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Scientists Create Stem Cells That Don't Age



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By [Catherine Donaldson-Evans](#) Oct 4th 2010 1:16PM



Sandy Huffaker, Getty Images

Scientists have developed adult stem cells that can continue to grow in a laboratory culture without aging or losing their ability to multiply.

Biomedical researchers at the University of Buffalo say their discovery of the new cell line, which they call "MSC Universal," is revolutionary and could expedite inexpensive treatments for various illnesses, including diabetes, [heart disease](#), immune disorders and neurodegenerative conditions.

Part of the benefit of the research, says lead author Techung Lee, is that isolating stem cells for treatments is normally very costly -- which can be problematic when it comes to growing stem cells for clinical use.

"If you want to make stem cell therapies feasible, affordable and reproducible, we know you have to overcome a few hurdles," Lee, an associate professor of biochemistry and biomedical engineering at Buffalo's School of Medicine and Biomedical Sciences, [said in a statement](#). "The cells we have engineered grow continuously in the laboratory, which brings down the price of treatments."

Lee and his team created the new stem cells by changing the genetics of existing ones found in [bone marrow](#) known as mesenchymal stem cells.

The mesenchymal cells, which can morph into others found in bone, muscle, fat and cartilage, normally have a fairly short life span once they're extracted and put into lab cultures.

That means they have to continuously be refreshed and replaced with new mesenchymal cells from bone marrow donors in order to be used for research and treatment. The process is not only time-consuming, but pricey and unreliable, as cell samples taken from different donors can act differently and have varying degrees of success.



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The genetically altered stem cells engineered by the Buffalo researchers have shown no signs of aging and seem to work just as normal mesenchymal stem cells do. They also didn't form tumors during animal testing, the scientists said.

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Dr. Hillard M. Lazarus, a stem cell expert at University Hospitals Case Medical Center, said that while he and his colleagues have worked with mesenchymal stem cells, the Buffalo research is important because it will "make them grow longer in culture than they already can."

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"Once the stem cell starts making more cells that can be used in the body, it loses the ability to continue being the goose that lays an indefinite number of golden eggs," Lazarus, the disease team leader of Cellular Therapy Integrated Services, told AOL Health. "This is an advance because it gives people an opportunity to get more cells and more bang for the buck."

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The latest findings, he said, helps stem cells continue doing what they do best: produce other cells that are useful treatments for illnesses.

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"A stem cell's job is to sit there and give rise to other cells," he said. "Once you put the cell in a culture and allow it to mature, it stops being able to do that. [This development] has preserved the ability of the cell to advance."

Stem cells are generally used to repair damaged tissue or grow new, healthy tissue in its place. Lee said his cells may be able to be injected into skeletal muscle rather than directly into the malfunctioning organ, which he predicts will be a less invasive procedure.

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