Review of: "Modeling the processive movement of dimerized kinesin-10 NOD motors"

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This paper presented three model for the movement of the kinesin motor on MT. The 3rd model can explain well the directional and processive movement of the NOD dimer. While there are some points the author needs to be clarified:

1. In most of the models, the stepping of trailing head is driven by the docking of neck linker on leading head. But can this energy support the "hand over hand" movement mode? otherwise the "inchworm" mode is also possible.

2. In Fig 1, ATP may bind/unbind on the leading head, so there are possible 2 states (ATP or $\varnothing$). And for trailing head, the ATP may bind/unbind/hydrolysis on it, there should be 3 states (ATP, $\varnothing$ or ADP.Pi), why the author only showed the ATP binding state?

3. In Fig 3, the author labelled all the bound state (ATP, ADP, ADP.Pi) by the "ATP" in the figure, which make me confuse about the timing of each chemical reaction and the docking of NL. Can the author specify each state clearly in the figure?

4. The timing for NL docking for model3 and model 1-2 is different? For model 1-2, the NL dock just after ATP binding, while in model3, the timing is quite complex. And also in Fig3, from (b) to (c), the NL change from docking to undocking on leading head while the binding state do not change on leading head?

5. The different binding affinity of NOD head on normal and deformed tubulin (E_{w1} and E_{w2}) is an essential assumption for model 3. I wonder whether there are more support for this assumption except the two MD simulation work? Like crystal structures to indicate the conformation changes of tubulins or experiment data about the binding affinity. As in the MD simulations, I found only one - tubulin in the simulation system. While in MT, the tubulins are highly compacted, so the conformation changes of the tubulin may be constrained by the neighbor tubulin.

6. The author needs to be care about the formatting of some formula. For example, function (2)~(5), the words need to be aligned. And also in main text, like in page 7, the "Ew", "tr" is not well formatted.