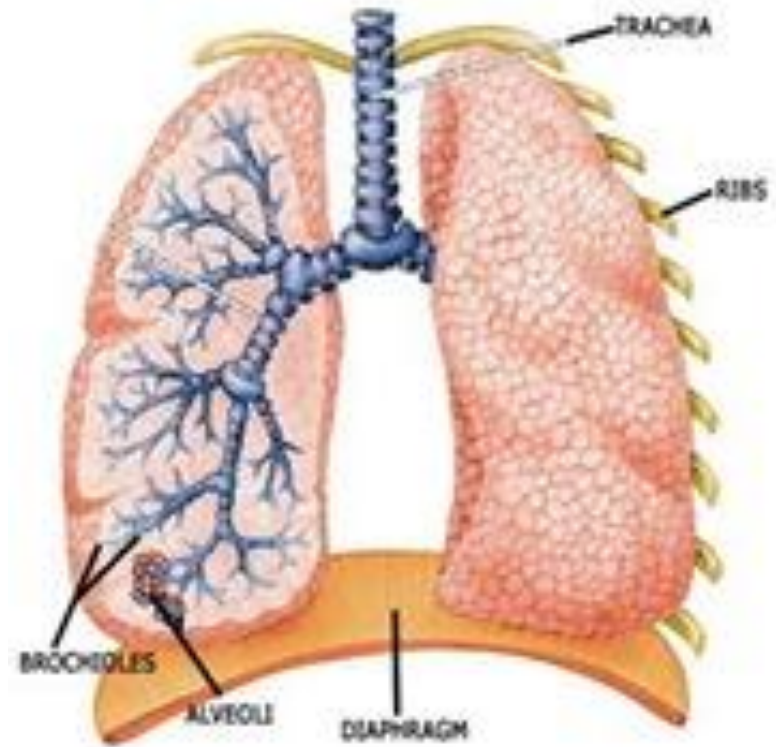
- The trachea, or windpipe, is a bony tube portion of the respiratory tract that connects the larynx with the bronchial parts of the lungs that about 13 centimeters long.

- cilia. The cilia catch the dust particles that reach the windpipe. The dust particles are then pushed out and up toward the throat and mouth for expulsion. This is why one coughs or sneezes just because of the dirt gets into the upper respiratory tract. The lower end of the trachea branches into two large tubes called the bronchi.



- **The Lungs are** the organs of respiration (in-charge for breathing). The left bronchus leads to the left lung while the right bronchus leads to the right lung. Each bronchus divides into smaller tubes called bronchial rami. The bronchial rami branches off further into smaller tubes called bronchial tubes or bronchioles. At the ends of these bronchioles are the tiny air sacs called alveoli.

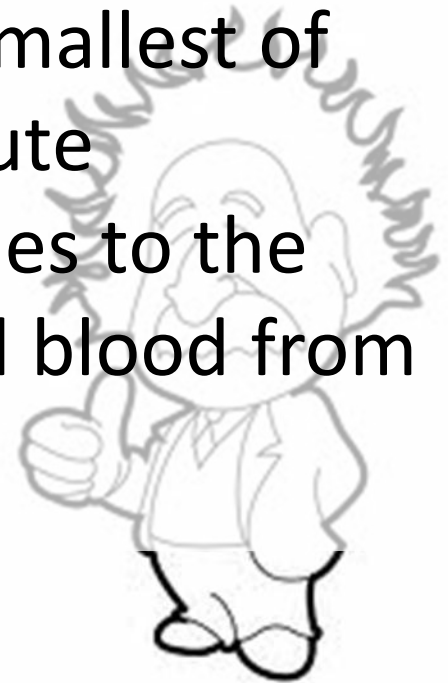
The Lungs



- The bronchioles and alveoli look like the branches of a tree. Bronchi is the biggest branches that are covered by cilia and a thin film of mucus. Dust and pollen are trapped by the mucus before they reach the alveoli.

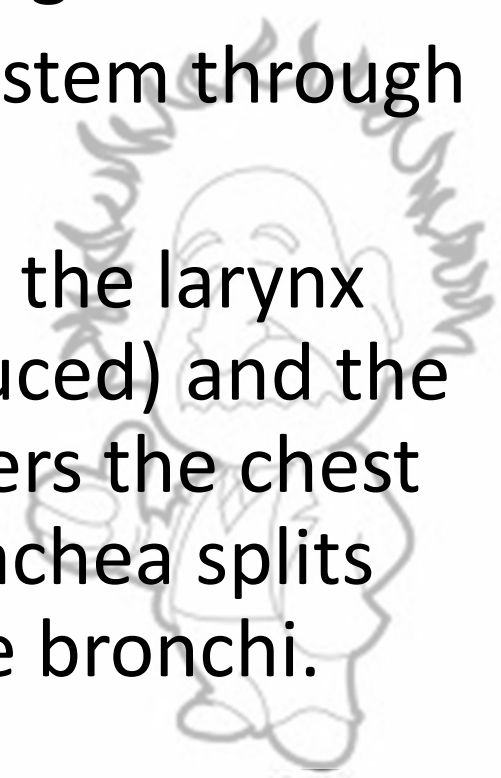


- Each of the lungs has 300 million alveoli. Alveolus is surrounded by tiny blood vessels called capillaries. These are the smallest of blood vessels that help to distribute oxygenated blood from the arteries to the tissues and to feed deoxygenated blood from the tissues back to the veins.

