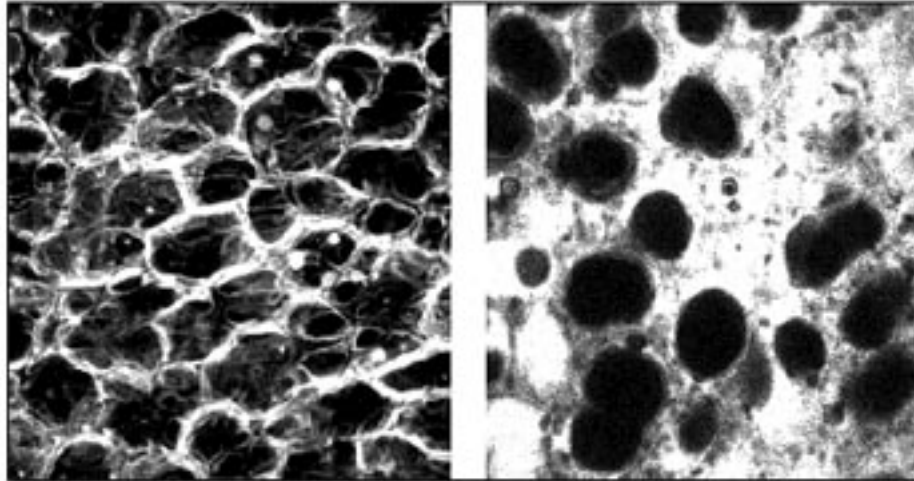


# Respiratory Diseases



Laser confocal images of subpleural alveoli of a normal (left) and an edematous, or flooded (right) rat lung. The edema fluid appears white, the alveolar walls gray and airpockets are black. (Gajic and Lee, unpublished). (Reproduced from the web site of Rolf D Hubmayr, M.D., Mayo Clinic and Foundation, Rochester, MN, with permission.)

The respiratory system plays a vital role in delivering oxygen to the body — fuel for all the body's functions. It also removes carbon dioxide waste, eliminates toxic waste, regulates temperature, and stabilizes blood acid-alkaline balance (pH).

The lungs are the largest part of the respiratory system and have both "respiratory" and "non-respiratory" functions. The respiratory function involves gas exchange — the transfer of oxygen from the air into the blood and the removal of carbon dioxide from the blood. Non-respiratory lung functions are mechanical, biochemical, and physiological. The lungs provide a defense against bacterial, viral and other infectious agents; remove various metabolic waste products; control the flow of water, ions, and large proteins across its cellular structures; and manufacture a variety of essential hormones and chemical agents that have important biological roles.

Respiratory diseases can arise from a number of causes, including inhalation of toxic agents, accidents, and harmful lifestyles, such as smoking. Infections, genetic factors, and anything else that affects lung development, either directly or indirectly, can cause respiratory symptoms.

## Diseases

Alpha-1-antitrypsin deficiency

Asthma

Cystic fibrosis

Lung carcinoma, small cell

## Did you know ...?

The NIH is running trials for many respiratory diseases, including [cystic fibrosis](#) and [asthma](#).