From: Emma Caunt <[redacted]
Sent: Friday, 11 November 2022 2:10 PM
To: Susan Hedge
Cc: Savannah Kuylaars
Subject: RE: Questions for STRMix review expert
Attachments: Minor Change - PowerPlex®21 Casework Baseline on 3500xL using Data Collection version 4_esigned.pdf

Good afternoon Susan

I have provided responses to Dr Taylor's questions below. Please let me know if you require any further assistance.

1) I can see the LOR is 80rfu for the 3500xl instrument, and I am not sure what the LOD value is, but I am assuming it is around 40rfu, is that right? and what are the LOD / LOR values for the 3130?

The LOD for the 3500xL is 30rfu as per the attached minor change document.
For the 3130xl the LOR is 40rfu and the LOD is 16rfu.

2) How do those interpreting the EPGs determine which peaks below the LOR are above the LOD? i.e. as they are not labelled with their heights how is it determined if a peak is sitting at 35rfu (and so should not be being used in any capacity) compared to 40rfu (which can be used to exclude or determine number of contributors)?

The scientist is provided with a zoomed epg. For the 3500xl this zoom is down to 400rfu; for the 3130xl the zoom is down to 200rfu. The zooms have the bins displayed. If a peak is clearly above the LOD then the scientist will only use the zoom to assess the peak. If the scientist thinks the peak could be close to the LOD then they will check the peak height in GeneMapper.

3) How are the peaks between LOD and LOR used in exclusionary purposes when not labelled? i.e. how does a person comparing a reference to the evidence profile determine the sub-threshold peaks are different (and hence exclusionary)?

For profiles generated using the 3500xl, peaks between the LOD and LOR are only used for the assessment of the number of contributors, they are not used for exclusionary purposes. For profiles generated using the 3130xl, peaks between the LOD and LOR are used for the assessment of the number of contributors and for exclusionary purposes. If the peak is clear on the zoomed epg then the scientist will use the printed bins to determine the designation. If there is any ambiguity then the scientist will assess the peak in GeneMapper.

4) In the SOPs I did not see how and when review of STRmix occurs. Does a sample get interpreted and analysed in STRmix by someone in the analysis team and checked by them for correctness, then reviewed by a second person in the analysis team for correctness? Then when the case is being compiled for a court report, are the profiles and STRmix analyses re-checked by the reporting scientist and then reviewed by another scientist? And where are these reviewings recorded? Or at the report compilation stage is it assumed that because the profile has already been analysed and reviewed within the analysis team that it doesn't need further checking? Feel free to point me to part of an SOP if I have missed it.

Page 15 of *QIS 17117v21 – Procedure for case management* describes the review of the STRmix output.

The STRmix analysis may be run by the scientist interpreting the profile or a technician. The scientist that is interpreting the profile will review the STRmix output as part of their interpretation. The scientist reviewing the interpretation will

also review the STRmix output. As the results of the interpretation are completed in our LIMS, the reviewing scientist will validate a test called “Profile Review” this shows that the interpretation has been reviewed and prompts the transfer of the results over the interface to the police. We do not record the details of the review, for example if there were any errors or differences of opinion that were subsequently resolved.

If a statement is required, one of two things can occur. The scientist that did the original interpretation writes the statement and the scientist that did the original review of the result reviews the statement. In this scenario it is unlikely that the original interpretation and review of the result will be repeated. If the scientists writing and reviewing the statement are different from the scientists that did the initial interpretation and review of the result, the profiles will be re-checked by the reporting and reviewing scientist for that statement.

Kind regards

Emma

Emma Caunt
Scientist

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Please note that I may be working from a different location during the COVID-19 pandemic. The best contact method is via email.

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: Susan Hedge <[redacted]
Sent: Friday, 11 November 2022 11:49 AM
To: Emma Caunt <[redacted]
Cc: Savannah Kuylaars <[redacted]
Subject: Questions for STRMix review expert

Dear Emma

Thank you for agreeing to assist the Commission’s expert, Dr Duncan Taylor, by answering a few questions about how STRMix is used in the laboratory. The questions are below. If you could respond today, that would be greatly appreciated. Email is fine, and if you could provide references to SOPs or guidelines if applicable, that would be of assistance also.

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Kind regards,

Susan Hedge
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