Wisconsin's Alpha-1 Support Group Newsletter
all for 1 for all
THE ALPHA PACK NEWS
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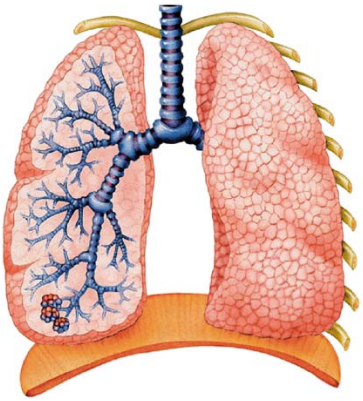
Lungs Give Life

by Noreen K James

Our lungs are miraculous organs. They feed our body with oxygen, the body's life-sustaining gas. They pull air in when we inhale, then extract the oxygen and pass it into the bloodstream, where it is rushed off to the tissues and organs that require them to function. All our organs are made up of cells. When a cell doesn't receive oxygen for it to make energy, it tries to make energy itself. This in turn causes acidosis and they inadvertently poison themselves. In the long run, the body stops functioning properly because the lungs could not provide enough oxygen in the bloodstream to the organs' cells.

Within healthy lungs, the mucus-lined bronchi split like the branches of a tree into tens of thousands of even smaller tubes (**bronchioles**), which connect to tiny sacs called **alveoli**. The average adult's lungs contain about 600 million of these spongy, air-filled structures. There are enough alveoli in just one lung to cover an area the size of a tennis court.



The diaphragm, the sheet of muscles between the chest and abdomen, does the actual job of breathing. These muscles contract when we breathe in, expanding the lungs and drawing in air. We breathe out simply by relaxing the diaphragm; the lungs deflate like balloons.

Lung damage by Alpha-1

Lungs are delicate organs and vulnerable to a range of illnesses. The most common of these in Western countries are **bronchitis** and **emphysema**, which are often caused by smoking. In some cases, emphysema is caused by **Alpha-1 Antitrypsin Deficiency** (A1AD) a genetic condition, which occurs 1-2500. When infected, tubes inside the lung become chronically inflamed, producing excess mucus. Overtime, damaged alveoli can distend to form exceptionally large air spaces called bulla that hinder breathing and trap air. Bullous tissue is thin, thus increasing the chance that they could rupture and cause the lung to collapse. The treatment to reduce inflammation is through prescribed medications such as bronchodilators or prednisone. However, emphysema is irreversible, thus leaving surgery and transplant as the few options left in advanced cases.

To prevent lung disease follow these tips:

- If you don't smoke, don't start!
- Avoid secondhand smoke.
- Do your part to control outdoor air pollution and keep the air we breathe clean.
- Learn about indoor air pollution and what you can do to reduce your exposure.
- Wear a protective mask when you work with chemicals and report unsafe working conditions.
- Get vaccinated (flu and pneumonia shot) to prevent respiratory infection.
- Wash your hands to avoid germs and illnesses.
- Get tested if you think you are at risk of Alpha-1.
- Get moving! Regular physical exercise is good for your whole body and especially your lungs.
- Visit www.alphaone.org for more Alpha-1 info.

November is Alpha-1 Awareness Month

Diagnosis of Alpha-1 can be done through a blood test. The World Health Organization (WHO), the American Thoracic Society (ATS), the European Respiratory Society (ERS), and the Alpha-1 Foundation's Medical and Scientific Advisory Committee (MASAC) recommend that individuals diagnosed with the following diseases should be tested for Alpha-1:

1. Chronic Obstructive Pulmonary Disease (COPD)
2. Emphysema
3. Bronchiectasis
4. Chronic bronchitis
5. Asthma that is incompletely reversible after aggressive treatment
6. Chronic liver disease
7. Unexplained liver disease in infants and children
8. The skin disease panniculitis

Got Alpha? Get Tested!

With the help of local physicians, Wisconsin's Alpha Pack now offers confidential and free testing for the genetic condition Alpha-1 Antitrypsin Deficiency by becoming a point-of-service screening site. The test results remain private unless you choose to share it with your family physician. If you are interested in being tested for Alpha-1, please contact our main office to obtain a screening kit at 920-803-2668 or info@thealphapack.org . Or attend a public screening offered on the dates and locations below. Results from the blood test take about one month to return.

