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Adult stem cells that do not age created

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University at Buffalo researchers have engineered adult stem cells that do not age, which means that scientists can grow them continuously in culture.

The discovery could speed development of cost-effective treatments for diseases including heart disease, diabetes, immune disorders and neurodegenerative diseases.

To create the new cell lines - named 'MSC Universal' - the team genetically altered mesenchymal stem cells, which are found in bone marrow and can differentiate into cell types including bone, cartilage, muscle, fat, and beta-pancreatic islet cells.

Mesenchymal stem cells have a limited life span in laboratory cultures, so scientists and doctors who use the cells in research and treatments must continuously obtain fresh samples from bone marrow donors, a process both expensive and time-consuming.

The age-less stem cells appear to function as regular mesenchymal stem cells do - including by conferring therapeutic benefits in an animal study of heart disease.

"In the case of stem cell treatments, isolating stem cells is very expensive. The cells we have engineered grow continuously in the laboratory, which brings down the price of treatments," said Techung Lee, associate professor of biochemistry and biomedical engineering in the School of Medicine and Biomedical Sciences and the School of Engineering and Applied Sciences.

Stem cells help regenerate or repair damaged tissues, primarily by releasing growth factors that encourage existing cells in the human body to function and grow.

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