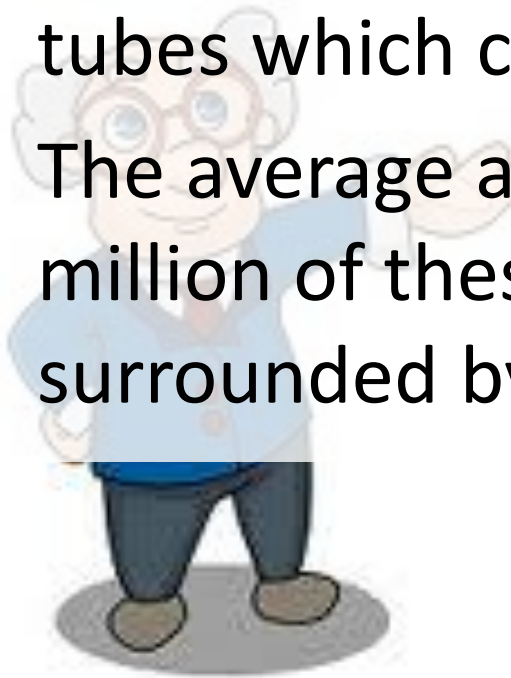


The Respiratory Process

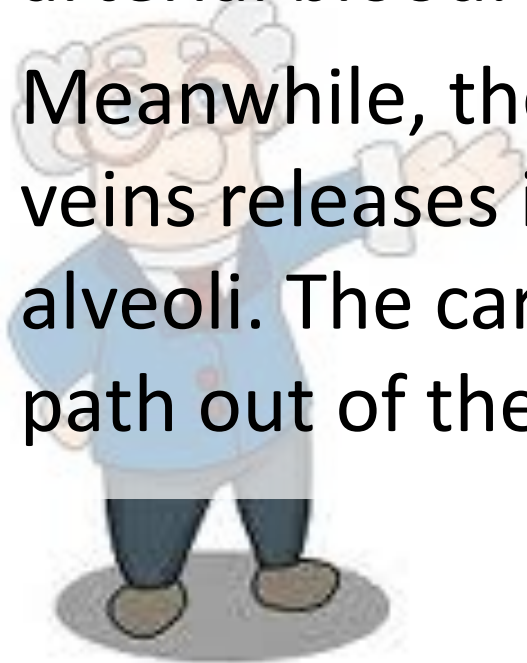
- Respiration is achieved through the mouth, nose, trachea, lungs, and diaphragm.
- Oxygen enters the respiratory system through the mouth and the nose.
- The oxygen then passes through the larynx (where speech sounds are produced) and the trachea which is a tube that enters the chest cavity. In the chest cavity, the trachea splits into two smaller tubes called the bronchi.

