Fresh hope for muscular dystrophy

Rome. Italian scientists have developed a new cellular treatment that provides hope for people suffering from advanced forms of muscular dystrophy. The team, led by Giulio Cossu of Milan University, has produced what it calls a kind of 'battering ram' cellular technique. Tested successfully on mice, it works by demolishing obstacles that prevent existing treatments from functioning properly on patients with an advanced stage of the disease. As wasting muscles ages, scarring occurs. This means the tissue hardens and is infiltrated by fat, preventing cellular treatments from reaching their underlying target, the muscle. The 'battering-ram' cells are modified fibroplasts, Cossu explained. Fibroplasts are the cells that usually produce and maintain tissue, providing a structural framework for tissues and aiding wound healing.

The modified cells are injected into muscles and start destroying the fibrous scar tissue that forms on the muscles of sufferers. The 'battering-ram' cells reduce excess collagen deposits produced by scarring and restore a vascular network in the tissue.

Having dealt with the scar tissue, researchers are then able to treat the underlying problem using mesangioblasts, stem cells that help regenerate new muscular fibre by bonding with residual fibres. Although mesangioblast treatments have been very successful in animals at an early stage of the disease, advanced sufferers have previously been unable to benefit because of the fibrous tissue created by scarring. "With this pre-treatment we have managed to get a cellular treatment using mesangioblasts to work on mice at an advanced stage of this disease as well as on young mice," explained Cossu, who also heads the San Raffaele Stem Cell Institute in Milan. However, he stressed that there were still technical problems to resolve and it would take some time before clinical trials of the dual treatment could start on humans.

Details of the new treatment will be reported in the next edition of the international monthly journal Nature Science.