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CELL THERAPY, TISSUE SCIENCE AND REGENERATIVE MEDICINE &  
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**Targeted pharmacological regulation of intracellular signal transduction in regenerative competent cells:  
A new direction of therapy in regenerative medicine**

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Advances in the field of cellular technologies have led to the possibility of developing a new direction of targeted therapy in regenerative medicine - "Strategy of Pharmacological Regulation of Intracellular Signal Transduction in Regenerator-competent Cells". The role of NF- $\kappa$ B, IKK, PKC, PKB, PI3K, ERK  $\frac{1}{2}$ , p38, adenylate cyclase, PKA, JAKs, STAT3, JNK, p53 in the realization of functioning progenitor elements of different classes and cells of tissue microenvironment was studied *in vitro* by means of cultural, immunological and other methods. On the models of posthypoxic encephalopathy, skin wound and cytostatic myelosuppression in experimental animals the therapeutic effects and mechanisms of action of modifiers of signal molecules activity were studied. The specificity of the involvement of a number of signaling molecules in the regulation of cell cycle and development of progenitor cells of various classes, as well as in the production of humoral factors by microenvironment cells was revealed. The neuroregenerative effects of JNK inhibitors associated with activation of neural stem cells of the brain were shown on the model of encephalopathy. An algorithm and approaches for estimating the potential efficiency and many-sided selectivity of the modifiers of signaling molecules act as targeted hemostimulators were developed. The effectiveness of various targeted pharmacological agents determined by the selective effect on different types of regenerative-competent cells was demonstrated on the models of cytostatic myelosuppression of various genesis. The perspective of using intracellular signaling molecules in regenerative-competent cells as targets of drugs for regenerative medicine was shown.

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