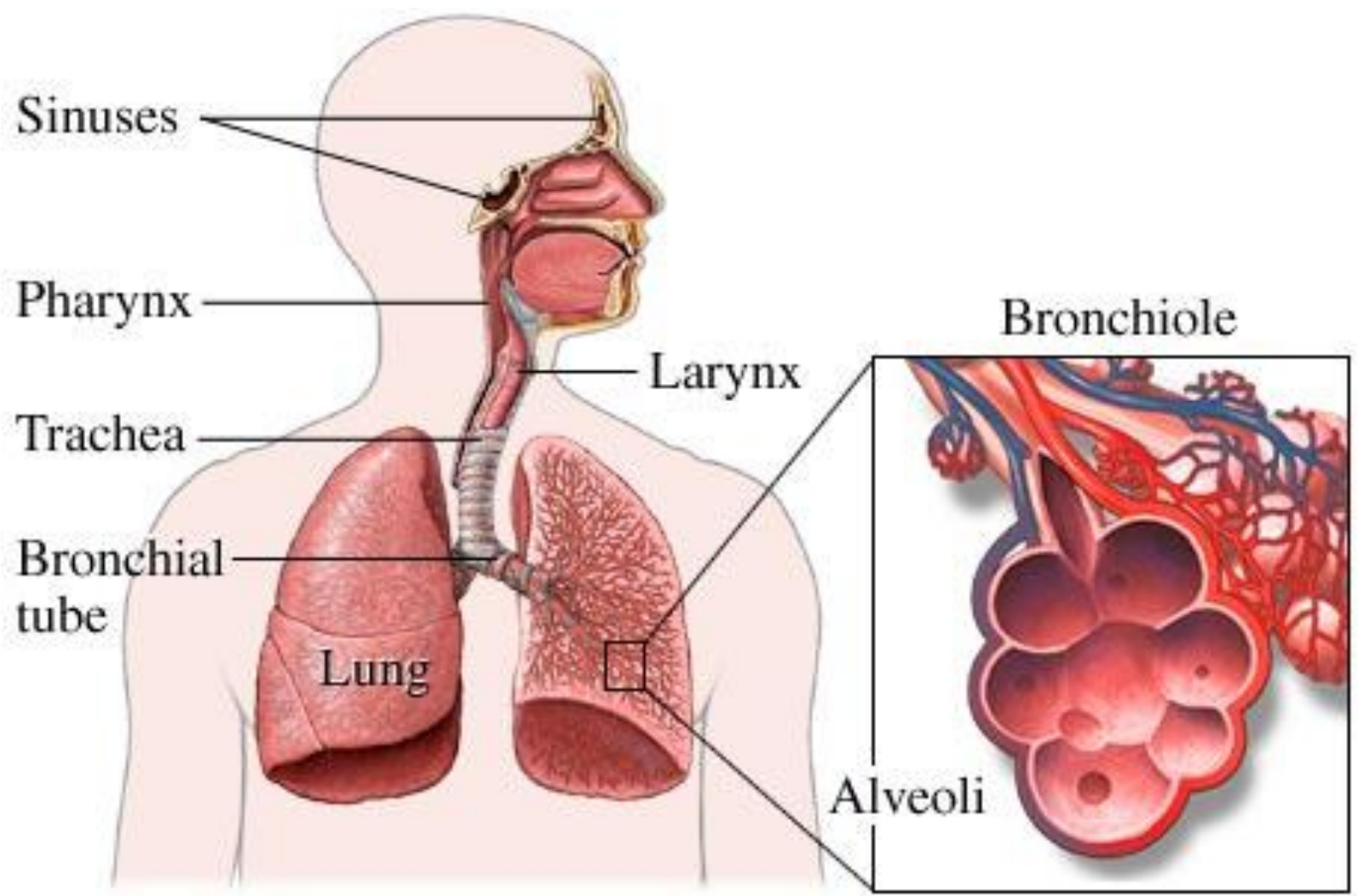


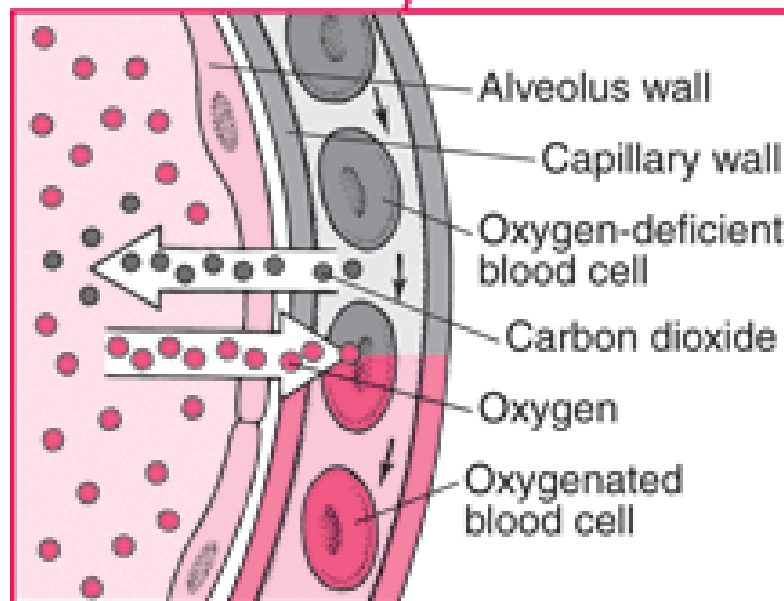
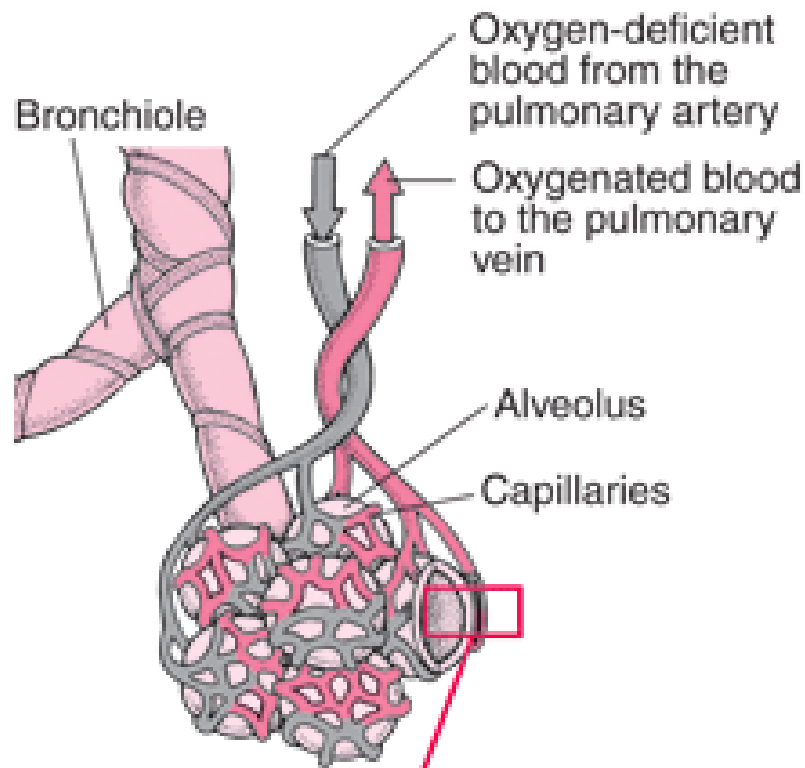
- Each bronchus then divides again forming the bronchial tubes.
- The bronchial tubes lead directly into the lungs where they divide into many smaller tubes which connect to tiny sacs called alveoli.
- The average adult's lungs contain about 600 million of these spongy, air-filled sacs that are surrounded by capillaries.