Mark Your Calendar for Alpha-1 Screenings

Nov 14...10:00a-2p **St Nicholas**, Sheboygan, Christopher Room
Nov 17….6:30p-8p **Aurora Baycare**, Green Bay, Arbor Room
~Free and Confidential~

Stem Cells May Provide Alternative to Lung Transplants

Belgian scientists who used embryonic stem cells to create lung tissue say this technique could provide an alternative to lung transplants for patients with chronic obstructive pulmonary disease (COPD) and cystic fibrosis.

This is the first time it's been shown that embryonic stem cells can be converted into airway epithelial-like cells without the use of specific growth factors or embryoid body formation. The researchers achieved this using an "air-liquid interface" system that mimics the conditions found in an adult trachea.

"Efforts will be made to further improve this novel culture protocol, trying to increase the number of differentiated cells or to guide the differentiation into particular cell types by adding certain growth factors to this system," Lindsey Van Haute, of the department of embryology and genetics at the Free University of Brussels, said in a news release.

She and her colleagues may start with fibroblast growth factors, which play an important role in lung development.

Human embryonic stem cells "have the capacity to differentiate in vivo and in vitro into cells from all three germ lineages, making them particularly important in developmental biology, regenerative medicine and in vitro pharmacological studies," Van Haute said.

The study published Nov 5, 2009 - *Respiratory Research*.

Southern Shores Region Mtg Minutes

Southern Shores Region October meeting welcomed Dr. Anne Lent who spoke on *Allergy and Immunology*. Allergists treat ailments such as hay fever, asthma, eczema, hives and other diseases of compromised immune systems. The immune system is a network of cells, tissues and organs that work together to defend the body against infections. For further questions about allergy and immunology, contact Dr Lent at **Madison Medical Associates** (414) 298-7100. CSL Behring (manufacturer for Zemaira®) hosted food and refreshments. The next meeting (weather permitting) will be on Thurs., April 8th, 2010. For details, contact Jaime Freitag (262) 797-0620 southernshores@thealphapack.org

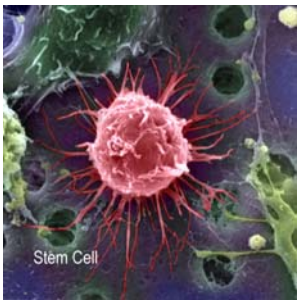
Central Fields Region Mtg Minutes

The next meeting (weather permitting) will be held at Marshfield Clinic, East Wing, Room 4 (lower level), on Thurs., May 6th 2010 from 3-7pm. For details, contact Dawn Smith at (715) 536-8145 or centralfields@thealphapack.org

Green Bay Region Mtg Minutes

The next meeting (weather permitting) will be on Tues., May 18th, 2010 at Aurora BayCare Hospital (Green Bay, WI) in the Arbor Room (near cafeteria) from 6:30-8:30pm. For details, contact Chelsea Krueger at (920) 265-3058 or greenbay@thealphapack.org

Making Stem Cells from Skin



Embryonic stem cells, which can be coaxed to turn into any kind of cell type, have been hailed as a 21st-century panacea. But they are fraught with ethical problems because they come from embryos. In November 2007, two teams of scientists turned ordinary adult skin cells into pluripotent stem cells—capable of becoming any kind of tissue—a feat that could solve the ethical problem forever. Here's how one group did it.

1. The scientists, led by Shinya Yamanaka of Kyoto University in Japan, identified 24 genes that are active in embryonic stem cells but not in adult cells. They deposited combinations of the 24 genes into the DNA of adult mouse skin cells.

2. They found that just four of the original 24 genes will turn adult cells into stem cells. The scientists aren't quite sure what the genes do. They think two of the genes code for proteins that encourage further protein synthesis.

3. The scientists repeated their experiment on human adult skin cells using the same four genes as in the mouse model. The human cells also turned into stem cells and then differentiated into brain and heart cells.

Source: Melinda Wenner, *Popular Science* www.popsci.com Sept 2008

Northern Lights Region Mtg Minutes

The next meeting (weather permitting) will be held at the Burnett County Government Center (Siren, WI) on Thurs., May 20th, 2010. For details, contact Judy Parker at (715) 653-2666 or northernlights@thealphapack.org

Alpha-1 Awareness T-Shirts

Awareness t-shirts for children and adults are available through the Alpha Pack. They feature Alpha-1 information on the back. These are limited editions for 2009. Adult's $15 (Small to XXL). Children's $12 (2T to XL18/20). They are available plus $2 shipping and handling. Contact our office through the information found in the footer below.