



in Ceske Budejovice, February 28th, 2023

Supervisor's assessment for Andrii Mazur

Vyjádření školitelky k plnění úkolů studijního plánu a k disertační práci Mgr. Andrie Mazura

Andrii Mazur prepared his thesis from the results obtaining during the postgraduate study in the Laboratory of Structural Chemistry at the Department of Chemistry of the Faculty of Science at the University of South Bohemia in Ceske Budejovice. Andrii has started his phd study in my group in March 2017. His thesis named „Crystallographic studies of multimeric and ancestral haloalkane dehalogenases” is aimed at crystallization study and crystallographic analysis of two newly prepared haloalkane dehalogenases: DpcA and AncLinB-DmbA, both with specific features. The novel haloalkane dehalogenase DpaA from *Paraglaciecola agarilytica* NO2 was firstly characterized structurally. Unusual feature of this enzyme is its property to form multimeric construction, whereas other members of the same phylogenetic subfamily are present as monomers. Thus this work expanded the knowledge of the structure and formation of the multimeric haloalkane dehalogenases. The second part of the thesis dealt with novel enzyme synthesized by use of the ancestral sequence reconstruction from dehalogenases with the broadest range substrate specificity LinB and DmbA. Providing with a new technique, the novel synthesized enzyme can enhance the effectiveness of the degradation of halogenated environmental pollutants.

Andrii successfully determined the influence of physical and chemical parameters on the crystallization of both enzymes, and crystallized them in optimized conditions. He obtained the diffraction data of both crystals at high resolution (ancestral enzyme AncLinB-DmbA crystals diffracted to the resolution of 1.50 Å and DpaA of 2.00 Å, respectively) and solved the protein structures using coordinate of HLD homologues.

Andrii is familiar with using of all crystallization methods (standard, advanced and alternative) used for production of crystals in diffraction quality and with work on synchrotron sources (he has experiences from synchrotrons DESY Hamburg and BESSY Berlin) and X-ray diffraction analysis. He knows and can use all SW for crystallographic analyses, solve protein structures as well as prepare scientific manuscripts. He included obtained scientific results into three impacted papers

published in Acta Cryst D (Q1 crystallographic journal), IJMS and Crystals as well as he presented scientific results at different relevant meetings and conferences. He speaks English and Czech.

As his supervisor, I could state that Andrii fulfilled his 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.

Andrii is friendly and perceptive person, who is able to work on specified work quite independently.

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

Sincerely,

Ivana Kuta Smatanova

Phd supervisor

Ivana Kuta Smatanova, Ph.D.

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