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Fund “Nauka” Project № 14010 Resume – Competition-Based Session 2014:

“Expression of some transcriptional factors in progenitor cells during the development of the human pallium”

Project leader: Prof. Vanya Goranova Stefovska, MD, PhD

The goal of the project was to investigate immunohistochemically some of the transcriptional factors (Sox2, Pax6, COUP-TF1, Olig2, Tbr2 and Zbtb20) in progenitor cells in the human cortex with a view of their role during the fetal development. These factors are of crucial significance for the correct structural arrangement and function of the cortical layers. If there occur disturbances in the cellular organization of the brain, this reflects into various disorders leading to serious neurological and psychiatric conditions. The obtained funds were mainly used for buying a fluorescence filter set “Alexa 647” for research motorized microscope Zeiss and 3 primary antibodies. Specimens of human fetal brains after spontaneous abortions at the age of 12 to 28 gestational weeks were taken from Varna Hospital of Obstetrics and Gynecology ”Prof. Dr. Dimitar Stamatov’’. Fluorescence stainings of the histological sections were used for microscopic immunohistochemical qualitative analysis by Axio Imager.72 Zeiss. A large number of digital images were taken from selective zones of the telencephalon. Statistical evaluation was performed on the transcriptional factors labeled cells. The results obtained were subjected to analysis related to various significant morpho-functional aspects of neural stem and progenitor cells in the human telencephalon during the fetal period (location, distribution, density, dynamics, migration, arrangement in layers etc.).

In June 2015, some of the results were presented at the XXII National Congress of the Bulgarian Anatomical Society with International Participation in Plovdiv in a scientific report, awarded first prize:

1. Angelova M, Pavlov S, Mihaleva V, Goranova V, Tonchev A. Rostro-caudal gradient in the expression of transcriptional factor Sox2 in the fetal human brain. *XXIInd National Congress of the Bulgarian Anatomical Society with International Participation, 05-07.06.2015, Plovdiv, Bulgaria.*

Two scientific papers on the project topic were published:

1. Angelova M, Minkov R, Goranova V, Pavlov S, Michaleva V, Tonchev AB (2015) Expression of transcriptional factor COUP-TF1 (NR2F1) in developing occipital cortex in humans. *Scr Sci Med (Varna)* 47(1):53-56.
2. Ангелова М, Павлов С, Михалева В, Горанова В, Тончев А (2015) Ростро-каудален градиент в експресията на транскрипционен фактор SOX2 във фетален мозък при човек. *Варн Мед Фор* 4(1):94-98.

Within the project, the dissertation work of Dr. Angelova was successfully defended.

The research goals, that were previously formulated, were completely achieved. The obtained results have an applied value in the analysis of some congenital anomalies of the brain in newborn children. Part of the material taken, histologic preparations, facilities and rest of antibodies might be used for other scientific investigations by young researchers and PhD students in the department of Anatomy, Histology and Embryology of MU – Varna.