Volcano Plot

The volcano plot displays p-values and fold-changes of numerous genomic features (e.g., genes or probe sets) at the same time. This allows differentially expressed genes to be quickly identified and saved as a gene list.

Note: the same list can be generated without a visual aid using the *List Manager (ANOVA Streamlined tab)*.

We will invoke a volcano plot from an ANOVA results child spreadsheet with genes on rows.

- Select **View** from the main toolbar
- Select **Volcano Plot** (Figure 1)

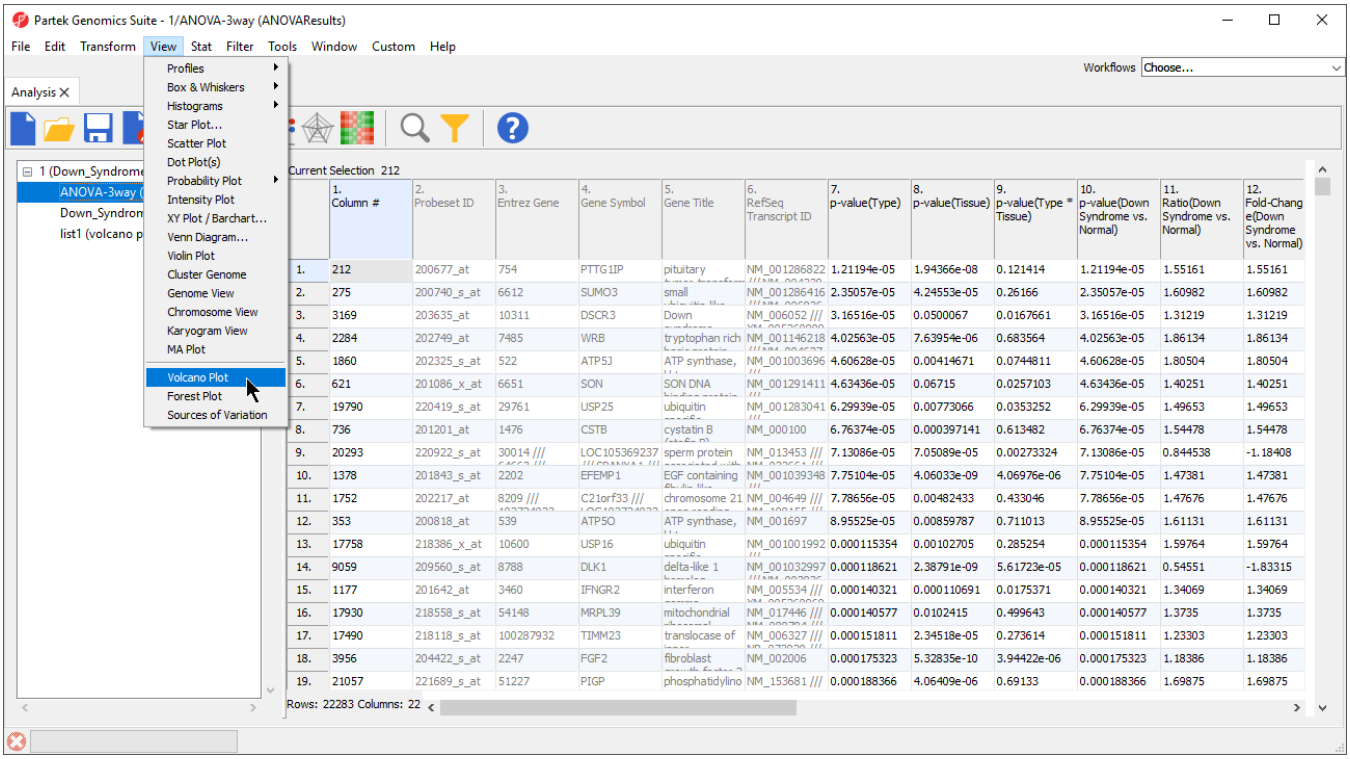


Figure 8. Invoking a volcano plot on an ANOVA results spreadsheet

The *Volcano Plot Configure* dialog will open (Figure 2).

