

## Stem Cells and P2 receptors

Human adipose tissue is a source of multipotent stem cells. The stem cell population can be isolated from human lipoaspirates. These cells, called processed lipoaspirate (PLA) cells or adipose tissue-derived stromal cells (ATSC) can, like MSCs, can differentiate towards osteogenic, adipogenic, myogenic and chondrogenic cells *in vitro*.

The **aim of the course** is to establish the isolation of human mesenchymal stem cells and investigate growth and morphology on wafer and their differentiation potential towards, osteoblasts, adipocytes myocytes and insulin-producing cells. Thus the expression of lineage markers will be investigated.

**P2 purinergic receptors**, their signaling and regulation is a relatively new field, that started to grow fast after cloning these receptors. Nucleotides may be secreted from various activated cells (such as platelets or endothelial cells) or released from damaged tissue and necrotic cells. These extracellular nucleotides are ligands for P2 receptors and they activate cells similarly to growth factors/cytokines. P2 receptors can be involved in various immediate and delayed cell responses and their signaling leads to regulation of gene expression, cell proliferation, motility and apoptosis, to name a few. P2 receptors play an important role in angiogenesis.

The **aim of the course** is to clone four purinergic receptors in tag-containing vectors to achieve 5' or 3' GFP-receptor fusion proteins. The result will be controlled by expression of the vector and testing of the biological activity.