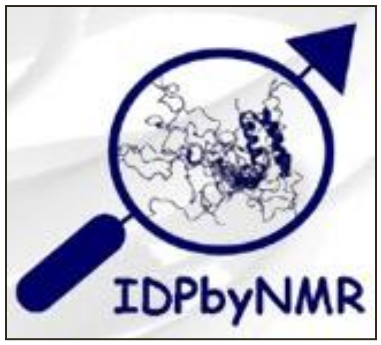
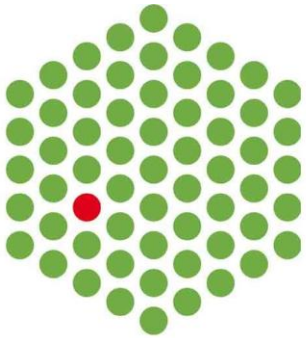


Michael Kachala

EMBL Hamburg Outstation,

Svergun Group

EMBL



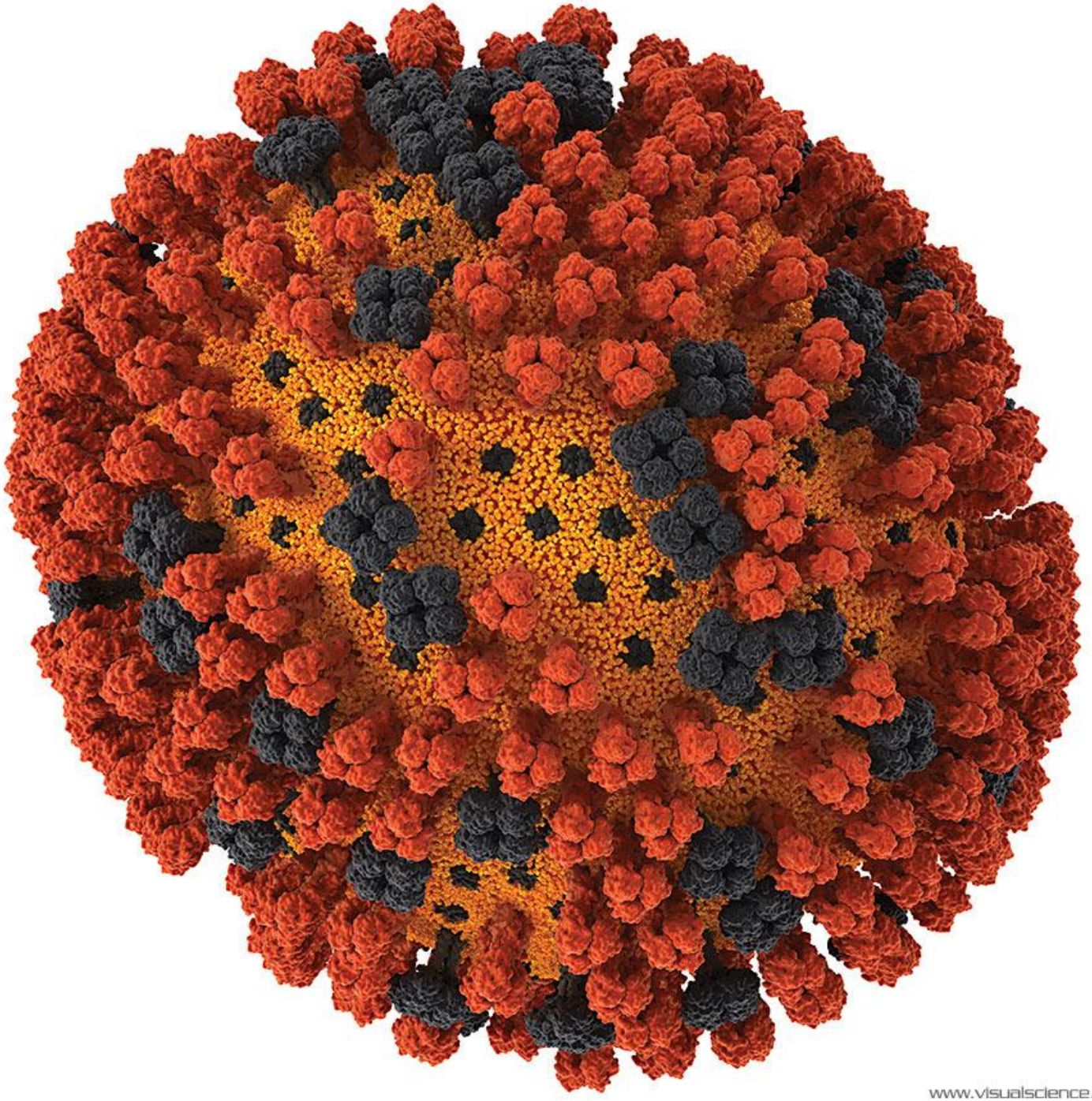