- The inhaled oxygen passes into the alveoli and then diffuses through the capillaries into the arterial blood.
- Meanwhile, the waste-rich blood from the veins releases its carbon dioxide into the alveoli. The carbon dioxide follows the same path out of the lungs when you exhale.







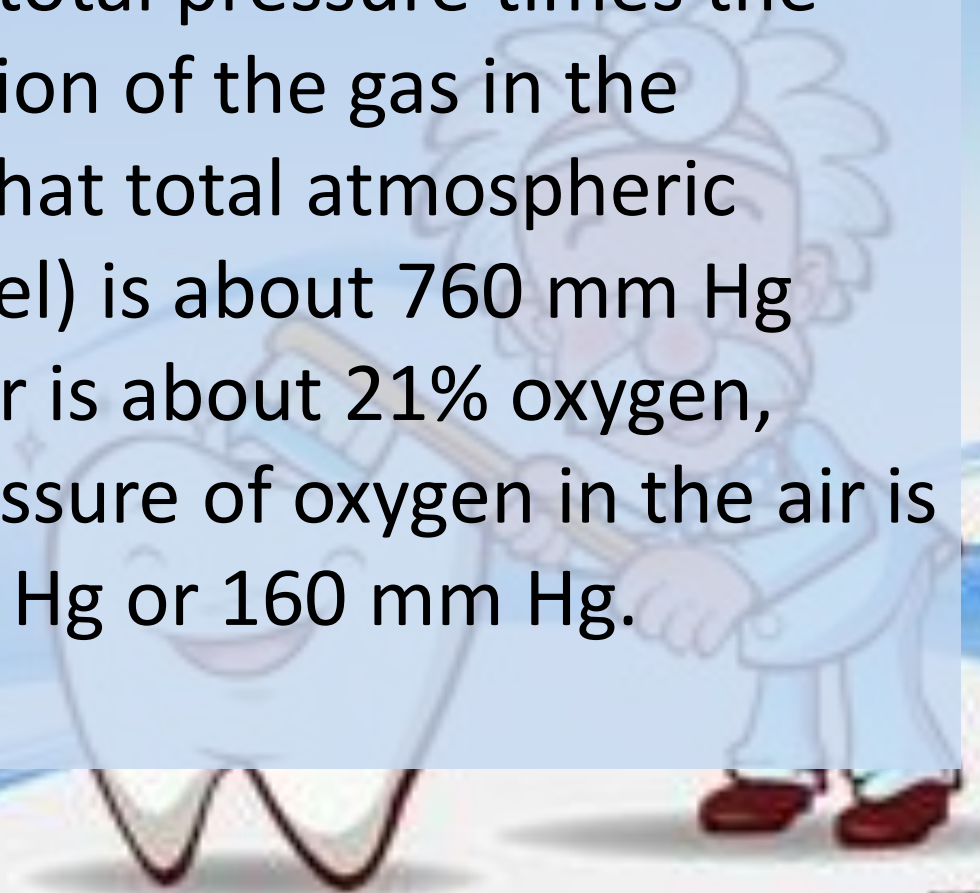


- The lungs are protected by a set of bones called the rib cage. The rib cage is the set of bones that encloses the heart and lungs. Diaphragm is located at the lower portion of the chest, it separates the chest from the abdomen. Both the rib cage and the diaphragm are important in the breathing process.
- When you **inhale**, the ribs move upward and outward while the diaphragm moves downward. When you **exhale**, the opposite happens. The ribs move downward and inward while the diaphragm moves upward.

What is Partial Pressure?

