

DESCRIPTION FOR THE GENERAL PUBLIC

Stem cells could be potentially use in the treatment of muscle diseases. However, their use is associated with same limitations. One of them is the ability of transplanted stem cells to home the damaged tissue. This means that these cells injected into the bloodstream do not always “travel” to the regenerating muscle. Moreover, even given intramuscularly , stem cells do not always efficiently migrate within it. The aim of this project is to increase the ability of stem cells to migrate and colonize damaged by injury or disease muscle. Our previous studies have shown that treatment of cells or muscles with cytokine Sdf-1 could direct stem cells into the damaged tissue. As a result, the transplanted cells can more effectively participate in muscle reconstruction. In this project we want to more precise activate stem cells. The research will be conducted on mesenchymal stem cells isolated from bone marrow and skeletal muscles, and muscle specific stem cells i.e. satellite cells. We selected several microRNA molecules that may be involved in stem cell mobilization processes. MicroRNAs are small RNA molecules complementary to mRNA molecules present in the cell. By binding to these they inhibit the expression of the proteins encoded. MicroRNA particles therefore play a very important role in the regulation of gene expression. The aim of this project is to understand the function of these molecules and their application to increase the potential of stem cells to colonize the damaged tissues.