Evaluation of bachelor thesis

~~advisor's assessment~~ reader's assessment	Name of evaluator: Valerie Siahaan
	Date: 19 May 2023

Author: Polina Belyaeva

Title of thesis: Tubulin post-translational modifications and microtubule associated proteins in neural development and disease

The work is literary research as specified in the published requirements (rules) ~~The work also contains its own results.~~

Objectives of the work (subject of research, working hypothesis...)

The objective of the work was to summarize the current knowledge on tubulin post-translation modifications (PTMs) and microtubule-associated proteins (MAPs), in the context of neural development and disease. The work specifically focused on one tubulin PTM (polyglutamylation), and one MAP (microtubule severing enzyme spastin), and how these two components regulate microtubule and neuronal development and degeneration.

Structure of the work:

The thesis is structured in the classical way, starting with an abstract, followed by an introduction that specifies the objectives of the thesis, then followed by the extensive literary review, and finished with a section on the conclusions. The topic of the research was very broad and I think the writer did a great job on structuring it.

Are sufficient literary resources used and properly cited in the work?
Did the author use any relevant data from literary sources in the research?

The thesis cites 209 works, exclusively cited in the literary review part. The introduction and conclusion state facts that should have a citation too. The number of citations is sufficient but on the high side. Keep in mind that a lot of journals have restrictions in the number of citations you can have, so for future work, try to limit your citations. The citations range from 1970's to very recent (2022) articles. The number of citations dating back to the 70's-90's is high (48 out of 209), this is understandable since a lot of fundamental research on these topics was done a long time ago. The number of new articles cited (from the last 5 years) is relatively low (35 out of 209). In the future I would recommend looking for leading researchers/labs in the field of your topic and read their most recent papers (for this research new studies from Roll-Mecak and Janke lab would have been helpful).

If the work contains its own research results (beyond requirements), are these results obtained, evaluated, and discussed in an adequate manner?

Formal level of work (visual documentation, graphics, text, quality of writing):

The thesis contains a vast amount of information, and it is clear a lot of work went into writing it. The thesis is written well, with some typos and clumsy English sentences, which is very understandable for a first major work in English. I recommend using a free software such as Grammarly on future texts to check the spelling and minimize mistakes.

The abstract and introductions are short but concise, it gives a clear summary of what will be discussed in the thesis and why it is important to study the topic. The literary review is very extensive and covers all topics that are part of the broad research subject. Some topics were explained in-depth where others were only shallowly covered, I think some information could have been excluded to make the thesis easier to read. For instance, since the thesis mainly focuses on polyglutamylation, I think the other PTM's could have been described in less detail.

The thesis had 4 images which were appropriately used and cited. I feel like the thesis would have benefited from the use of more images.

Some abbreviations were missing from the list (PT, MNB kinase, TCP, ORF).

Fulfillment of the objectives of work and overall evaluation:

The thesis focuses on tubulin post-translational modifications and microtubule-associated proteins in the context of neural development and disease. The objectives of the work were well fulfilled, the thesis has a nice structure and some very interesting facts. Due to the vast amount of information and facts, the thesis was sometimes hard to read. Expanding on some facts and leaving other facts out would improve the readability. Using more descriptive figures would help a lot too. For a first major work the writing was done well, and I hope my advice will help with any future work.

Questions and comments of the reader:

1. The severing mechanism of katanin is well-described and was shown to work katanin forming a hexamer around the c-terminal tail of tubulin, pulling the tubulin dimer by the c-terminal tail out of the microtubule. Is the severing mechanism of spastin known and similar? If it would be similar, can you think of any PTM's that could influence the severing mechanism of spastin solely based on knowing the mechanism?
2. You state an interesting question in your thesis where you write that it remains to be elucidated whether centrosome localization is a cause of neuronal polarization or a consequence of it. Can you explain this in more detail? How would it be a cause, and how it would be a consequence?
3. In the abstract you mention MAPs that bind MT ends (+TIPs), is there any known effect of tubulin PTM's on this class of MAPs?

Recommended grade of the advisor or reader:

~~excellent~~   **very good**   ~~good~~   ~~failed~~

Signature of advisor/reader: