Přírodovědecká fakulta
Faculty of Science
Jihočeská univerzita v Českých Budějovicích
University of South Bohemia in České Budějovice

in Ceske Budejovice, March 22nd, 2019

Supervisor's assessment for Katsiaryna Tratsiak

Vyjádření školitelky k plnění úkolů studijního plánu a k disertační práci Mgr. Katsiaryny Tratsiak

Katsiaryna Tratsiak prepared her thesis from the results obtaining during her postgraduate study in my Laboratory of Structural Chemistry at the Institute of Chemistry of the Faculty of Science at the University of South Bohemia in Ceske Budejovice. Katya has started her phd study in my group in May 2011. Her thesis named „Crystallographic study of biotechnologically attractive haloalkane dehalogenases DpcA and DmxA" is aimed at crystallization study and crystallographic analysis of two new haloalkane dehalogenases DpcA and DmxA. DpcA from *Psychrobacter cryohalolentis* K5 (PDB ID 6F9O) is a cold-adapted enzyme and demonstrates the highest activity at 25 °C, while retaining more than 25% of its activity at 5 °C. DmxA from *Marinobacer* sp. ELB17 (PDB ID 5MXP) exhibits the highest thermal stability (Tm = 65.9 ± 0.1 °C) of all biochemically characterized members of the haloalkane dehalogeanse (HLD) family.

Katya successfully determined the influence of physical and chemical parameters on the crystallization of DpcA and DmxA enzymes, and crystallized them in optimized conditions. She obtained the diffraction data of both crystals at atomic resolution (DpcA crystals diffracted to the resolution of 1.05Å and DmxA of 1.45 Å) and solved the protein structures using coordinate of HLD homologues. She also prepared several their complexes with substrates, measured diffraction data and solved structures of enzyme-substrate complexes. Simultaneously she worked on enzyme activity studies.

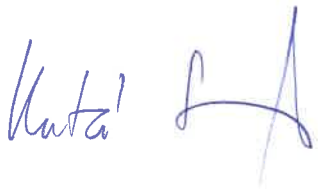
Katya is familiar with expression and overexpression methods in molecular biology, isolation and purification processes as well as with using of all crystallization methods (standard, advanced and alternative) used for production of crystals in diffraction quality and with work on synchrotron sources (she has experiences from synchrotrons DESY Hamburg and BESSY Berlin) and X-ray diffraction analysis. She is able to solve protein structures as well as prepare scientific manuscripts. She included her scientific results into two impacted papers published in Acta Cryst F and third paper will be published in the FEBS Journal this year. She also presented her scientific results at different relevant meetings and conferences. She speaks English and Czech fluently.

As her supervisor I could state that Katya 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.

Katya is friendly and studious, and she is able to work on her experiments very precisely.

In conclusion, I can say that Katya 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



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