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New Stem Cells Seen to Restore Lung Air Sacs After Injury, May Help in COPD Research

MARCH 6, 2018

BY ALICE MELAO IN NEWS.

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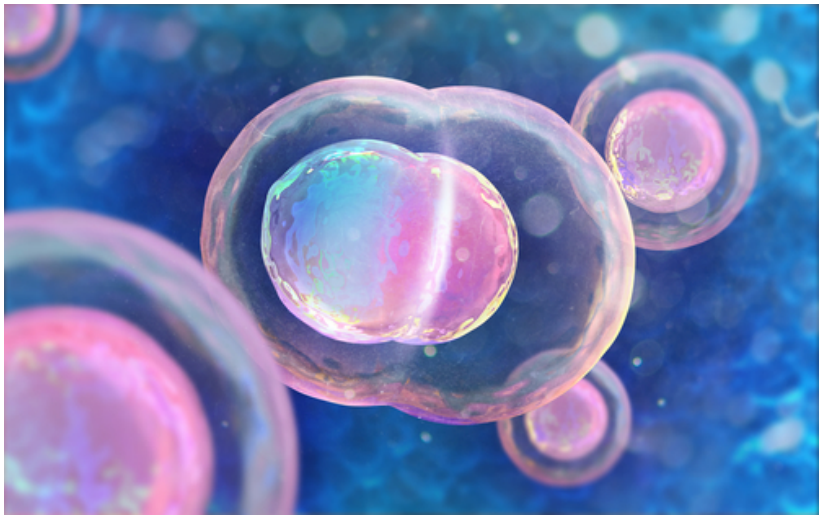

A new subset of stem cells was found to expand quickly after lung injury and to specifically restore the tissues of air sacs, called alveoli, according to a study published in the journal *Nature*.

This finding can represent a new therapeutic option for treatments targeting pulmonary conditions such as chronic obstructive pulmonary disease (COPD).

The study was led by researchers at Penn's Perelman School of Medicine and the Children's Hospital of Philadelphia (CHOP). It is titled "Regeneration of the lung alveolus by an evolutionarily conserved epithelial progenitor."


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The team identified what they called alveolar epithelial progenitor (AEP) cells in the lungs of mice. After tracking these cells for a few months they found that this cell population is very stable during adulthood.

"One of the most important places to better understand lung regeneration is the alveoli," Edward E. Morrisey, PhD, scientific director of Penn's Institute for Regenerative Medicine and the study's senior author, said in a press release.

"To better understand these delicate structures, we have been mapping the different types of cells within the alveoli. … understanding cell-cell interactions should help us discover new players and molecular pathways to target for future therapies," Morrisey added,

To evaluate the role of these cells in lung injury, the researchers used a mouse model of the flu virus. The infection triggered the expansion of AEPs, which transformed into mature cells that regenerated the damaged alveoli.

"These cells sits quietly, but poised, in the lung until an injury activates them to proliferate and

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differentiate," said David B. Frank, an MD and PhD, pediatric cardiologist at CHOP and co-first author of the study. "If we can learn to manipulate the biological signals in this process, we may be able to regenerate lung tissue in patients."

Next the team isolated human AEP and found they had cellular markers that identified them as progenitor of alveoli cells, similar to what they found in mice.

In fact, an analysis of the gene pattern of the human and mouse AEP revealed they shared 35.6% of the enriched genes, including those that identified and regulated them as progenitor cells.

This finding suggests that these cells are biologically important and are conserved between species. In addition, it confirms that studying AEP in mice can provide valuable information about their behavior and role in human biology and disease.

"We now understand how the alveolar epithelial niche regenerates following injury," Frank said. "With this information, we may able to design pathway-specific modifiers


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or cell-based therapies to treat lung damage."

Given that the respiratory and the vascular system go hand-in-hand, the team is planning to explore potential contributors for blood vessel regeneration, as well.

"If we can eventually improve blood vessels along with healing damaged airways in our patients, we could significantly advance treatments," Frank said.

TAGGED AEP, ALVEOLAR EPITHELIAL PROGENITOR, ALVEOLI, PULMONARY DISEASES, REGENERATION, STEM CELLS.

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9 comments

Esther Van Fleet says:

March 8, 2018 at 6:17 PM

I had heard some things about stem cell treatment. Is it being used on patients or volunteers. I have continued to get worse and can not do the things I used to do.
Esther Van Fleet.

Reply

GySgt Lew Souder says:

March 15, 2018 at 9:00 AM

Hi,
My wife has COPD. I would appreciate any new findings that you find about Stem-Cell research. It would greatly appreciated….

Thanks,

GySgt. Lew Souder, USMC/Ret.
439 Arbor St.
Sebastian, FL 32958

Reply

GySgt Lew Souder says: March 15, 2018 at 9:05 AM

They have found cures for a lot of Cancers, why not COPD???

Reply

Tony A Volpi says: June 30, 2018 at 4:56 AM

I have heard they are actually doing stem cell therapy procedures in Thailand and India. I am looking to find where they are doing these procedures as my copd seems to be progressing to the point that I fear by the time the U.S. begin doing these procedures that my lungs will reach a point beyond repair if its not already to that pointI'm only 61 yrs. old and I actually feel healthy in every regard with the exception of my lungs. Please let me know where they taking a more aggressive action in the use of stem cell therapy

procedures and how I could go about contacting any place, anywhere to have this procedure started. I look forward to any response in regard to my question. Thany you for your time

Reply

Mr.Willx says: July 23, 2018 at 6:12 PM

Tongji University in China has been doing stem cell research with very promising results. They've done 80 human stem cell transplants as part of their research. You could try contacting one of the companies or Doctors in the following article:

https://medicalxpress.com/news/2018-02-lung-stem-cell-

transplantation-clinical.html

It is really disappointing how the US always drags its feet with this kind of life saving research. The article I linked to is actually from a month before this article came out.

Good luck!

Reply

Vivian Ayen says: October 21, 2018 at 10:36 AM

I spoke to a stem cell Hosp. In Pheonix and they do Lung cell there. You might

call them it is not paid for by insuranc e and it is pricey

Reply

Kathy Brasher says:

July 23, 2018 at 3:23 PM

Need facts on end stage COPD w/CHF.Was told stem cell procedure has given many patients back a quality of life.Need facts on cities that perform this, cost, ect.Know for a fact its being done in Hot Springs, Ark.Please give info ASAP.Thank you

Reply

michele says:

August 3, 2018 at 3:23 PM

Any new info. on stem cell treatments ?

Reply

Edwardo Aguilar says:

August 29, 2018 at 5:26 AM

the lung institute, phoenix az,..$8-10,000

Reply

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