STEM CELL REPORT

Regenerating whole limbs

The first steps toward developing “bioartificial” replacement limbs that are suitable for transplantation have reportedly been taken by a team at Massachusetts General Hospital in Boston.

People can lose limbs for many reasons [1] and afterward they often have a prosthetic limb fitted. Prosthetic limbs have greatly advanced but they still have many limitations. Some patients, over the past 20 years, have received hand transplants from donors [2], but this procedure means they need long term treatment with medicines to prevent them from rejecting the new hand. This problem could be solved by using the patient’s own stem cells to regenerate the tissue for a new limb - rather than rely on a donor. The new procedure would also need a matrix or scaffold on which the new tissue could grow. Dr. Ott from the team at Massachusetts says: “Building limbs requires a specific supporting structure called the matrix. We have shown that we can maintain the matrix of all of these tissues in their natural relationships to each other.” However, the researchers still face many challenges such as the need to re-grow nerves of a regenerated limb into nervous system of the amputee.

Next, the team will attempt muscle regeneration using human cells, before expanding the process to human bone, cartilage and connective tissue.

(http://www.medicalnewstoday.com/articles/294850.php)

Image: Dr. Bernhard Jank/Ott Laboratory

[1] http://www.nhs.uk/conditions/amputation/Pages/Introduction.aspx
[2] http://consumer.healthday.com/infectious-disease-information-21/misc-infections-news-411/doctors-perform-double-hand-transplant-in-a-child-701755.html

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