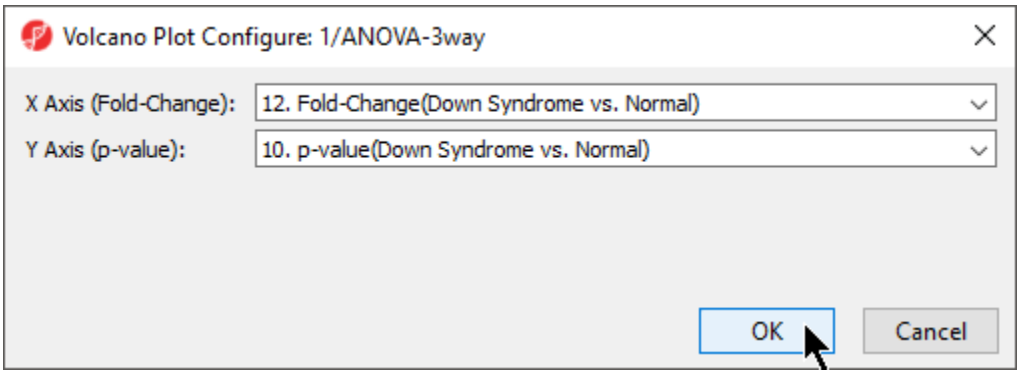


Figure 9. Select the columns to display in the volcano plot

- Select the fold-change and p-value columns you would like to visualize from the ANOVA results spreadsheet; here we have chosen **12. Fold-Change(Down Syndrome vs. Normal)** for the *X Axis* and **10. p-value(Down Syndrome vs. Normal)** for *Y Axis*
- Select **OK**

The volcano plot will open in a new tab (Figure 3). Control and color options for the volcano plot are largely similar to those described for a dot plot. On volcano plots with many probe(sets)/genes, the shapes and sizes of individual probe(sets)/genes will not be visible until they are selected.

Copyright © 2018 by Partek Incorporated. All Rights Reserved. Reproduction of this material without express written consent from Partek Incorporated is strictly prohibited.

