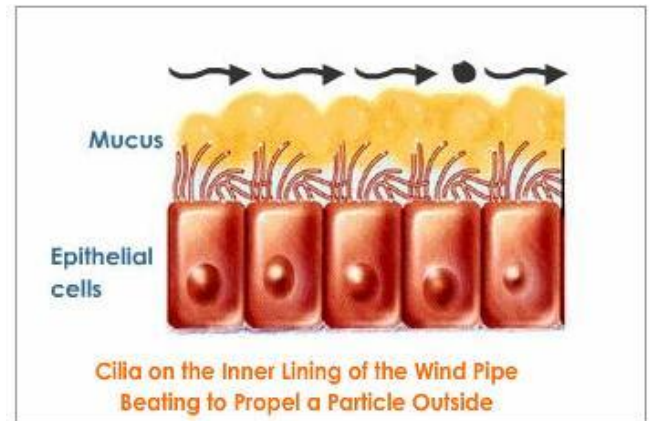


The Inner Lining of the Respiratory Tract

The **respiratory system** is in direct contact with the external environment and is therefore quite vulnerable to infectious organisms and air pollutants present in the air around us. That being said, this system has evolved several **protective mechanisms**.

Small particles known as fine particulates are so tiny that they can penetrate deep into the lungs. Some of these particles contain toxic metals such as mercury, which can cause lung cancer.

Particles that precipitate out of the inhaled air in the nose, the trachea and bronchi are trapped in a layer of **mucus**, a thick slimy secretion produced by **mucus cells** found in the lining of the respiratory tract.



The cells of the inner lining of the respiratory tract also contain **cilia** that beat upward, propelling the mucus containing bacteria and dust particles towards the mouth. Operating day and night, they sweep the mucus towards the oral cavity where it can then be spit out.

Like any other homeostatic processes, the respiratory mucus trap is not invincible. **Sulfur dioxide**, a pollutant found in cigarette smoke and air pollution, temporarily paralyze and may even destroy cilia.



For example, this gas in the smoke of cigarettes will paralyze the cilia for an hour or more, permitting bacteria and toxic particulates to be deposited in the lining of the respiratory tract and even enter the lungs. **Ironically, the cilia of a smoker are paralyzed when they are needed the most!**

Because smoking impairs a natural protective mechanism, it should come as no surprise that smokers suffer more frequent respiratory infections than non-smokers.