

## The Air we Breathe

We go to great lengths to keep the harmful pathogens in our environment out of our bodies. While we may wash our hands and avoid touching a subway pole, we can't stop breathing. We need to breathe 20 times a minute and with each breath, we risk inhaling any number of undesirable microscopic particles floating around in the air. Luckily, our airway epithelial cells (the cells lining our mouth, nose, throat, and lungs) are there to defend us. These cells have various chemical signals at their disposal to deactivate harmful pathogens right away and if necessary signal a stronger immune response. This response needs to be tightly controlled. If it is too weak then dangerous pathogens can infiltrate the epithelial cells, enter our bodies, and multiply. If the airway epithelia signal an immune response that is too strong, dangerous conditions such as airway obstruction or asthma might occur. This paper by Dr. Iwasaki and colleagues at Yale does a great job of explaining the communication between airway epithelial cells and the rest of the immune system. More importantly, the paper identifies ways in which our airway defenses may be compromised because of cigarette smoking, obesity, cool temperatures, and certain metabolic or hormonal conditions.

