

## Evaluation Report of Doctoral Dissertation of M.Sc. Phu Nguyen Van

### *Antagonistic Regulation by Global Transcription Factors Tup1p and Cyc8p of Flo11 and Flo11-dependent Phenotypes in Wild Yeast*

The doctoral dissertation of Phu Nguyen Van summarizes extensive work focused on Tup1p and Cyc8p, transcription co-repressors in *Saccharomyces cerevisiae*, and their role in regulation of cell-surface glycoprotein Flo11p. Since Flo11p is crucial for *S. cerevisiae* flocculation, pseudohyphal growth and biofilm formation, detailed knowledge of its regulation significantly contributes to understanding of the yeast multicellular life-style.

The dissertation is based on two articles published in high-profile journals (PLoS Genetics and NPJ Biofilms and Microbiomes). Phu Nguyen Van is the first author of both of these articles. However, the articles themselves are not part of the dissertation, not even as an appendix.

The dissertation was difficult to read. It apparently has not undergone language editing, and it does not contain any list of abbreviation

The dissertation is arrangement in the following chapters: General Introduction, Literature Review, Materials and Methods, Results and Discussion I (related to the first article), Results and Discussion II (related to the second article), Conclusions and References. Objectives of the dissertation are not listed.

I have following comments and questions regarding the formal aspect of the dissertation:

1. Page 13: Figure 1.4 legend does not explain, what the sequences in the lower part of the figure are.
2. Some sentences seem to be incomplete, e.g. on the pages 25, 30, 33.
3. *N-terminal* is an adjective. The noun is *N-terminus* (e.g. page 26 or 64).
4. What is the difference between *inducer* and *inductor* (pages 54, 55), and between *adhesive* and *adherent* cells (page 84)?
5. Page 58: Figure 6 legend is confusing. Does it mean that the author altered the levels of Cyc8p and Tup1p, and then quantified them? In the right side of the figure, the amount of Tup1p in the individual strains seems to be represented by the bars relative to the Tup1p content in BR-F strain, which is set as 1. But the assessment of Cyc8p is unclear, and the legend does not comment on it.
6. The author used Northern blots to assess mRNA levels of the studied genes (e.g. page 62). How was the mRNA amount assessed? Just by visual inspection, or using some software?

And following questions regarding the content:

1. Pages 60-61: while *TUP1* and *CYC8* were induced similarly on the level of mRNA, respective amounts of Tup1p and Cyc8p significantly differed. Is it known how the translation of these genes is regulated?

2. Page 64: the author analysed Flo11p-GFP in the extracellular fluid. How was the sample of the extracellular fluid prepared for analysis? Was it necessary to concentrate the fluid?
3. Can the biofilm formation and flocculation be affected by temperature?

Phu Ngueyn Van carried out an extensive work and contributed to understanding of *FLO11* regulation by Tup1p and Cyc8p. His work has been published in two international peer-reviewed journals. Despite the reservations mentioned above I recommend his doctoral dissertation for acceptance.

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Doc. RNDr. Olga Heidingsfeld, CSc.