The Laboratory was established in 2003 году on the base of group of experimental morphogenesis of the Laboratory of cell wall biochemistry

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Areas of current interest:

1. The secretome and its role in the differentiation and adaptation of plant cells *in vitro*.

2. The role of redox homeostasis in the regulation of cell proliferation and morphogenesis in plant cell cultures.

3. Transcriptome and proteome analysis of callus cultures of tatar buckwheat, differing in the morphogenic activity. Identification of genes and proteins involved in the regulation of somatic embryogenesis.

4. The search for phenolic compounds with high antioxidant and regulatory activity in cultured cells of the Fagopyrum genus.

Selected publications (2003-2012):

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3. Rumyantseva N.I., Akulov A.N., Mukhitov A.R. Extracellular polymers in callus cultures of *Fagopyrum tataricum* (L.) Gaertn. with different morphogenic activities: time courses during the culture cycle // Applied Biochemistry and Microbiology.- 2004.- V .40.- I. 5 .- P . 494 -5 00 .

4. Lebedeva V.V., Akulov A.N., Rumyantseva N.I. The cytological and biochemical peculiarities of the primary and secondary calli formation on maize root apices // Physiology and biochemistry of cultivated plants.- 2005.- V. 37.-I. 5.- P. 406-412.

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9. Gumerova E.A., Utina D.B., Rumyantseva N.I. Establishment and Characterization of Morphogenic Suspension Culture of Tatar Buckwheat Fagopyrum tataricum (L.) Gaertn. // Uchenye Zapiski Kazanskogo Universiteta (Proceedings of Kazan University).- 2008.- V. 150.- book. 2.- P. 126–135 (In Russian).

10. Kamalova, G.V., Akulov, A.N., and Rumyantseva, N.I. Comparison of Redox State of Cells of Tatar Buckwheat Morphogenic Calluses and Non-Morphogenic Calluses Obtained from Them // Biochemistry (Mosc).- 2009.- V. 74.- P. 686–694.

11. Sibgatullina G., Nigmatullina L., Rumyantseva N. The alteration of morphological, cytogenetical and biochemical characteristics of common buckwheat calli during long-term culture // Uchenye Zapiski Kazanskogo Universiteta (Proceedings of Kazan University).- 2009.- V. 151.- book 4.- P. 103-112 (In Russian).

12. Maksyutova N., Galeeva E., Mukhitov A., Rumyantseva N., Viktorova L. Changes in the Growth of Tartary Buckwheat (*Fagopyrum tataricum* (L.) Gaertn.) Calli with Different Ability for Morphogenesis Induced by Salicylic Acid // The European Journal of Plant Science and Biotechnology.- 2009. - V.3 .- Special Issue 1.- P .71-74.

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Fagopyrum
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Methods:

Different methods of culture of plant cells, tissues and organs (the establishment of callus and suspension cultures, plant regeneration, micropropagation, isolation and culture of plant protoplasts, embryo culture); histological, cytochemical, cytogenetic analysis, electron microscopy; various methods of proteomic analysis (one-dimensional and two-dimensional gel electrophoresis, the identification of proteins by MALDI-TOF MS, electrophoretic and spectrophotometric methods for the analysis of various enzymes, immunoblotting); determination of redox status of cultured cells (hydrogen peroxide and nitric oxide, oxidized and reduced forms of glutathione, the activity of various antioxidant enzymes); methods to determine the content of phenolic compounds and their antioxidant activity, HPLC analysis of qualitative composition of phenolic compounds; PCR, RT-PCR.

Grants:

RFBR, I. 05-04-49433_a (2005-2007) (Rumyantseva N.I. Principal Investigator)
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RFBR, I. 09-04-97039-r (2009-2011) (Rumyantseva N.I. Principal Investigator)

RFBR, I. 12-04-31006-mol_a (2012-2013) (Sibgatullina G.V. Principal Investigator)