Variant Navigator Tutorial #2

1. There are 2 deletions presented in the previous tutorial – DEL 1266, and DEL 4287. DEL 1266 (top) is homozygous, DEL 4287 (bottom) is likely heterozygous since the read depth in the region of the deletion is about half the read depth in the remaining portion of the histogram.

Graphical user interface, calendar

Description automatically generated

Graphical user interface

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1. Some SVs can be questionable related to being homozygous or heterozygous. DEL 528 (second row) for example appears questionable at first inspection (Fig. 1 - below).

Chart

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Fig. 1 – Notice that the read depth in portions of the range of the called deletion is nearly half the read depth in the surrounding regions.

1. While examining DEL 528 click the DISPLAY button and a menu will appear (below). Move your mouse over the “Reads – MQ < 10” item and scroll down until a pink region is visible. All of these reads have MQ < 10. MQ is mapping quality of reads. 60 is the highest possible MQ. MQ < 10 is poor quality data indicating that these reads could align to other locations. These reads account for most if not all of the read depth in the region of the deletion call. This deletion is most likely a homozygous deletion.

Graphical user interface

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1. If you zoom in on the region with low MQ you will see a lot of soft-clipping (below). Recall in the previous tutorial (Fig. 1) that SNVs are shown as small rectangles of a different color than gray. Soft-clipping is where large regions are placed at a location relative to the reference but are not considered part of the alignment, hence these regions are indicated as large regions of mismatches (like SNVs). Soft-clipping and low MQ both indicate poor data and justify that these reads don’t belong here, and this deletion is homozygous.

A screenshot of a computer

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1. If you look at DEL 4287, you will see that soft-clipping is present near the two ends (breakpoints) of the deletion in the “Discordant Pairs” region (top reads with pink bars). This commonly occurs with deletion. Since soft-clipping is not considered part of the alignment, soft-clipping is often used to confirm the breakpoints of a deletion.