Qeios

Peer Review

Review of: "Nuclear Basket Proteins Mlp1 and Nup2 Drive Heat Shock–Induced 3D Genome Restructuring"

Koh Nakayama[1]

1. Asahikawa Medical College, Japan

This is a fine research article studying the role of nuclear basket protein Mlp1 and Nup2 during the heat shock response. The authors demonstrated that Mlp1 and Nup2 are required for intra/inter chromosomal interactions and intragenic interactions, but not for nuclear pore complex integrity, recruitment of heat shock factors, or Hsf1 condensate formation, which indicates specific roles of the factors.

The manuscript is well-written, and experiments were performed in detail. I will make the following suggestions to improve the manuscript so that it will be read by a broader audience of researchers.

1. Out of multiple NPC/nuclear basket proteins, why did the authors focus on Mlp1 and Nup2? This point should be described in the introduction.
2. What is the conclusion of the first part, which characterizes Nup1 and Nup145? It would be preferable to have a discussion taking this part into consideration and possibly compare the roles of Nup1/Nup145 and Mlp1/Nup2.
3. Although it is demonstrated that the depletion of Mlp1 and Nup2 reduced intra/inter chromosomal interactions and intragenic interactions of some gene regions, only 3 minute-points after heat shock were examined. One wonders if, in response to a longer period of heat shock, changes in chromatin structure could be observed in Mlp1/Nup2-depleted cells (Figure 4F-H).
4. Since chromatin structural changes also play a role in sustained gene expression, one wonders if, upon a longer period of heat shock or after heat shock treatment, differences in gene expression between control and Mlp1/Nup2-depleted cells would be observed (Figure 8B).

doi.org/10.32388/OY5VPI

Declarations

Potential competing interests: No potential competing interests to declare.