- it's the individual pressure exerted independently by a particular gas within a mixture of gasses. The air we breath is a mixture of gasses: primarily nitrogen, oxygen, & carbon dioxide. So, the air you blow into a balloon creates pressure that causes the balloon to expand (& this pressure is generated as all the molecules of nitrogen, oxygen, & carbon dioxide move about & collide with the walls of the balloon). However, the total pressure generated by the air is due in part to nitrogen, in part to oxygen, & in part to carbon dioxide. That part of the total pressure generated by oxygen is the 'partial pressure' of oxygen, while that generated by carbon dioxide is the 'partial pressure' of carbon dioxide. A gas's partial pressure, therefore, is a measure of how much of that gas is present (e.g., in the blood or alveoli)

- the partial pressure exerted by each gas in a mixture equals the total pressure times the fractional composition of the gas in the mixture. So, given that total atmospheric pressure (at sea level) is about 760 mm Hg and, further, that air is about 21% oxygen, then the partial pressure of oxygen in the air is 0.21 times 760 mm Hg or 160 mm Hg.



Why Do I Yawn?

- When you are sleepy or drowsy the lungs do not take enough oxygen from the air. This causes a shortage of oxygen in our bodies. The brain senses this shortage of oxygen and sends a message that causes you to take a deep long breath---a YAWN.

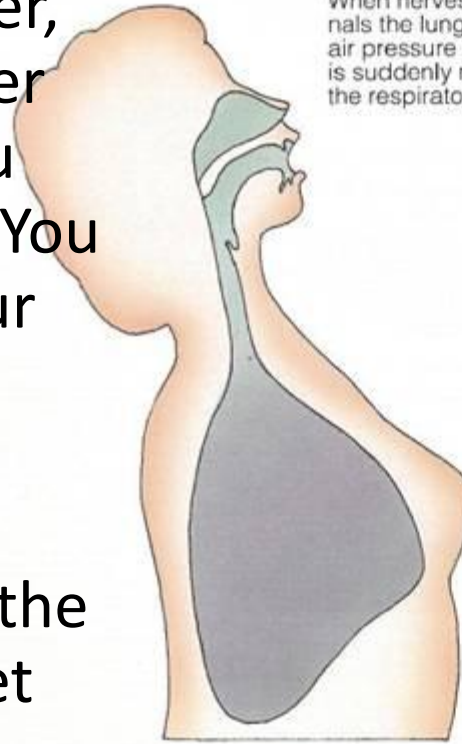


Why Do I Sneeze?