October 13th 2011

Agenda

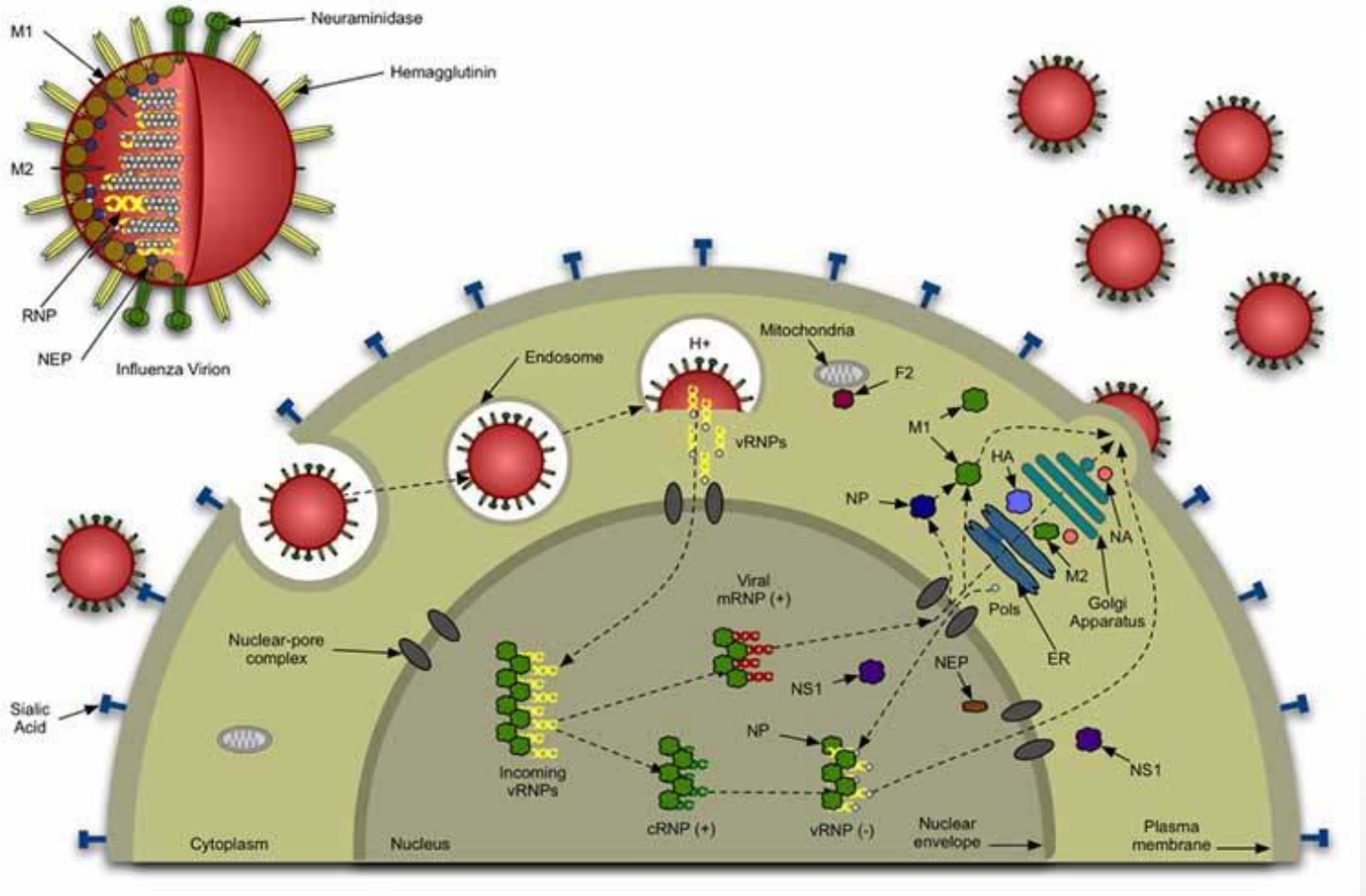
- My Background
- Previous research
- Possible Contribution to the Project
- Expectations from the Project

