

in Ceske Budejovice, May 1st, 2017

Supervisor's assessment for Iuliia Iermak

Vyjádření školitelky k plnění úkolů studijního plánu a k disertační práci Mgr. Iuliie Iermak

Iuliia Iermak prepared dissertation thesis from the results obtaining during her postgraduate study in the Laboratory of Structural Chemistry (formerly Laboratory of Crystallogenesi and Biomolecular Crystallography) at the Institute of Chemistry and Biochemistry of the Faculty of Science at the University of South Bohemia in Ceske Budejovice.

Iuliia has started her phd study in my group in March 2013. Her thesis named "Structural biology approach to biotechnological problems" is aimed at structure-functional characterization of the glyceraldehyde dehydrogenase from thermophilic bacterium *Thermoplasma acidophilum* (TaAIDH), which is one of the key enzymes in the cell-free system for the production of ethanol or isobutanol from glucose. The second part of the thesis concerns optimization by structure-guided engineering of the haloalkane dehalogenase LinB from the soil bacterium *Sphingobium japonicum* UT26, used for the effective degradation of halogenated environmental pollutants. The obtained information is used to engineer favorable enzyme variants exhibiting beneficial properties for applications in biotechnology.

Iuliia 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.

The results of her work are not negligible. These results were individually elaborated and described in impacted papers published in Acta CrystF (2015) and ACS Catalysis (2016) and also were prepared two manuscripts for IUCrJ (2017) and Acta CrystD (2017). The results of her work Iuliia actively presented in many domestic and international conferences in the form of posters and lectures.

Iuliia worked in the frame of foreign internship at the University of Lübeck in the group of Dr. Jeroen Mesters, where she learned how to solve protein structures and manage

problems in protein crystallography. In the framework of active cooperation with Masaryk University Brno, she spent several weeks at CEITEC MU Brno (Assoc. Prof. Hejatkó Group), where she directly participated in the preparation of studied enzymes.

Iuliia has been one of the few young scientists who are able to solve the research projects independently and comprehensively, thanks to her approach, effort and interest in the studied subject of molecular biology and protein crystallography.

In addition to the scientific work, Iuliia has also demonstrated excellent pedagogical and organizational skills, especially during the preparation and implementation of FEBS and FEBS-INSTRUCT practical crystallization courses, but also during summer schools and student's education. She speaks English and Czech fluently.

Iuliia fulfilled her study plan without reservation.

As her supervisor, I especially appreciate her positive approach to problem solving and her human attitude in teaching and educating younger students both in English and in Czech.

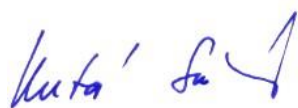
I am convinced that Iuliia, as a young scientist, will strengthen and move any scientific team in that she chooses to work for.

The format of the dissertation corresponds to the requirements for the dissertation thesis defended in the PhD program at the USB.

In conclusion I have to say that Iuliia has fulfilled all the requirements for the proper termination of doctoral studies and therefore I recommend her work for the defense without reservations.

Sincerely,

Ivana Kuta Smatanova
Phd supervisor



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