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***Influence of exogenous phytohormones on the functional activity of apical meristematic cells in wheat seedlings.***

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The functioning of plant apical meristems is controlled by the hormonal regulatory system, which operates at all stages of plant ontogenesis. A topical problem is the identification and further study of molecular markers involved in the perception of a hormonal signal and its transmission to the plant cell genome.

Our preliminary work has found that the meristematic cells of the wheat apex are characterized by the presence of a marker protein called the proliferative antigen of initials (PAI), whose content in root and stem meristematic cells correlates with their mitotic index (i.e., it defines the extent of activity of these cells (Evseeva et al. 2009). The suggestion has been made that PAI is associated with the perception of an auxin or cytokinin signal and its transmission to the cell genome. Our aim was to examine the influence of exogenous auxins and cytokinins on the functional activity of meristematic cells in the seedlings of wheat cultivar Saratovskaya 29.

The root system of 5-day-old seedlings was treated with solutions of indole-3-acetic acid (IAA; 1 and 0.1 mg/L) and 6-benzilaminopurine (6 BAP; 1 and 0.1 mg/L). The activity of meristematic cells was assessed by the results of determination of the cells mitotic index and by comparative immunochemical estimates of PAI content in these cells.

IAA at 1.0 and 0.1 mg/L enhanced the mitotic activity of the root meristematic cells 2- and 2.5-fold, respectively. The PAI content of the apical meristems changed insignificantly. In turn, in response to 6-BAP at 0.1 mg/L, cellular mitotic activity increased 2-fold and PAI content increased 1.2-fold. These results suggest that PAI involved in the perception of signals from hormones of the cytokinin series and their transmission to the plant cell genome.

Reference.

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***The programmed cell death in winter wheat suspension culture at low temperatures.***

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Programmed cell death (PCD) is the genetically controlled process of the organized destruction of superfluous or defective cells (Krishnamurthy et al. 2000; Kingston-Smith et al. 2008). The mechanisms of PCD are well known in animals, whereas many features of this process in plants are needed to investigate. PCD in plants plays a crucial role in real-