

Physician-scientist proves stem cells heal lungs of newborn animals

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Dr. Bernard Thébaud lives in two very different worlds. As a specialist in the Stollery Children's Hospital's Neonatal Intensive Care Unit at the Royal Alexandra Hospital, he cares for tiny babies, many of whom struggle for breath after being born weeks before they are due. Across town, in his laboratory in the Faculty of Medicine & Dentistry at the University of Alberta, Dr. Thébaud dons a lab coat and peers into a microscope to examine the precise effect of stem cells on the lungs.

Today, with his scientific research being published in the *American Journal of Respiratory and Critical Care Medicine*, Dr. Thébaud has made a significant leap to bridge the gap between those two worlds.

An international team of scientists led by Dr. Thébaud has demonstrated for the first time that stem cells protect and repair the lungs of newborn rats. "The really exciting thing that we discovered was that stem cells are like little factories, pumping out healing factors," says Dr. Thébaud, an Alberta Heritage Foundation for Medical Research Clinical Scholar. "That healing liquid seems to boost the power of the healthy lung cells and helps them to repair the lungs."

In this study, Thébaud's team simulated the conditions of prematurity - giving the newborn rats oxygen. The scientists then took stem cells, derived from bone marrow, and injected them into the rats' airways. Two weeks later, the rats treated with stem cells were able to run twice as far, and had better survival rates. When Thébaud's team looked at the lungs, they found the stem cells had repaired the lungs, and prevented

further damage.

"I want to congratulate Dr. Thébaud and his team. This research offers real hope for a new treatment for babies with chronic [lung disease](#)," says Dr. Roberta Ballard, professor of pediatrics, University of California, San Francisco. "In a few short years, I anticipate we will be able to take these findings and begin clinical trials with premature babies."

"The dilemma we face with these tiny babies is a serious one. When they are born too early, they simply cannot breathe on their own. To save the babies' lives, we put them on a ventilator and give them oxygen, leaving many of them with chronic lung disease," says Dr. Thébaud. "Before the next decade is out I want to put a stop to this devastating disease."

The research team includes physicians and scientists from Edmonton, Alberta, Tours, France, Chicago, Illinois, and Montreal, Quebec.

The team is now investigating the long-term safety of using stem cells as a lung therapy. The scientists are examining rats at 3 months, and 6 months after treatment, studying the lungs, and checking their organs to rule out any risk of cancer. Dr. Thébaud's team is also exploring whether human cord blood is a better option than bone marrow stem cells in treating [lung](#) disease.

"We are also studying closely the healing liquid produced by the stem cells," says Dr. Thébaud. "If that liquid can be used on its own to grow and repair the lungs, that might make the injection of [stem cells](#) unnecessary."

Source: Alberta Heritage Foundation for Medical Research

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