Cystic Fibrosis

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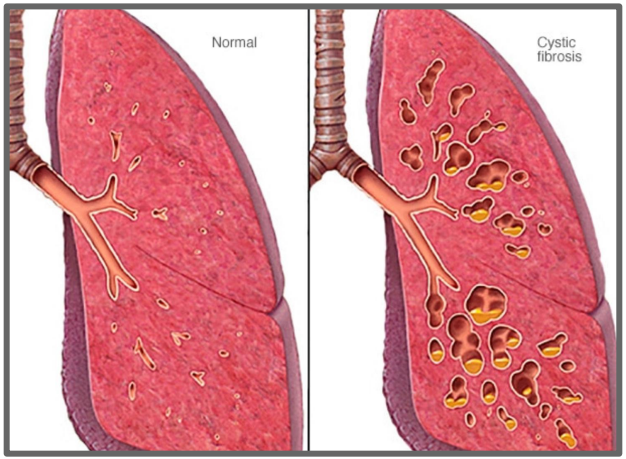
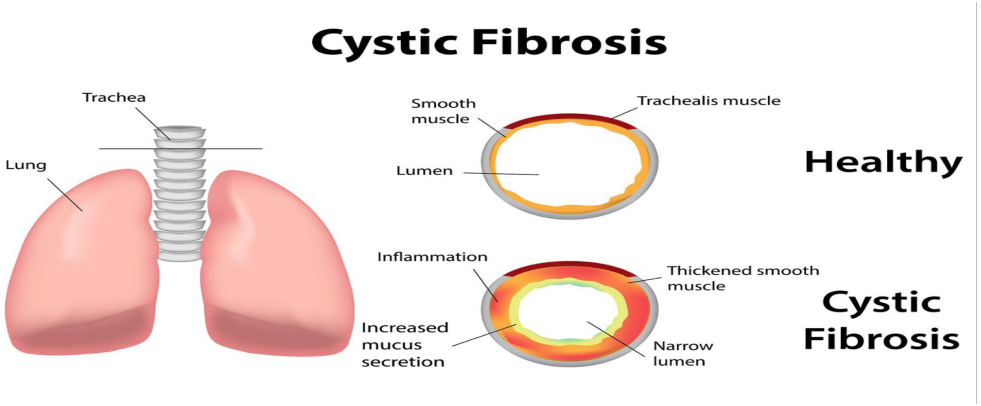
What is cystic fibrosis?

Cystic fibrosis is a genetic condition that causes mucus to be produced in your lungs that block airways. To obtain cystic fibrosis a child must inherit one copy of CFTR from each parent. People who have only one copy of CF do not obtain this disease, they are merely a carrier.



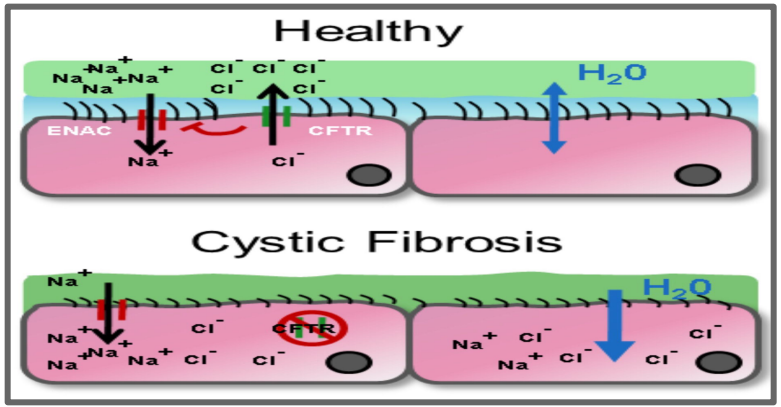
How should the gene and protein function

The CFTR gene provides instructions on how to make the protein called the cystic fibrosis transmembrane conductance regulator. This protein basically acts as a channel across the membrane of cells that produce sweat, mucus, saliva, tears, and digestive enzymes.



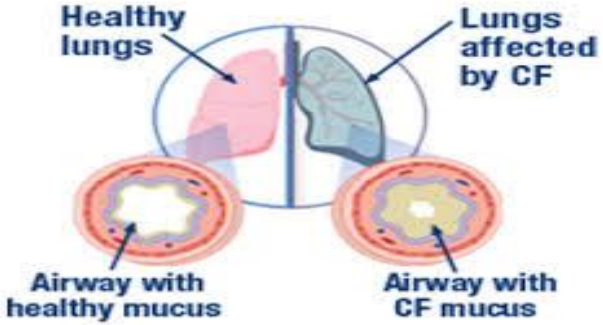
How the genes and proteins function with the disease

Cystic fibrosis occurs when the CFTR gene causes proteins not to be made, or to be made improperly. When this happens, chloride becomes trapped within cells when it isn't supposed to be. When the chloride can't move, water can't be distributed throughout the cells. Because of this, the mucus becomes thick and sticky, and covers the lungs.



Problems in protein production

Cystic fibrosis is a genetic disease, and therefore it has to be inherited from your parents. Every child inherits two CFTR genes from their parents, but when a child inherits two faulty CFTR genes they'll have cystic fibrosis. Thousands of known defects can cause the fault in the gene, and the defect can relate to the severity of the CF.



How does dna make proteins normally and abnormally

Cystic fibrosis comes from a malfunctioning or nonexistent CFTR gene failing to produce proteins that allow for chloride to move through the cell. Scientists have found over 1,700 different mutations that can cause CF to form. When the CFTR gene isn't created properly the gene can send signals to stop protein building prematurely, or even a simple replacement of one letter to another in its bases can throw off proper production entirely.