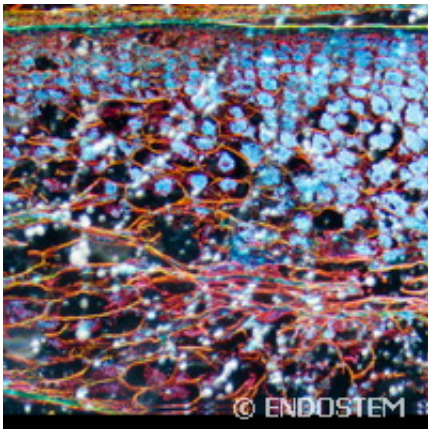


Progress in stem cell research could advance Muscular Dystrophy treatment

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Credit: Endostem

A large scale scientific collaboration led by France's Pierre and Marie Curie University and national institute of health and medical research has generated significant advances in treatment for muscular dystrophies by targeting muscle stem cells.

Muscular dystrophy is a neurological disorder that progressively leads to skeletal [muscle](#) weakness and the death of muscle cells and [tissue](#). While clinical trials of new therapeutics are progressing for treating neurological diseases, scientific researchers working jointly under the EU-financed ENDOSTEM project investigated cardiac stem cell therapy as a tool for efficient [muscle tissue](#) repair and regeneration.

ENDOSTEM research focuses on [cardiac muscle](#) stem cells as the cardiac related effects of [muscular dystrophy](#) weaken the heart, preventing the cardiac muscle from pumping blood efficiently. Their findings represent critical and pivotal insights for muscular diseases and more common cardiac related diseases, where stem cell activation, scarring and fibrosis and immune modulation are critical for the restoration of tissue functionality.

The team identified endogenous cardiac stem cells as a means to stimulate repair and regenerate damaged heart tissue following myocardial damage which can cause acute heart failure. Following damage, muscle tissue is infiltrated by a collection of immune cells whose interplay protect against foreign infection and then stimulate [tissue repair](#). In larger tissue damage, the body also has the mechanism of filling the 'gap' with scar tissue to maintain integrity, but not functionality. By understanding and modulating this environment, ENDOSTEM researchers sought to maintain tissue protection, with the additional aim to slow scarring and permit restoration of tissue functionality.

A key issue that this project addresses is the tissue environment in which endogenous [stem cells](#) are activated. Muscle degeneration and fibrosis can lead to altered immune responses which eventually negatively affect stem cell functions.

The project team will develop novel strategies for effective drug delivery to the cardiac muscle with molecules that can be used to therapeutically target the heart and neighbouring vascular, inflammatory and fibrotic cell types. The researchers hope this will lead to more effective approaches to muscle regenerative medicine and to novel cures for degenerative diseases including atherosclerosis, vascular damage in diabetes and in peripheral vascular disease.

ENOSTEM's research has been published in several scientific journals including *Cell*, *Cell Metabolism*, *Development*, and *Nature*. The project received EU funds totalling EUR 11 997 580 and is due for completion in December 2014.

More information: www.endostem.eu/

Provided by CORDIS

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