



Fund “Nauka” Project № 15010 Resume

“Creation of an infrastructure for high-throughput histological detection of transcripts”

Project leader: Prof. Anton Tonchev, MD, PhD, DSc

Project Goals: To build an infrastructure that will allow processing of tissues, preserved in advance, and in situ analysis of gene expression with cellular resolution.

Results:

1. Funding the purchase of equipment allowing for processing of preserved tissue and in situ assays of cellular gene expression. A cryostat and an autostainer were purchased and are currently used for the histological treatment of tissue sections.
2. With the purchased equipment, part of the gene expression analysis in progenitor niches of the primate brain was performed. The project was co-funded by the “Alexander Von Humboldt Foundation” and “Max Planck Society”, Germany. The processed and stained slides will be made freely accessible to the scientific community in 2018, after the release of the first publication on these projects.
3. Current PhD students using the equipment purchased for the ongoing project (beginning 2015/2016)
 - Dr. Vesselina Mihaleva – “Quantity, distribution and phenotype of newly formed cells in the cerebellum of adult primates” (2015)
 - Dr. Marin Zhelezov – “Analysis of microglia during the development of the pallium in human primates” (2016)
 - Dr. Boyan Parvanov – “Localization and characterization of progenitor cells during the prenatal tooth development in humans” (2016)
 - Dr. Dimo Stoyanov – “The Role of the Transcription Factor Zbtb20 in the interneuron development of the murine neocortex” (2016)
 - Dr. Radoslav Spassov – “The Role of Transcription Factor Pax6 in the cerebellar development in mammals” (2016)
4. Publications related to the project:
 - Tonchev AB, Tuoc TC, Rosenthal EH, Studer M, Stoykova A. Zbtb20 modulates the sequential generation of neuronal layers in developing cortex. *Mol Brain* 2016;9:65.
 - GN Chaldakov, L Aloe, AB Tonchev, P Ghenev, A Maucher, M Fiore, M Zhelezov. Adipobiology of the brain: from brain diabetes to adipose Alzheimer’s disease. *Scripta Scientifica Medica* 48; 2016.
 - M Zhelezov, S Pavlov, R Minkov, AB Tonchev. Subpopulations of human fetal cortical microglia express markers IBA1 and HAM56. *Scripta Scientifica Medica* 48; 2016.
 - M Zhelezov. Microglia as Potential Regulators of Empathy and Prosocial Behavior – A Hypothesis. *Biomedical Reviews* 27, 69-74; 2017