



Shanghai Cooperation Organization- 1st Young Scientists Conclave (SCO-YSC 2020)
A virtual event organised in India at CSIR-IICT, Hyderabad
Theme: Shaping SCO-STI Partnership: Young Scientists Perspectives

SCO-Young Scientist Profile

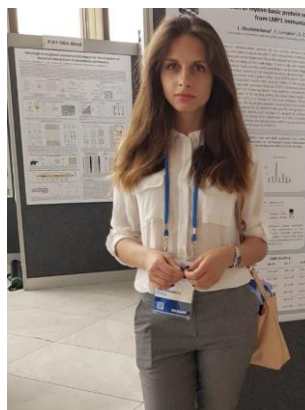
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Details of research work carried out in S&T

My research project is dedicated to the development of the novel systems for the intercellular delivery of protein therapeutics. The specific objective of this project is to develop and conduct preclinical research of the effectiveness of a fundamentally new drug based on genetically encoded extracellular vesicles (GEEV) for the therapy of an animal model of multiple sclerosis - experimental autoimmune encephalomyelitis (EAE).

Associated SCO-YSC Theme:

Statement of Innovation

Immunodominant peptides are a promising cure for such conditions as autoimmune pathologies and cancer. These peptides can redirect immune response against malignant cells or induce immune tolerance to autoantigens. To provide a therapeutic effect, these peptides should be presented on the surface of professional antigen-presenting cells (APCs) as part of MHCII and/or MHCI. We decide to use GEEV for delivering of immunodominant peptides to APCs - dendritic cells and macrophages. These cells are characterized by a high level of CD206 expression. Thereby we developed genetic constructs for the production of extracellular vesicles with anchored antibodies towards CD206 on the membrane surface and tested the ability of the obtained GEEV to deliver proteins into target cells. The developed technology for the inclusion of MBP fragments into targeted GEEV can allow to obtain in the shortest time an innovative therapeutic drug for MS, which modulates immunotolerance to its own autoantigens.

Major awards/ Achievements

Possible collaboration with SCO countries

Animal models of autoimmune diseases, especially EAE model.

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Key words: vesicles, protein nanocages, autoimmune diseases