



**Title:** Neurogenic and neuroprotective potential of stem/stromal cells derived from adipose tissue.

**Authors:** Klaudia Radoszkiewicz<sup>1^</sup>, Anna Figiel-Dąbrowska<sup>1^</sup>, Paulina Rybkowska<sup>1</sup>, Natalia E. Krzesniak<sup>2</sup>, Dorota Sulejczak<sup>3</sup> and Anna Sarnowska<sup>1,\*</sup>

<sup>1</sup> Translational Platform for Regenerative Medicine, Mossakowski Medical Research Institute, Polish Academy of Sciences, Warsaw, Poland

<sup>2</sup> Department of Plastic and Reconstructive Surgery, Centre of Postgraduate Medical Education, Prof. W. Orłowski Memorial Hospital, Warsaw, Poland

<sup>3</sup> Department of Experimental Pharmacology, Mossakowski Medical Research Institute, Polish Academy of Sciences, Warsaw, Poland

#### Poster abstract:

Nowadays it is observed, that the number of stem-cell based experimental therapies in neurological injuries and neurodegenerative disorders is massively increasing. Despite the fact that we still do not obtain the strong evidence of mesenchymal stem/stromal cells neurogenic effectiveness in vivo, there may be a need to focus on more appropriate sources that brings more therapeutically promising cells populations. In this study we decided to use dedifferentiated fat cells (DFAT) that are proven to demonstrate more pluripotent abilities in comparison to the standard adipose stromal cells (ASCs). We used ceiling culture to establish DFAT cells and optimize culture conditions with the use of physioxic environment (5% O<sub>2</sub>). We performed neural differentiation and assessed the neurogenic and neuroprotective capability of both DFAT cells and ASCs. Our results showed that DFAT cells may have better abilities to differentiate into oligodendrocytes, astrocytes and neuron- like cells, both in culture supplemented with N21 and in co-culture with oxygen-glucose deprived (OGD) hippocampal organotypic slice culture (OHC) in comparison to ASCs. Moreover, we showed that DFAT cells may have better secretory profile after contact with injured tissue. In this study we proved that there is a need to further study the plasticity of DFAT cells, as probably due to their properties different from ASCs, they may be a promising answer for the treatment of many neurological diseases.

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