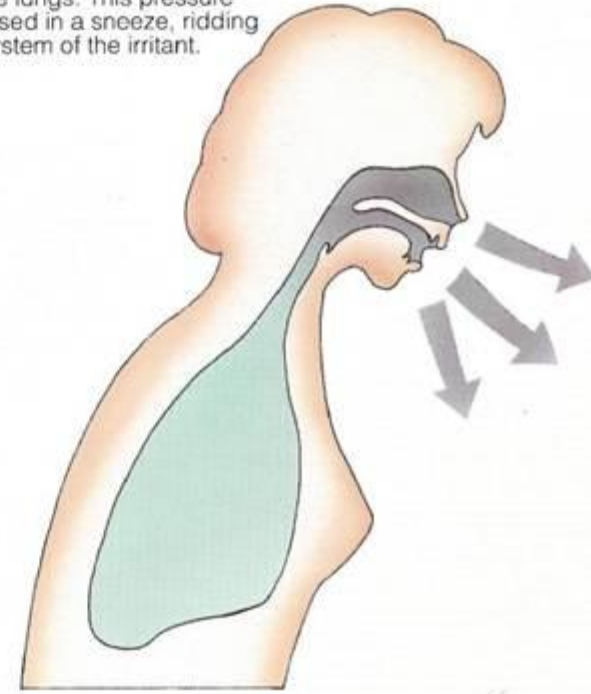


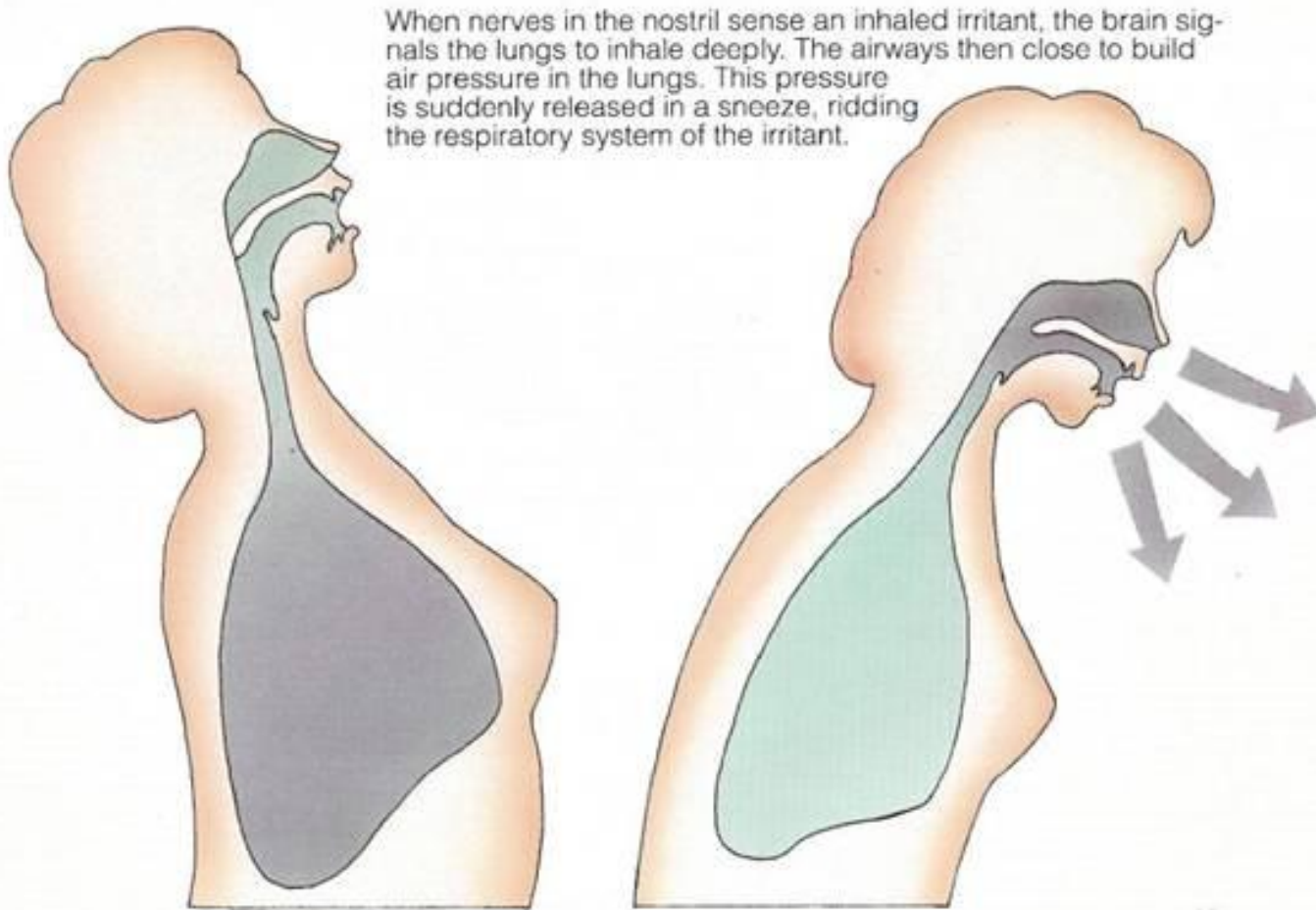
- Sneezing is like a cough in the upper breathing passages. It is the body's way of removing an irritant from the sensitive mucous membranes of the nose. Many things can irritate the mucous membranes. Dust, pollen, pepper or even a cold blast of air are just some of the many things that may cause you to sneeze.

- The air in your home is filled with millions of tiny particles of dust, dander, pollen, smoke and other allergens that keep you sniffing and sneezing. You can clean the air in your home by changing air filters in your air-conditioning system regularly and by using the right kind. Once you get the air clean in your home, you may be able to stop taking all the allergy medications.



When nerves in the nostril sense an inhaled irritant, the brain signals the lungs to inhale deeply. The airways then close to build air pressure in the lungs. This pressure is suddenly released in a sneeze, ridding the respiratory system of the irritant.





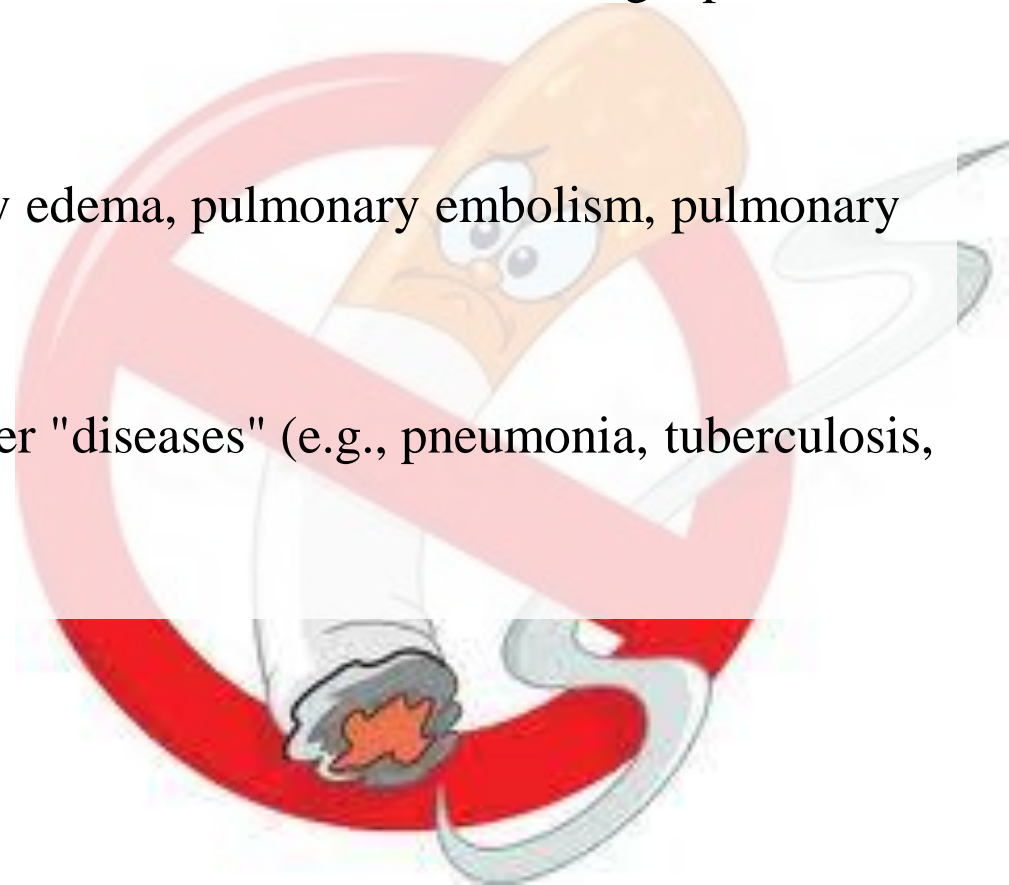
- Because for that moment of the sneeze all your bodily functions stop even your heart. When the sneeze is over and all bodily functions are restored we are grateful and praise Allah for returning all back to us again. SubhanAllah.

