Durham, NC – A new study appearing in the current issue of ***STEM CELLS*** *Translational Medicine* indicates that **stem cells harvested from fat** (adipose) are **more potent** than those collected from bone marrow in helping **to modulate the body's immune system** .

The finding could have significant implications in developing new stem-cell-based therapies, as adipose tissue-derived stem cells (AT-SCs) are far more plentiful in the body than those found in bone marrow and can be collected from waste material from liposuction procedures. Stem cells are considered potential therapies for a range of conditions, from enhancing skin graft survival to treating inflammatory bowel disease.

Researchers at the Leiden University Medical Center's Department of Immunohematology and Blood Transfusion in Leiden, The Netherlands, led by Helene Roelofs, Ph.D., conducted the study. They were seeking an alternative to bone marrow for stem cell therapies because of the low number of stem cells available in marrow and also because harvesting them involves an invasive procedure.

"Adipose tissue is an interesting alternative since it contains approximately a 500-fold higher frequency of stem cells and tissue collection is simple," Dr. Roelofs said.

"Moreover," Dr. Melief added, "400,000 liposuctions a year are performed in the U.S. alone, where the aspirated adipose tissue is regarded as waste and could be collected without any additional burden or risk for the donor."

For the study, the team used stem cells collected from the bone marrow and fat tissue of age-matched donors. They compared the cells' ability to regulate the immune system in vitro and found that the two performed similarly, although it took a smaller dose for the AT-SCs to achieve the same effect on the immune cells.

When it came to secreting cytokines — the cell signaling molecules that regulate the immune system — the AT-SCs also outperformed the bone marrow-derived cells.

"This all adds up to make AT-SC a good alternative to bone marrow stem cells for developing new therapies," Dr. Roelofs concluded.

"Cells from bone marrow and from fat were equivalent in terms of their potential to differentiate

into multiple cell types," said Anthony Atala, M.D., editor of STEM CELLS Translational Medicine and director of Wake Forest Institute for Regenerative Medicine. "The fact that the cells from fat tissue seem to be more potent at suppressing the immune system suggest their promise in clinical therapies."