



in Ceske Budejovice, July 1st, 2016

Supervisor's assessment for Ekaterina Sviridova

Vyjádření školitelky k plnění úkolů studijního plánu a k disertační práci Mgr. Ekateriny Sviridove

Ekaterina Sviridova prepared her thesis from the results obtaining during her postgraduate study in my Laboratory of Structural Chemistry (formerly Laboratory of Crystallogenes and Biomolecular Crystallography) at the Institute of Chemistry and Biochemistry of the Faculty of Science at the University of South Bohemia in Ceske Budejovice. Ekaterina has started her phd study in my group in February 2008. Her thesis named "Integrated structural study of the FrpD protein from *Neisseria meningitidis*" is aimed at crystallization study and crystallographic analysis of iron-regulated outer membrane protein FrpD from *Neisseria meningitidis* derived from recombinant *E.coli* with unknown function. FrpD can serve as an accessory lipoprotein involved in anchoring of the secreted FrpC protein to the outer bacterial membrane. However, the exact mechanism of function and the biological role of the FrpC protein as well as the mechanisms of its interaction with FrpD remain also unknown. Ekaterina has successfully crystallized the truncated version of the FrpD protein and performed diffraction analysis of crystals of native and selenomethionine derivative (SeMet FrpD) of FrpD. She has determined the structures of the native and SeMet FrpD protein by single-wavelength anomalous dispersion (SAD) and molecular replacement techniques using the diffraction data of 1.40 Å and 2.3 Å resolutions, respectively. It was found that atomic structures of FrpD reveal a novel protein fold. Further research was aimed at determination of the mechanism of FrpD-FrpC interaction. In order to do that she has worked on structural and functional characterization of the high affinity interaction between FrpD and the N-terminal domain of FrpC. The putative function of the FrpD-FrpC₁₋₄₁₄ complex as a new minor adhesin of *N. meningitidis*, which mediates the bacterial adhesion to the host epithelial cells and facilitate the colonization was proposed from experimental data. The results of Ekaterina's work constitute the first step in clarifying the molecular basis of the FrpD-FrpC interaction and sets the base for further investigation of the role of FrpD and FrpC in the virulence mechanism of *N. meningitidis*.

Ekaterina is familiar with expression and overexpression methods in molecular biology, isolation and purification processes as well as with using of all crystallization methods (standard, advanced and alternative) used for production of crystals in diffraction quality and with work on synchrotron sources (she has experiences from synchrotrons DESY Hamburg and BESSY Berlin) and X-ray diffraction analysis. She is able to solve protein structures measured to high resolution herself as well as prepare scientific manuscripts at high level.

She has presented her scientific results at different relevant meetings and conferences and published these in three publications in impacted scientific journals. She speaks English fluently and understands and speaks Czech well.

As her supervisor I could state that Ekaterina shows to be an independent, competent individual, capable of hard work, willing to take initiative and to work on her own.

Ekaterina fulfilled her study plan without reservation.

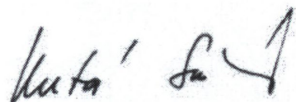
The format of the dissertation meets the requirements for the processing of dissertations advocated in the PhD program of study at USB CB.

Ekaterina is friendly, clever, studious, and cogitative and even she is able to work on her experiments independently, I have to say that she is the best mother for her son and this fact is the most important for life and career.

In conclusion, I can say that Ekaterina has met all requirements for the proper completion of doctoral studies and therefore I recommend her work to defend without reservation.

Sincerely,

Ivana Kuta Smatanova
Phd supervisor



Ivana Kuta Smatanova, Ph.D.
Associate Professor of Chemistry and Teacher
Institute of Chemistry and Biochemistry
Faculty of Science
University of South Bohemia Ceske Budejovice
Branisovska 1760
CZ-370 05 Ceske Budejovice
CZECH REPUBLIC
Phone: +420 608 106 109
E-mail: ivanaks@seznam.cz (kuta@prf.jcu.cz)