What Causes Hiccups?

- Hiccups are the sudden movements of the diaphragm. It is involuntary --- you have no control over hiccups, as you well know. There are many causes of hiccups. The diaphragm may get irritated, you may have eaten too fast, or maybe some substance in the blood could even have brought on the hiccups.



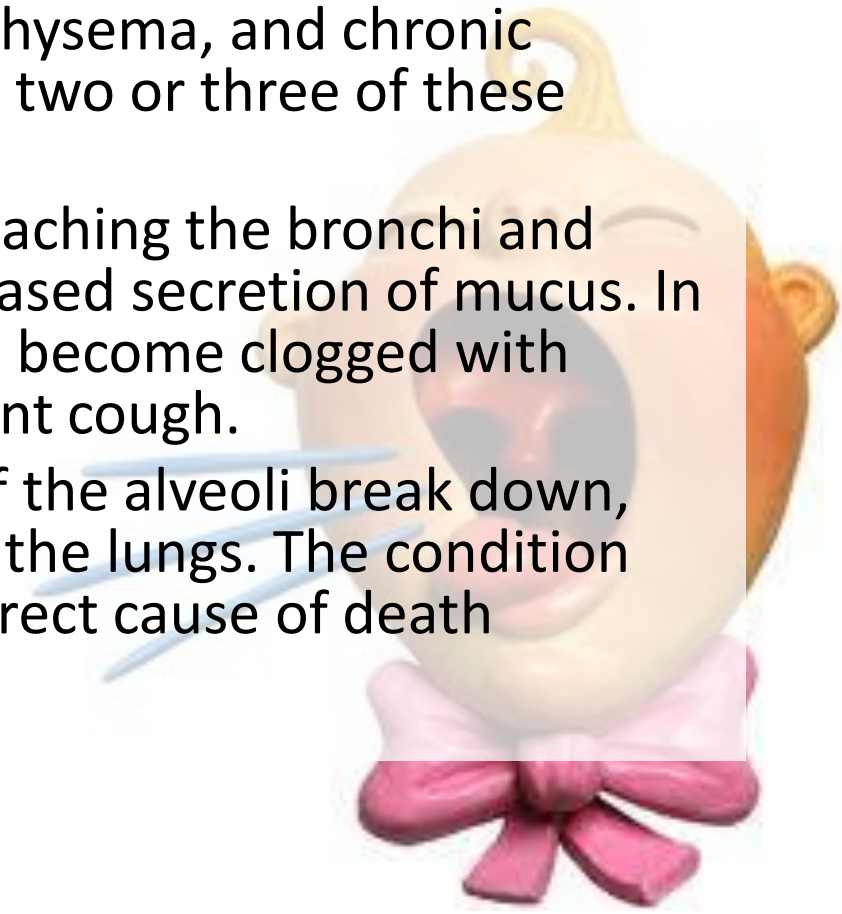
- Smoking and air pollution are two common causes of respiratory problems.
- Disorders of the respiratory system can be classified into four general areas:
- Obstructive conditions (e.g., emphysema, bronchitis, asthma attacks)
- Restrictive conditions (e.g., fibrosis, sarcoidosis, alveolar damage, pleural effusion)
- Vascular diseases (e.g., pulmonary edema, pulmonary embolism, pulmonary hypertension)
- Infectious, environmental and other "diseases" (e.g., pneumonia, tuberculosis, asbestosis, particulate pollutants):



