

## Artificial lung "breathes" in rats: study

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WASHINGTON, July 13, 2010 (Reuters) — U.S. researchers have created a primitive artificial lung that rats used to breathe for several hours and said on Tuesday it may be a step in the development of new organs grown from a patient's own cells.

The finding, reported in the journal *Nature Medicine*, is the second in a month from researchers seeking ways to regenerate lungs from ordinary cells.

In the latest study, Harald Ott and colleagues at Massachusetts General Hospital and Harvard Medical School in Boston removed the cells from rat lungs to leave a scaffolding or matrix.

They soaked these in a bioreactor along with several types of human lung cells, creating pressures to simulate the pressure inside a body to make the lung workable and flexible.

The cells took up residence and grew into different tissue types seen in a lung, Ott's team reported.

When transplanted into rats, they worked for about six hours, although imperfectly.

The researchers said it may be possible to try the experiment with more immature stem cells, the body's master cells. These could include embryonic stem cells, which can mature into any cell type in the body, or induced pluripotent stem cells -- ordinary cells with genes added to make them behave like flexible stem cells.

The potential market is large and dozens of companies are launching into regenerative medicine, as are academic labs like those at Harvard.

"Nearly 25 million people live with chronic obstructive pulmonary disease and approximately 120,000 patients die from end-stage lung disease annually in the United States alone," Ott's team wrote.

"Lung transplantation remains the only definitive treatment for end-stage lung disease. As with other organs, however, the supply of donor lungs is limited. In 2005, only one out of four patients waiting for a lung underwent transplantation," they added, citing the United Network of Organ Sharing.

Last month, a team at Yale University in Connecticut implanted engineered lung tissue into rats that helped the animals breathe for two hours.

(Editing by Todd Eastham)