

DNA Cell Cycle Plots

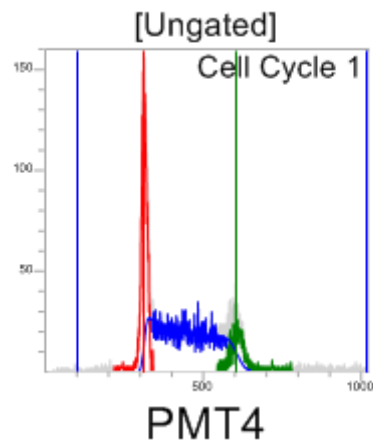
In VenturiOne you can perform DNA Cell Cycle Analysis of single parameter linear data plots.

To display DNA Cell Cycle information, first select one or more histograms and then press the **Cell Cycle** button on the **Plot Format** tab of the **Ribbon**.

If there are regions on any of the selected histograms **Cell Cycle** cannot be activated and the **Cell Cycle** button is disabled. You have to delete the regions or deselect the plots containing them before **Cell Cycle** can be activated.

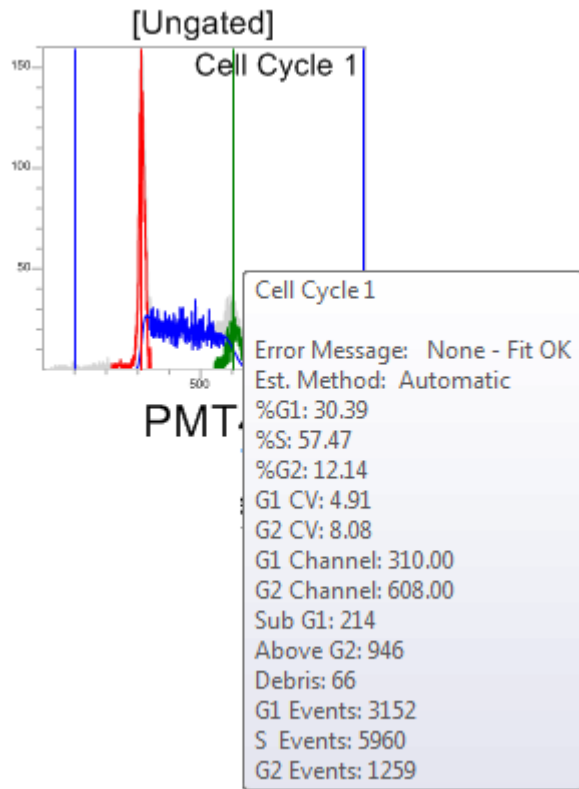
Each Cell Cycle plot is identified numerically with the title **Cell Cycle n**, where **n** is a number.

Below is an example of single parameter linear plots with **Cell Cycle** enabled:



Cell Cycle Plot Tool Tip

If you hover the mouse cursor over a cell cycle plot a tool tip is displayed, listing the Cell Cycle number, statistics and the **Error Message** associated with the plot:



DNA Cell Cycle Markers and Phases

The three phases of the DNA Cell Cycle are colored on the cell cycle plot as follows:

- **Red:** Denotes the G0/G1 phase
- **Blue:** Denotes the S phase
- **Green:** Denotes the G2/M phase

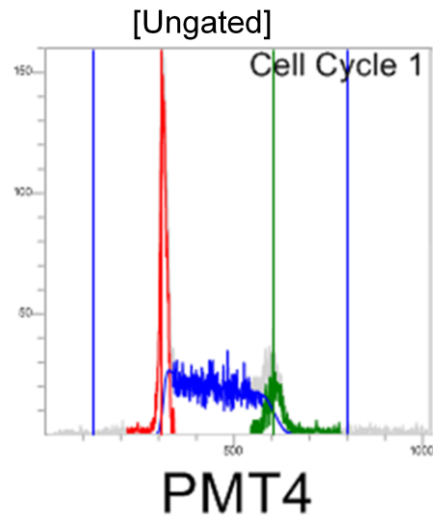
Additional regions cannot be applied to the Cell Cycle Plot.

Markers presented on the Cell Cycle plot denote the estimated central point of the G0/G1 and G2/M phases.

Additional markers are displayed, allowing you to set noise thresholds. Events that occur below or above these noise markers will be presented on the plot, but not analyzed, by the software.

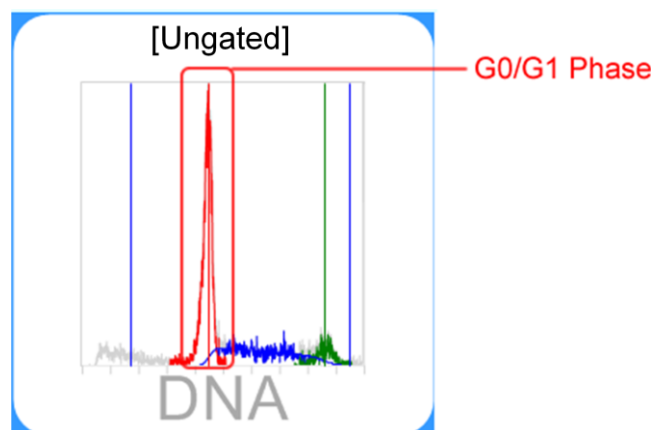
- **Blue Markers:** Debris Markers – Allow the exclusion of cellular debris above or below the respective marker.
- **Red:** Marks the estimated mean channel of the G0/G1 peak.
- **Green:** Marks the estimated mean channel of the G2/M peak.

