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## Analysis of amyloid properties of the STXBP1 protein forming detergent-resistant aggregates in the brain of rat *Rattus norvegicus*

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Amyloids are the fibrillar protein aggregates with cross- $\beta$  structure. Traditionally amyloids were associated exclusively with pathology: incurable diseases in animals and humans such as Alzheimer's disease and Parkinson's disease. However, nowadays more data is emerging about functional amyloids which are not linked with diseases but play essential roles in cellular processes. Until recently there were no universal methods for large-scale proteomic screening for amyloids. A new universal proteomic approach which may enable identification of a broad range of amyloid-forming proteins (PSIA LC-MALDI) was created in our laboratory. Using this method, we identified proteins which were candidates for the role of functional amyloids in young male rat's brain. One of the identified proteins was STXBP1 (syntaxin-binding protein 1). This protein is synthesized in brain and takes part in vesicular transport and neurotransmitter secretion. It's been shown that some mutations in this protein cause early infantile epileptic encephalopathy (EIEE), or Ohtahara syndrome, which is one of the most severe forms of age-related epileptic encephalopathies. Bioinformatical algorithm ArchCandy predicted 3 potentially amyloidogenic regions in C-terminal part of the STXBP1 protein. We checked the presence of amyloid aggregates of STXBP1 in rat's brain using semi-denaturing detergent agarose gel electrophoresis (SDD-AGE) and protein fractionation. We found out that STXBP1 forms small detergent-insoluble aggregates, which is one of the basic characteristics of amyloids, so we can make an assumption that this protein has amyloid properties.

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### Biography

Vera Siniukova has received her Bachelor's degree from the Tomsk State University; Master's degree from the Saint Petersburg State University and now is a PhD student at the Vavilov Institute of General Genetics. She is an active member of all kinds of scientific activities, always has been among the top 5% students of the class in terms of academic achievements and has published several papers. Currently, she is also a Manager of the scientific project supported by Russian Foundation for Basic Research (RFBR).

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