

Structural basis for hepatitis B virus restriction by a viral receptor homologue

Corresponding Author: Dr Koichi Watashi

This manuscript has been previously reviewed at another journal. This document only contains reviewer comments, rebuttal and decision letters for versions considered at Nature Communications.

This file contains all reviewer reports in order by version, followed by all author rebuttals in order by version.

Version 0:

Reviewer comments:

Reviewer #2

(Remarks to the Author)

The authors have appropriately addressed my previous comments. I would just suggest a couple of wording changes that could improve readability of the manuscript.

Lines 227-228: "Thus, this two-dimensional feature that position 158 is a..."

The authors have clarified what they mean by "two-dimensional", but I would suggest that a more appropriate term for their meaning would be "dual role" (as in: the residue at position 158 has a dual role, because it acts as a rheostat for bile acid uptake but is a toggle switch for viral receptor function...)

Lines 487-491: "The particles belonging to the volume showing appropriate shape were re-extracted with a pixel size of 1.09 Å/pix. Three rounds of Hetero-refinement were conducted on re-extracted particles. We were able to obtain two volumes showing appropriate shape."

"Appropriate shape", used twice in these lines, is not a very informative term. What is exactly meant here? Clear structural features? Similarity with previously solved structures?

Reviewer #3

(Remarks to the Author)

The authors have addressed the comments I raised in the previous round, and I have no further questions.

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Sep 30, 2024

Revision for NCOMMS-24-47395A

“Structural basis for hepatitis B virus restriction by a viral receptor homologue” by Shionoya K et al.

Dear Editor:

Thank you for sending the manuscript decision letter for #NCOMMS-24-47395-T on Sep 13, 2024. According to the editor’s and the reviewer’s suggestion, we have modified the manuscript as shown below. The point-by-point responses are also shown below.

To the Reviewer #2

Reviewer’s comment 1.

Likes 227-228: "Thus, this two-dimensional feature that position 158 is a..."

The authors have clarified what they mean by "two-dimensional", but I would suggest that a more appropriate term for their meaning would be "dual role" (as in: the residue at position 158 has a dual role, because it acts as a rheostat for bile acid uptake but is a toggle switch for viral receptor function...)

Reply to the comment 1.

According to the reviewer’s comment, we corrected the sentence to “the dual role of position 158 functioning as a “rheostat” for bile acid uptake but as a “toggle switch” for ~~~” in lanes 223-225 on page 7-8 in the revised manuscript.

Reviewer’s comment 2.

Lines 487-491: "The particles belonging to the volume showing appropriate shape were re-extracted with a pixel size of 1.09 Å/pix. Three rounds of Hetero-refinement were conducted on re-extracted particles. We were able to obtain two volumes showing appropriate shape."

"Appropriate shape", used twice in these lines, is not a very informative term. What is exactly meant here? Clear structural features? Similarity with previously solved structures?

Reply to the comment 2.

According to the reviewer’s comment, we corrected “To optimize the use of computational resources, the particles were divided into three sets and 2D classification was performed on each set. The final round of 2D classification was performed as a single calculation, merging all particles.” in lane 478-481 on page 15, and “In the hetero-refinement step, particles belonging to volumes with clear transmembrane and Fab fragment regions were re-extracted with a pixel size of 1.06 Å/pix. Three rounds of hetero-refinement were then performed to obtain two good volumes with clear transmembrane regions, and their corresponding particles were selected. Using these selected particles, local CTF refinement and non-uniform refinement

were performed. We obtained a density map with a global resolution of 3.49 Å.” in lanes 478-490 on page 15 in the revised manuscript.
