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Intrinsic role of p53 in the differentiation of neural stem cells

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P53 is a tumor suppressor protein that induces cell cyclearrest, senescence, or apoptosis in response to cellular stresses. Recent studies suggest the involvement of p53 also in the regulation of neural stem cell self-renewal and differentiation. However, our knowledge about molecular mechanisms of the p53-mediated neuronal differentiation is still limited. The purpose of this study was to reveal the signaling pathways involved in p53-mediated neuronal differentiation. Recently, we demonstrated that p53 deficiencies affected not only on the functional activity of mature neurons of hypothalamus, but also differentially changed the cell's populations. Moreover, our and others data demonstrated that p53 can induce MAPK activity, the well-known pathway involved in NSC differentiation. Our study was performed on neural progenitors isolated from the hippocampus of new-born mice. The obtained data demonstrated that p53 acts on neural differentiation in cooperation with MAPK. Moreover, the results revealed that GSK3b also mediates the effects of p53.

Biography

Margarita Glazova received her PhD (1997) from Sechenov Institute of Evolutionary Physiology and Biochemistry Russian Academy of Science. She performed Postdoctoral studies at Turku Centre for Biotechnology, University of Turku/ÅboAkademi, Finland (2001-2003) and then at East Carolina University Brody School of Medicine, Department of Physiology, Greenville NC, USA (2004-2006). Now, she is Senior Researcher and group leader at the Sechenov Institute of Evolutionary Physiology and Biochemistry, Russian Academy of Sciences, St. Petersburg, Russia. Her main interests concern the study of adult neurogenesis and neural stem cells differentiation at normal and under neuropathology disease, such as epilepsy. She has published more than 30 articles in peer-reviewed scientific journals.

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