

MC3's BioLung

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Leading the research team on the BioLung, Robert Bartlett, MD, has been known for developing many of the current breathing machines that are used today. His current project is a difficult task, but is leading the way to a hopeful future for those in need of lungs.

According to the National Heart, Lung, and Blood Institute, one-third of the 150,000 Americans that experience lung failure every year die waiting for a lung donor. BioLung isn't meant to replace the lung, but to instead lengthen the life-time of an individual a couple of months in hopes of finding him or her a donor and to allow them to live relatively normal lives in the mean time.

Many machines used today, like the Extra Corporeal Membrane Oxygenation (ECMO), are not meant for long-term use and they keep patients bedridden which can potentially make them weaker for surgery and slow recovery time and rehabilitation. The BioLung will finally change all this by the way in which it was designed.

The device is designed to connect to the pulmonary artery to work off of the pumping action of the heart and to perform the necessary gas exchange that a normal functioning lung would by using tiny hollow fibers. The great feature about this apparatus though is how its size is relatively the same size as a soda can which allows for the BioLung to be portable and implanted either in the body or outside of the body. Whether the device is placed in the body or outside of it all depends on how long the patient may need the BioLung.

Researchers say that the artificial lung could remain in place up to 5 years depending on how long it takes a donor's lungs to function normally. In cases such as this, doctors may implant the device directly into the chest wall.

This breakthrough that Bartlett and other researchers have been working on for the past 12 years is undergoing final preparations to begin clinical trials in a year or two. The National Institutes of Health (NIH) has been funding Bartlett's development of artificial organs since 1971 and has granted Bartlett \$5 million a few years ago to fund the project leading up to but not including the clinical trials. The only trials that have been performed using this device is on sheep. According to experimental results, out of five days, 6 out of 8 sheep survived using the BioLung compared to 1 of 6 on an external breathing machine. For the thirty-day trial only 5 of the 30 survived using the BioLung. Five out of thirty doesn't seem like good odds, but compared to other machines it's a step in the right direction. From such trials, Bartlett and researchers have been looking through their data and determining what problems need to be assessed in order to prolong this lifespan.

Within a few years this life-saving product should satisfy the Food and Drug Administration and be reproduced commercially.

