

## **Abstract of Doctoral Thesis**

Title: Study of the organization and dynamics of the membraneless cell compartments

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### **Abstract**

Eukaryotic cells contain many organelles and specific bodies. Beside the membrane delimited organelles such as nucleus, mitochondria or Golgi apparatus there are other structurally and functionally distinct membraneless structures in the cells. In this work we studied the self-organization processes, i.e. the processes that do not require specific interactions, of membraneless structures in nuclei, cytoplasm and plasma membrane of mammalian cells and yeast. The research was focused on the formation of nucleoli and Cajal bodies in mammalian cell nuclei and processing bodies (P-bodies) in the cytoplasm of mammalian cells. The organization of MCC domains in the yeast plasma membrane (Membrane compartment of Can1) was studied as well. It was shown that nonspecific interactions as the result of macromolecular crowding could be one of the main driving forces in formation and stabilization of these highly dynamic structures.