My Background

- Born in Murmansk, Russia
- Finished Moscow Institute of Physics and Technology (MIPT)
  - BS in Molecular and Biological Physics, 2009
  - MS in Physics of Living System, 2011
- Internship at Proctor & Gamble R&D department, Frankfurt, 2009
- Predoc at EMBL-Hamburg, Svergun Group, started September 2011

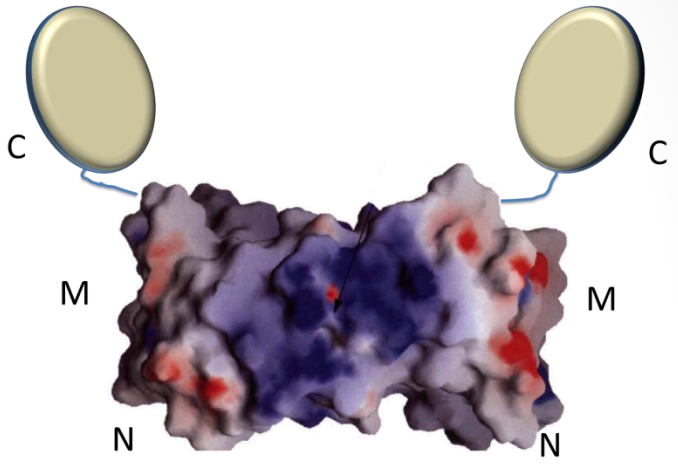


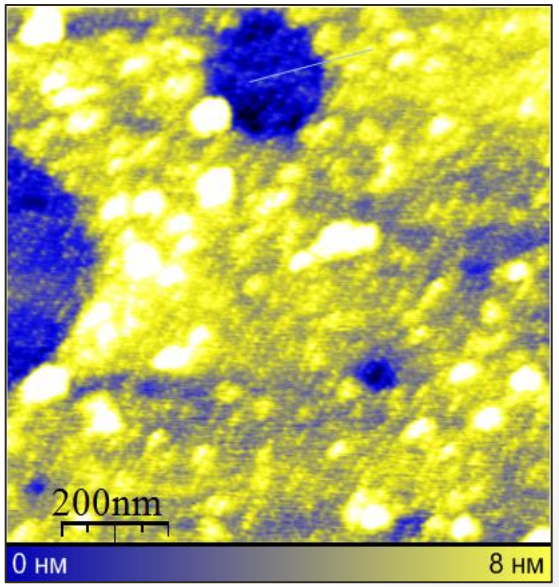
Previous Research: Study of Adsorption Process of Flu Virus M1 Protein On Bilayer Lipid Membrane



Previous Research: Study of Adsorption Process of Flu Virus M1 Protein On Bilayer Lipid Membrane

