Ph.D. Dissertation - Mgr. Viola Vaňková Hausnerová

Supervisor's evaluation
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Background comments

This student left the laboratory in October 2016 to go on maternity leave. The student wrote the thesis while on maternity leave. She was back in the lab for 2-3 weeks in the Summer of 2017, working to address the reviewers' comments on the manuscript that had been submitted to Scientific Reports (and which was accepted). Apart from discussing the overall structure of the thesis before the student left the lab, I was not asked to provide any input during the writing (which is fine by me). The student sent me the dissertation on October 20th last and did not see fit to give me more than 10 days to write this evaluation.

Overview

Overall, the quality of this thesis is average. I get the distinct impression from reading it that the student's goal was to fulfill some sort of bureaucratic formality rather than use the opportunity to delve into her subject and exercise criticism, as it should be. I believe that this student could have done a better job.

Format

The Introduction (25 pages) contains only 4 figures, all of which were adapted from published material. Except for the Tables, the Materials and Methods section is copied verbatim from published articles. I see no problem in that if the student contributed to writing the source articles. However, it is important to stress here that the student was not involved in writing the paper that appeared in Scientific Reports. It is thus essential to cite as such any passages that were taken from this paper. Otherwise, it is a form of plagiarism. The Results section consists of the concatenated Results sections of the 3 manuscripts included in the thesis, rewritten by the student, who changed sentences but kept the text structure. Below is an example of a sentence that was rewritten.

ARTICLE (Biol. Cell, 2017 PMID27633335)

'Interestingly, the PCP-GFP-labelled transcriptional dots were found in both NCC and HCC conditions to be localized at putative transcription factories, i.e. local accumulation of initiating RNA polymerase II.'

THESIS (top of page 79)

'Interestingly, the localization of the PCP-GFP-labelled transcriptional dots in the nuclear space in both NCC and HCC conditions is highly similar to the spatial pattern of the putative transcription factories, nuclear lob of increased concentration of initiating RNApolII.'
It is difficult for me to understand what is the goal of this exercise. What is expected of the student in writing a Results section? Why can’t she simply insert into the thesis the manuscript of the published papers? In this way, she could have concentrated on writing a longer and more in-depth Introduction and a provocative and stimulating discussion. I am aware that, for someone who did not read the papers, the text will appear entirely new. And indeed it is. But again, it is simply a rewrite of existing texts with very little intellectual work going into its production.

The Discussion contains a single figure, which the student had drawn herself for one of the papers. The list of references comprises 164 items (compared with a total of 141 articles that are cited in the 3 articles included as part of the thesis).

Contents

The introduction gives a clear and adequate picture of gene expression noise and transcriptional pulsing. Examples are taken from various experimental models and setups. While I find the introduction to be generally good, I would have liked to see more (historical and logical) links between the various pieces of data that are mentioned. Because of this relative lack of structure, the introduction reads a bit like a list of experimental reports. Also, I find that results from the literature are sometimes superficially presented, as in the following example (bottom of page 12): A complementary system to MS2 called PP7 (Lim et al., 2001) was first employed in Saccharomyces cerevisiae cells to image transcription initiation, elongation and termination events with single molecule sensitivity (Larson et al., 2011)².

The Results section makes no effort to present results that are not already included in the 3 published works included in the thesis, even though a great amount of unpublished results was available to the author.

As I wrote above, I have the feeling that this thesis was mainly written to fulfill a formality and not to explore a scientific question in depth. Nowhere is this more apparent than in the Discussion. It is true that there is some speculation to explain observations in terms of molecular mechanisms. However, no attempt is made to link the various projects, the possibility of using figures and schemes to summarize results is not exploited, there is no criticism of the experimental approaches, etc. I think that the ability to put one’s project in a broader context, to criticize and to develop new perspectives is the hallmark of an excellent thesis. I have not really found proof of this ability in this dissertation. Having said that, I would like to conclude on a positive note and mention that Mgr. Vaňková Hausnerová was an above-average graduate student in my research group.