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April 24, 2008

Embryonic stem cells coaxed into key heart cells

BY WILL DUNHAM

WASHINGTON (Reuters) - Scientists say they have coaxed human embryonic stem cells into becoming three of the major cell types in the human heart, and they improved cardiac function when transplanted into mice.

The findings, published in the journal Nature on Wednesday, showed that scientists can efficiently make different kinds of human heart cells for use in basic and clinical research.

The researchers said that in the short term, they could be used to test how heart cells respond to different drugs. In the long term, the cells may be useful in developing new ways to repair damaged hearts following a heart attack.

The study marks the latest step toward possibly using embryonic stem cells -- master cells that can transform into all types of cells in the body -- to treat disease in people.

Canadian, U.S. and British scientists said they succeeded in the laboratory in directing human embryonic stem cells to turn into the most immature possible heart cell in human development. This cell is called a heart progenitor cell.

The scientists then encouraged these cells to develop into three types of human heart cells: cardiomyocytes, which are cardiac muscle cells that contract with the beating heart; and two other types called endothelial cells and vascular smooth muscle cells that make the blood vessels in the heart.

When the scientists transplanted the three types into mice with simulated heart disease, their heart function was improved, offering hope to researchers who may want to develop this technique for treating human hearts.

"We're not the first group to show that you can make heart cells from embryonic stem cells. That's been done before," Gordon Keller of the McEwen Centre for Regenerative Medicine in Toronto, who led the research, said in a telephone interview.

"So what's different here? We've taken more of a step-wise approach to following the progression of how these embryonic stem cells move through development to make the first type of heart cells," Keller said.