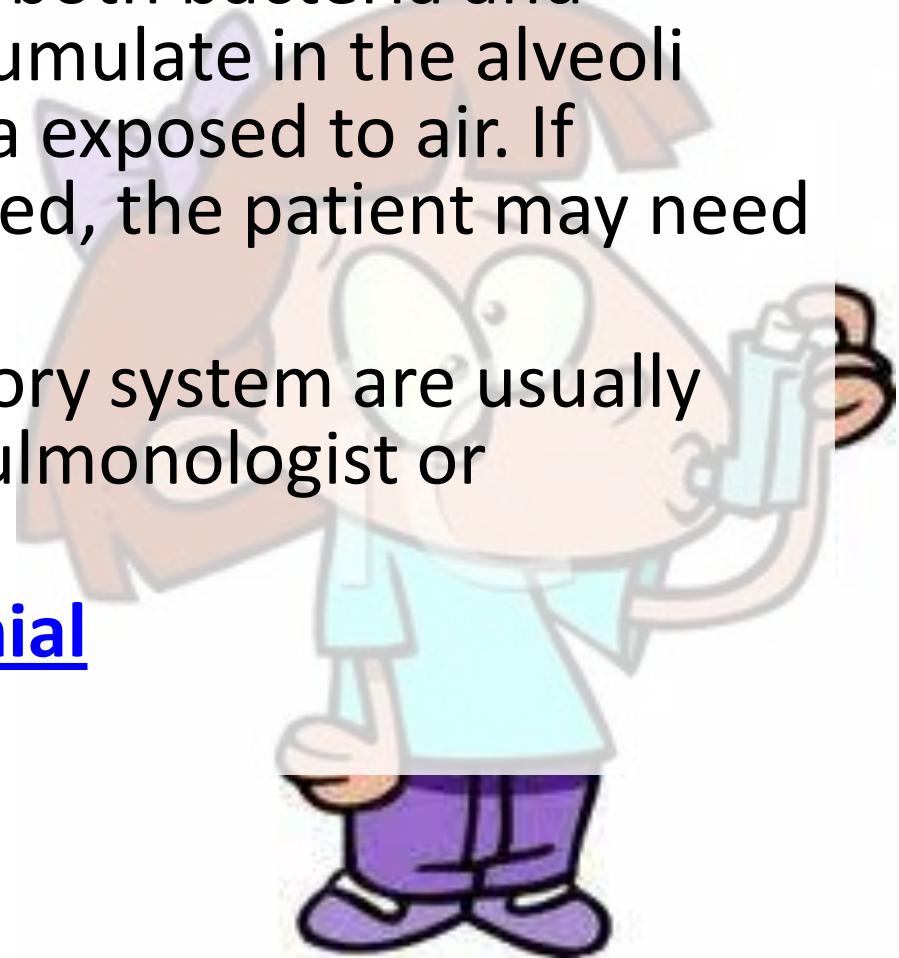
- Coughing is of major importance, as it is the body's main method to remove dust, mucus, saliva, and other debris from the lungs. Inability to cough can lead to infection. Deep breathing exercises may help keep finer structures of the lungs clear from particulate matter, etc.



- The respiratory tract is constantly exposed to microbes due to the extensive surface area, which is why the respiratory system includes many mechanisms to defend itself and prevent pathogens from entering the body.
- **Common Respiratory Disorders Include:**
- **Chronic Obstructive Pulmonary Disease (COPD)** - Irritation of the lungs can lead to asthma, emphysema, and chronic bronchitis and people can develop two or three of these together.
- **Chronic Bronchitis** - Any irritant reaching the bronchi and bronchioles will stimulate an increased secretion of mucus. In chronic bronchitis the air passages become clogged with mucus, and this leads to a persistent cough.
- **Emphysema** - The delicate walls of the alveoli break down, reducing the gas exchange area of the lungs. The condition develops slowly and is seldom a direct cause of death



- **Asthma** - Periodic constriction of the bronchi and bronchioles makes it more difficult to breathe.
- **Pneumonia** - An infection of the alveoli. It can be caused by many kinds of both bacteria and viruses. Tissue fluids accumulate in the alveoli reducing the surface area exposed to air. If enough alveoli are affected, the patient may need supplemental oxygen.
- Disorders of the respiratory system are usually treated internally by a pulmonologist or respiratory physician.
- **Asthma Allergies Bronchial**



References

- <http://www.takdangaralin.com/science/life-science/respiratory-system/parts-of-the-respiratory-system/>
- <http://www.fi.edu/learn/heart/systems/respiration.html>
- <http://hes.ucfsd.org/gclaypo/repiratorysys.html>
- <http://pakislam.com/1811/why-do-muslims-say-alhamdulillah-when-we-sneeze.html>
- <http://www.psychologytoday.com/blog/brain-sense/201112/do-the-holidays-give-you-the-hiccups>
- <http://betastuffs.blogspot.com/2012/08/a-sneeze-may-function-as-reboot-for-nose.html>
- http://www.merckmanuals.com/home/lung_and_airway_disorders/biology_of_the_lungs_and_airways/exchanging_oxygen_and_carbon_dioxide.html