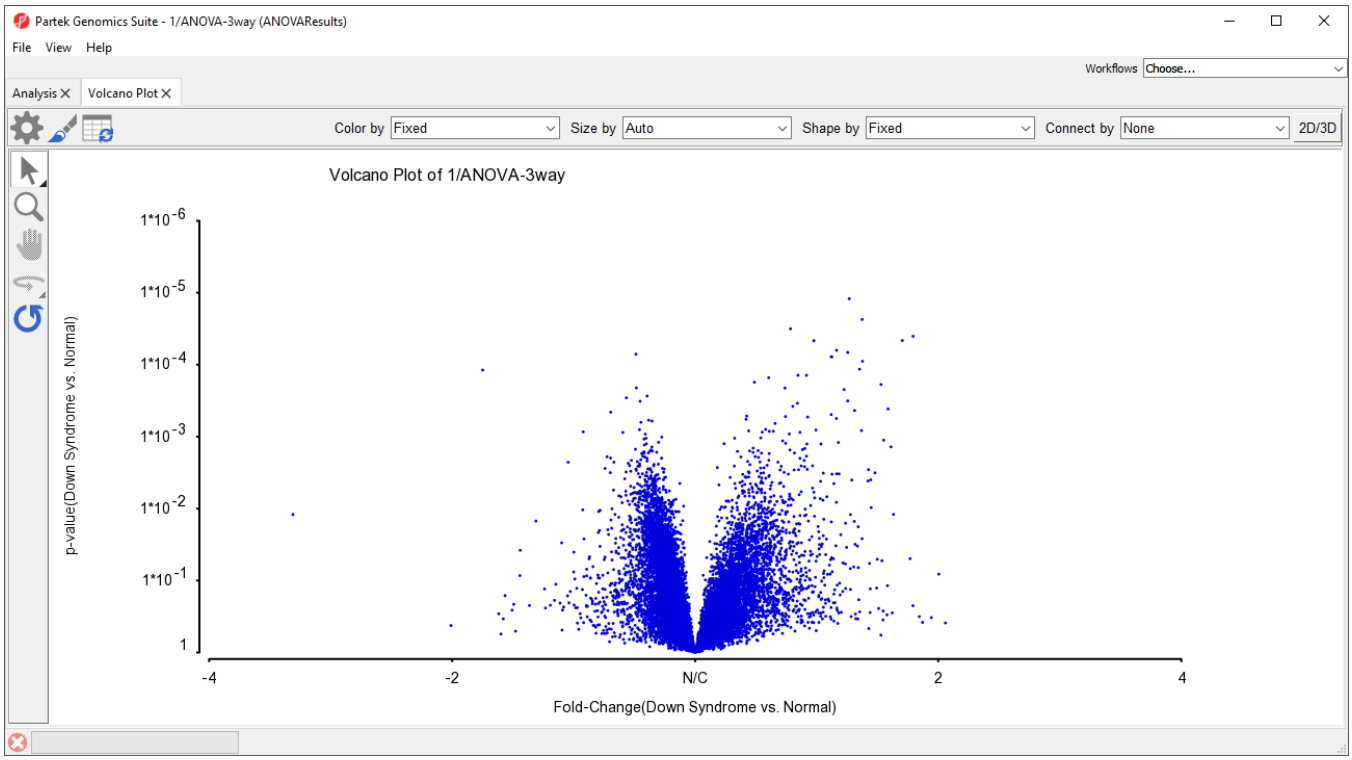
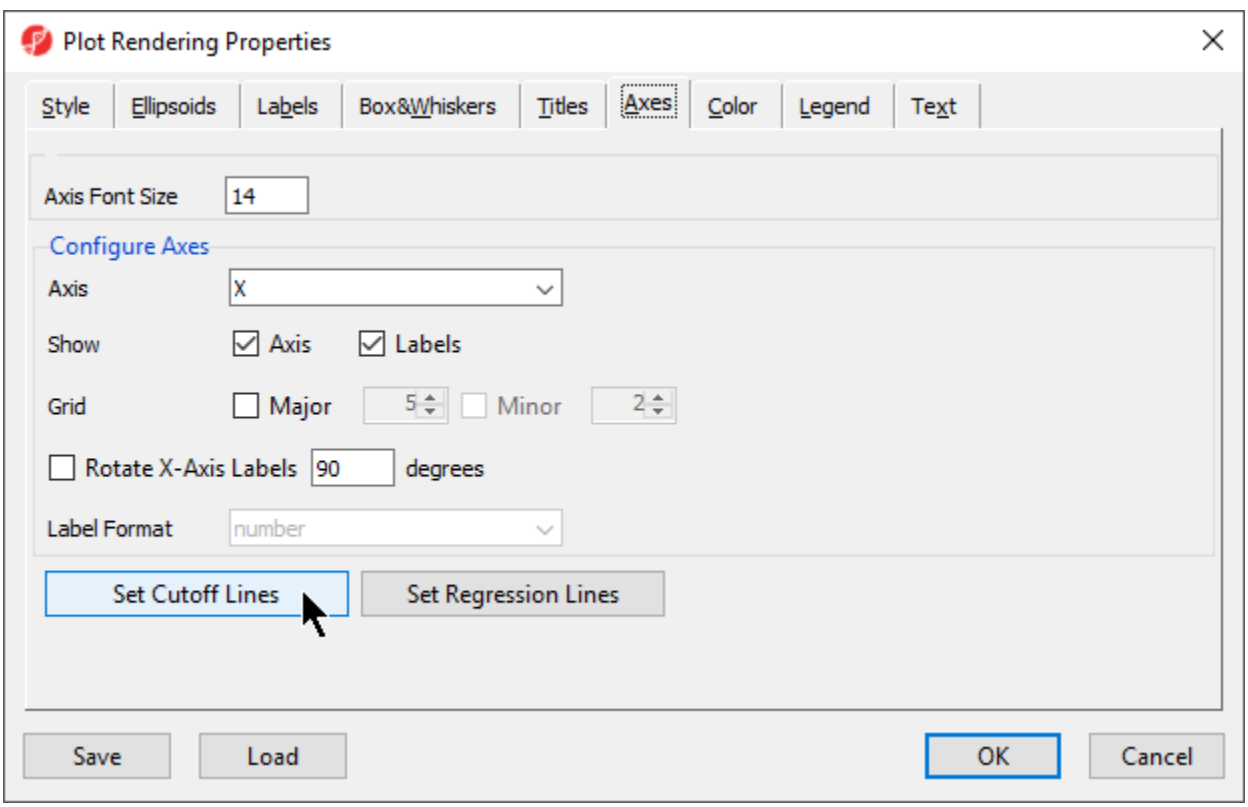


Figure 10. The volcano plot shows each probe(set)/gene as a point. The X Axis shows fold change with no change (N/C) as the mid-point. The Y Axis shows p-values in descending value from a maximum of 1 at the X Axis intersection.

To facilitate analysis, we can add cutoff lines for both fold-change and p-value.

- Select ( )
- Select the **Axes** tab
- Select **Set Cutoff Lines** (Figure 4)



Copyright © 2018 by Partek Incorporated. All Rights Reserved. Reproduction of this material without express written consent from Partek Incorporated is strictly prohibited.