- **Aim:** to understand how M1 proteins interacts with the cell membrane and each other
- **Used techniques:** Atomic Force Microscopy and Inner Field Compensation
- **Main results:**
  - Interaction between M1 protein and membrane is mainly electrostatic
  - M1 protein forms netlike structure on the membrane surface, which decays after acidulation
- Results were presented at the 9th International Frumkin Symposium, Moscow, October 2010



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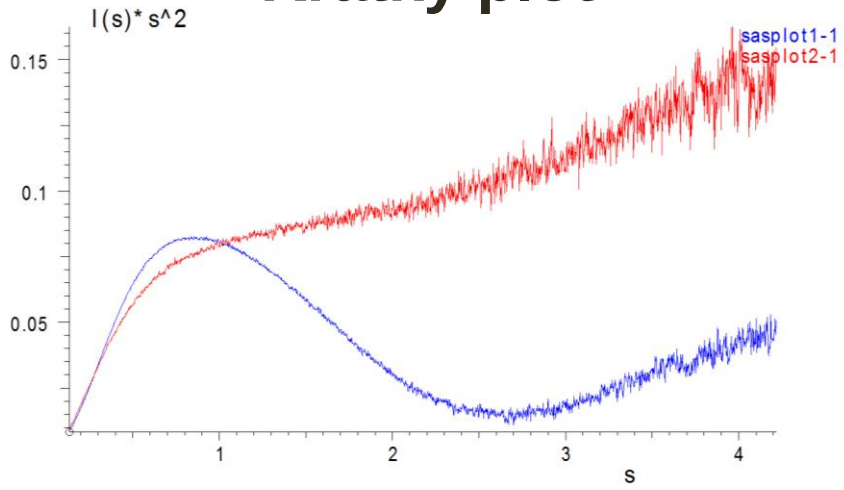
PETRA III

How Can I Contribute to the IDPbyNMR project

Kratky plot



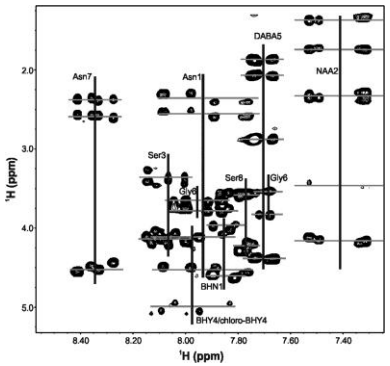
Ensemble Optimization Method (EOM)

- Instead of one structure – ensemble of N various structures
- Genetic algorithm is used to select optimal ensemble
- **BUT** SAXS is low resolution technique, so…

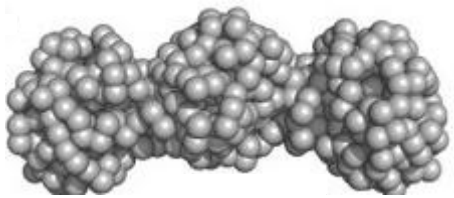
Bernado, P., Mylonas, E., Petoukhov, M.V., Blackledge, M., Svergun, D.I. (2007) Structural Characterization of Flexible Proteins Using Small-Angle X-ray Scattering. *J. Am. Chem. Soc.* **129**(17), 5656-5664

How Can I Contribute to the IDPbyNMR project

NMR



SAXS



- Adjusting SAXS experimental setup and software for effective investigation of IDPs and their properties using NMR data

Bernado, P., Mylonas, E., Petoukhov, M.V., Blackledge, M., Svergun, D.I. (2007) Structural Characterization of Flexible Proteins Using Small-Angle X-ray Scattering. *J. Am. Chem. Soc.* **129**(17), 5656-5664

My Expectations From the Project

- To take part in the development of “IDP pipeline”
- To acquire skills of work in collaboration with many research groups located in different countries
- To get closer to understanding of the mysteries of nature

Thank you for your attention!