

Proceedings of German Society for Stem Cell Research (PGSSCR)

Neural stem cells and synaptogenesis

Liebau S, Bockers T

University Ulm Anatomy & Cell Biology, Albert-Einstein-Allee 11, 89081 Ulm, Germany

Published on 16 May 2007

Neural stem cells (NSCs) are found in the developing as well as in the adult brain. They are self-renewing cells that maintain the capacity to differentiate into all major brain-specific cell types, such as glial cells and neurons. However, it is still unclear whether these cells are capable of gaining full functionality, which is one of the major prerequisites for NSC-based cell replacement strategies of neurological diseases. The ability to establish and maintain polarized excitatory synaptic contacts would be one of the basic requirements for intercellular communication and functional integration into existing neuronal networks. In primary cultures of hippocampal neurons it has already been shown that synaptogenesis is characterized by a well ordered, time-dependent targeting and recruitment of pre- and postsynaptic proteins. In this study, we investigated the expression and localization of important pre- and postsynaptic proteins including Bassoon and synaptophysin, as well as proteins of the ProSAP/Shank family, in differentiating rat fetal mesencephalic NSCs.

and localize cytoskeletal and scaffolding molecules of the pre- and postsynaptic specializations, in a well defined temporal order.

Moreover, we analyzed the ultrastructural features of neuronal cell-cell contacts during synaptogenesis. We show that NSCs express

Copyright © Journal of Stem cells and Regenerative medicine. All rights reserved
JSRM/002010700046/May16, 2007.