



Paper #5: Babbitt et al. (2005)

Background:

The Complainant brought attention to four panels in Figure 1, two panels in Figure 2, and one panel in Figure 4. The issues brought forward were areas of potential stamping and adjacent lanes that had been assembled from non-contiguous areas of blots.

Analysis:

- In Figure 1, the panels in question are 1A, 1B, 1C, and 1F. For three of these panels (1A, 1B, and 1F) the Complainant suggests that images of lanes shown as adjacent in the figures were actually cut and spliced from non-contiguous areas of the original Western blots. Comparison to the original data obtained from the Respondent validates these allegations. It is apparent that splicing occurred using lanes from the same original film and was done for presentation purposes. Therefore, although the reader was not made aware of these splices, the published image does not result in any alteration in the scientific content or its interpretation.

- In Figure 1C, there are multiple regions of stamping. The potential stamping of the gel regions reporting the data regarding Rpt1 and alphas does appear to have occurred, but the results are identical to the original blots- there are no bands in these lanes. Of primary concern is a different region of the image that appears to have been replaced (stamped)- lanes 4, 5, and 6 for both Rpn12 and Rpn10. In the published figure, there are no bands present in these sets of lanes,

and the Complainant has raised the possibility that lanes 4-6 are stamped with the data present in lanes 7, 8, and 9, resulting in duplicated regions. When compared to the original blots, these suppositions were validated- faint bands are detectable in the lanes on the original film for both Rpn12 and Rpn 10 in the lanes from which the published figure's lanes 4-6 are purportedly derived. Analysis of these regions (lanes 4-6 and lanes 7-9) of the published figure shows a similarity in both background and artifacts present. This stamping resulted in the strong suggestion that no disassociation of the complex occurs in the absence of ATP hydrolysis, an interpretation that would be somewhat weakened if the original data had been shown. However, other data presented in the same figure and in other manuscripts support overall contention that ATP hydrolysis is required. Therefore, the outcome regarding the science is mitigated by confirmation from results from other types of experiments that have been presented. Regardless, the figure has been falsified. In the interview, the Respondent could not provide an explanation for this manipulation.

- In Figure 2, the Complainant has raised concerns about areas of blots in Figure 2A (bottom panels) and Figure 2B. Comparison of the blots to the original films showed that while stamping appears to have occurred in Figure 2B, there was no logical explanation for it as there were no densities in the published figure or in the originals. Therefore, these changes have no impact on the science. However, the alterations to the bottom panel in Figure 2A are of concern. In this case, there appears to be stamping of lanes 6 and 7 for Rpn3, Rpn12, Rpn10, and Rpt1. These lanes are represented as showing immunoreactive material in fractions from a column, with the lane # being equivalent to the fraction #. For the experiment described in the figure, the original blots do not contain a fraction 6. Therefore, the published figure contains a fabricated lane for these four proteins, which is best explained by the stamping of lane 7 to create a lane 6. The Respondent states that fraction 6 is a pre-void volume fraction and would not contain any protein anyway, and, therefore, the falsified data does not change the scientific content or interpretation of the figure. The committee agrees that this is probably true. However, while this may indeed be the case, there is no question that the data presented in the figure has been falsified.

- Figure 4D also appears to contain regions of stamping. Comparison of this figure to the original films does not reveal any alteration of data, as these regions are blank in both the film and figure. Even though the accusation of stamping is supported by analysis, it is not clear why it was performed, and it does not result in any change in the scientific content or interpretation of the data.

Conclusions:

Overall, this paper demonstrates that stamping did occur in multiple figures and that the resulting effect had little-to-no impact on the scientific content or interpretation of the results. Regardless, there was image falsification performed.