Figure 11. Adding cutoff lines to the volcano plot

- Set *Vertical Line(s)* to **1.3** and **-1.3**
- Set *Horizontal Line(s)* to **0.05**
- Select **Select all points in a section**
- Select **OK** (Figure 5)

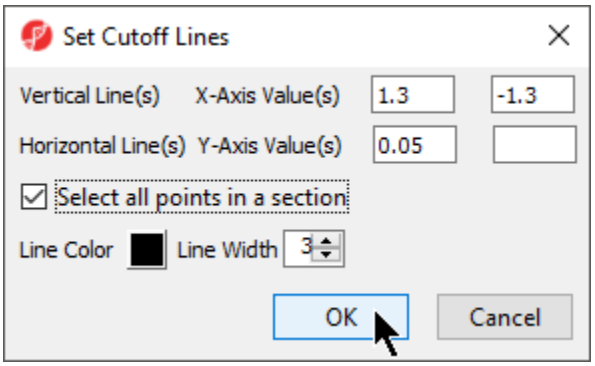


Figure 12. Setting cutoff lines. The vertical lines are fold-change cutoffs. The horizontal line is a p-value cutoff.

- Select **OK** to close the *Plot Rendering Properties* dialog

The volcano plot now has cutoff lines for fold-change and p-value (Figure 6).

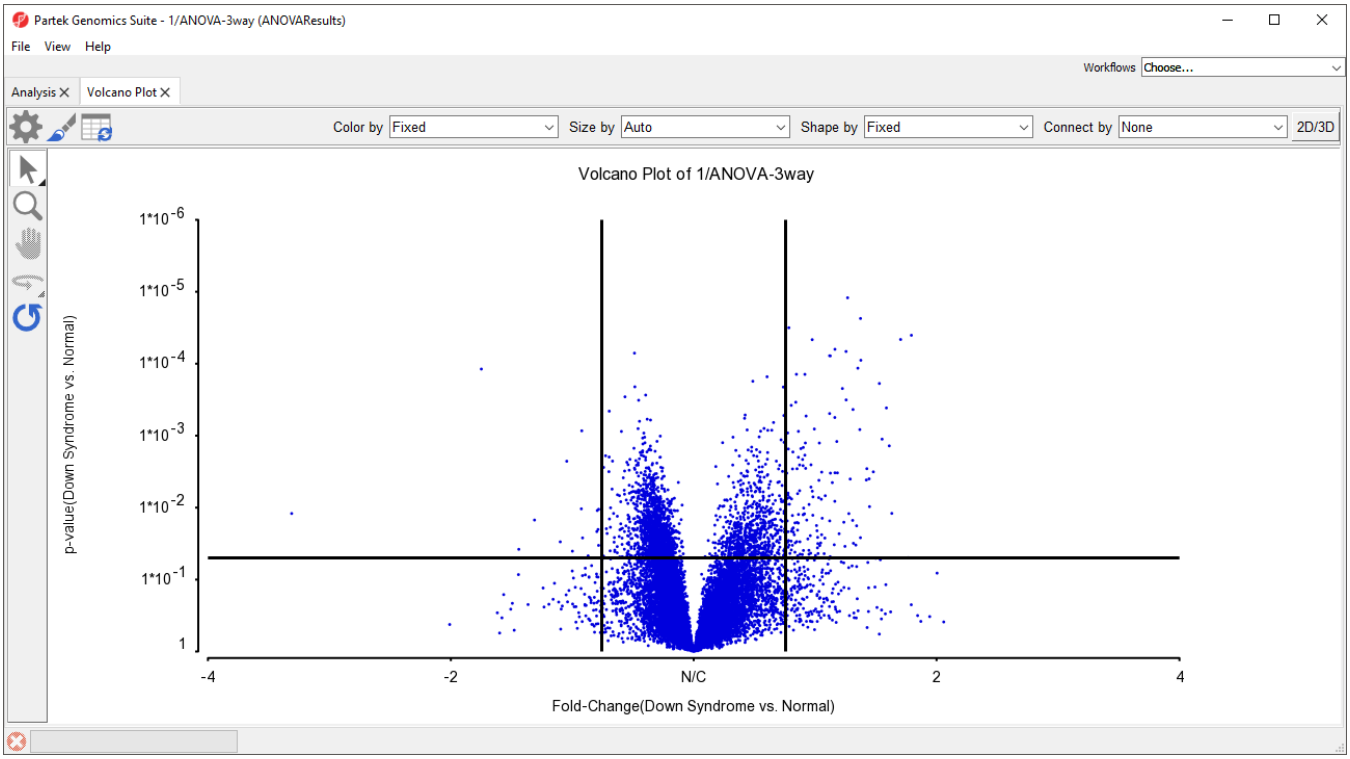


Figure 13. Cutoff lines facilitate visual analysis of ANOVA results

Because we selected *Select all points in a section* when adding the cutoff lines, selecting any of the quandrants will select all probe(sets)/genes in that quadrant. If this option is not selected, individual probe(sets)/genes or groups can be selected using selection mode. Gene lists can be generated from selected probe(sets)/genes.

