Fakulta rybářství a ochrany vod
Faculty of Fisheries and Protection of Waters

Jihočeská univerzita v Českých Budějovicích
University of South Bohemia in České Budějovice
Czech Republic

Confidential

Supervisor´s Review of USB RIFCH PhD Thesis

Surname of the PhD student: Bachhar	Name of supervisor: **Jiri Jablonsky**
Title of PhD thesis: Role of isoenzymes in metabolic regulation of cyanobacteria	

OVERALL COMMENTARY ON THE PhD THESIS

Introduction

The submitted thesis deals with isozymes and their role in metabolic regulation of cyanobacteria and *Synechocystis* PCC 6803 in particular. In last decade, the amount of various omics data increased dramatically, requiring some sort of computational analysis. The thesis is not only employing but advancing the bioinformatic analysis and multi-level kinetic modeling while its results have real applications and impact on the current science.

Contents of the thesis

The first chapter introduces isozymes in general and focusing in detail on particular cases within the central carbon metabolism, complemented with current bioinformatic analyses made by the candidate. The final marks of this chapter briefly discuss the enzymatic multifunctionalities and regulatory genes. Chapters 2 and 3 present the results of this thesis in a form of two scientific publications in well-respected journals. Finally, Chapter 4 illustrates the systems biology workflow from data mining and validation to model description with an example of used code and list of parameters for particular scenario. I would like to highlight how the candidate explained the needs for modeling in biology and advocated for the collaboration among experimentalists and modelers.

Summary and evaluation

The submitted thesis is based on two high-quality original studies to which the PhD candidate Anushree Bachhar contributed 50% as the first author. Her work is already stimulating the future research focused both on isozymes and Entner-Doudoroff pathway. Therefore, I highly recommend to accept the submitted work as the dissertation thesis and to award the PhD degree to the candidate.

FINAL RECOMMENDATION

- ☒ **can be recommended for defence of PhD Thesis**
- ☐ **can be recommended with reservations for defence of PhD Thesis**
- ☐ **can not be recommended for defence of PhD Thesis**

...13.10.2022...in Prague.....
Date and place

...Jablonský .....
surname and signature