Review of: "Depolarization block of interneurons"

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Potential competing interests: No potential competing interests to declare.

Tirozzi et al present a mathematical model for depolarization block in hippocampal interneurons. While this could be a useful addition to the field, the authors do not provide sufficient details to fully evaluate their findings. An H&H model is chosen from one paper without rationale as to why this model is appropriate. The authors focus on functionality as the “best” criterium for modeling, also without justification. The parameters, and rationale for setting specific values, should be more fully explained. There are also assumptions made that are not biologically realistic. For example, depolarization block is not a binary phenomenon. The amplitudes of action potentials do decrease leading into depolarization block.

The manuscript would be greatly strengthened by including more background from the vast research already performed in this field. Descriptions of neurobiology are overly simplistic which weakens confidence that the model reflects reality. Synaptic plasticity is a much more diverse phenomenon than the simple insertion or removal AMPA receptors. The authors may not have access to the equipment needed to test their model, but they can do a more thorough comparison with what data others have published and provide citations accordingly.

Overall, the core of a useful model may be here, but much work remains to show it can accurately describe a physiological phenomenon.