If columns are selected in the ANOVA results source spreadsheet for the volcano plot, only those columns will be included in the created list.

- Select the upper right-hand quadrant of the volcano plot
- Right click the selected quadrant
- Select **Create List** (Figure 7)

Copyright © 2018 by Partek Incorporated. All Rights Reserved. Reproduction of this material without express written consent from Partek Incorporated is strictly prohibited.

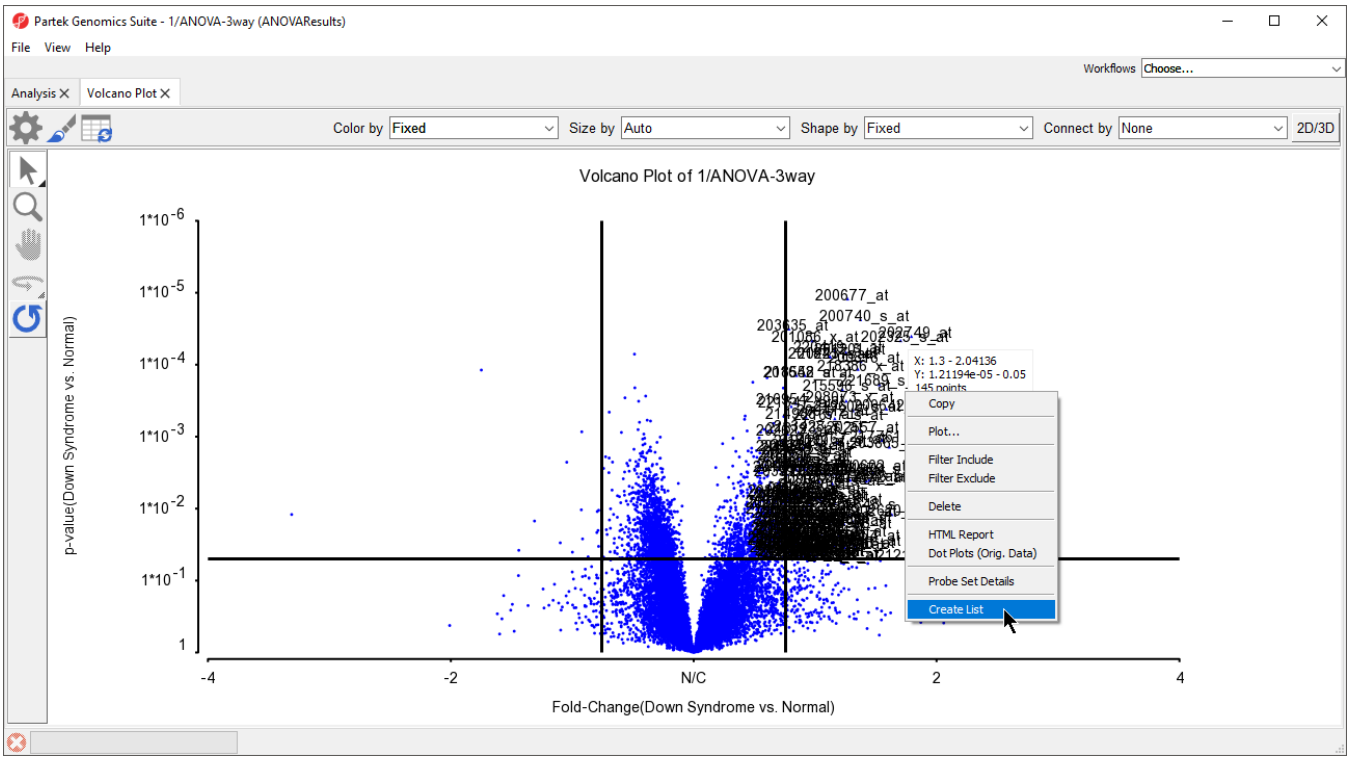


Figure 14. Creating a gene list from a volcano plot

- Give the new list a name and description as appropriate
- Select **OK**

The list will be saved as a text file and open as a child spreadsheet in the *Analysis* tab.

« XY Plot / Bar Chart Scatter Plot and MA Plot »

Additional Assistance

If you need additional assistance, please visit our support page to submit a help ticket or find phone numbers for regional support.

Copyright © 2018 by Partek Incorporated. All Rights Reserved. Reproduction of this material without express written consent from Partek Incorporated is strictly prohibited.

Your Rating: ☆☆☆☆☆ Results: ★★★★½ 34 rates

Copyright © 2018 by Partek Incorporated. All Rights Reserved. Reproduction of this material without express written consent from Partek Incorporated is strictly prohibited.