The four Markers presented on each plot are illustrated in the figure below:

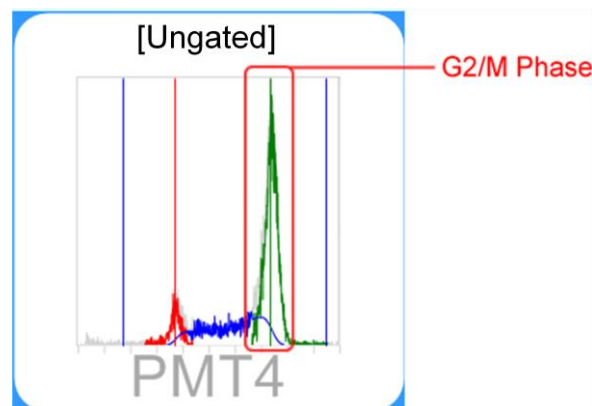


The state of the DNA Cell Cycle can be verified by studying these phases.

The figure illustrated below, indicates that the majority of cells are in the single cell G0/G1 phase. This is denoted by the large G0/G1 (red) peak.



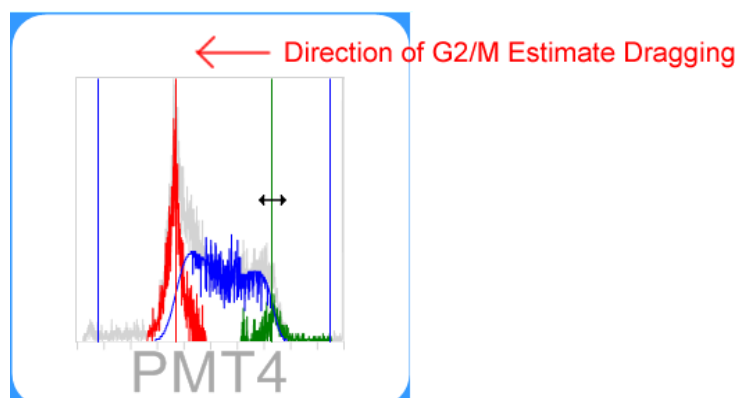
The figure illustrated below, indicates that the majority of cells are in the G2/M phase. This is denoted by the large G2/M (green) peak.



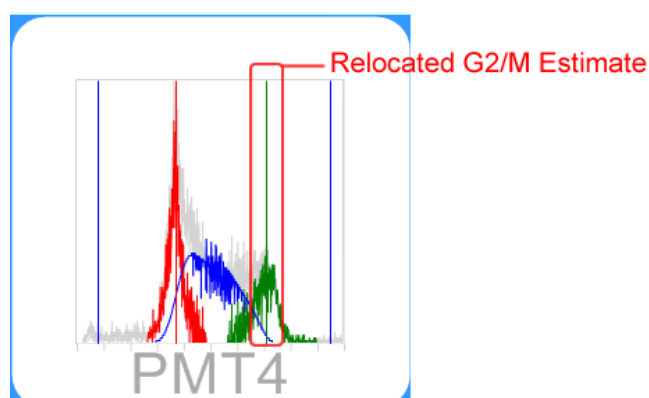
Repositioning of the Estimates

If the calculated phases are not as expected, the G0/G1 and/or G2/M Estimates can be adjusted by clicking on the marker and dragging/dropping it to the desired position to generate a successful fit for the DNA cycle.

In the example illustrated below, the G2/M peak is smaller than expected, therefore click on the G2/M Estimate and drag it to the left. Drop the G2/M Estimate in the desired position:



The G2/M peak is now positioned in the desired/expected location, as illustrated in the figure below:



The Estimate Markers cannot be crossed over. The Estimate Markers can be moved left or right but will be blocked by the one on its left side or on its right side.

The markers can only be moved to within 10 channels (based on a 1024 channel histogram) from each other.

Noise markers cannot be moved outside the limits of the histogram.

Moving any of the markers triggers recalculation on the DNA Cell Cycle plot. When the noise markers are moved the automatically estimated G1/G0 and G2/M peak values will be used. When the G0/G1 and/or G2/M are moved, the adjusted values of these markers will be used.

Resetting to Automatically Calculated Estimates

Following a manual adjustment of the Estimates, you can return the calculated Estimates to their original calculated positions.

Click the **Reset Cell Cycle** button displayed on the **Plot Type** group (**Plot Format** Ribbon) to reset the Cell Cycle with the automatically calculated G0/G1 and G2/M position Estimates.