

XY Plot / Bar Chart

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The XY plot / bar chart displays the intensity of one probe(set)/gene across two categorical variables. Only one probe(set)/gene may be visualized at a time.

Invoking from a gene list

We will invoke an XY plot from a gene list child spreadsheet with genes on rows. The parent spreadsheet should include the categorical variables you want to chart.

- Right-click on the row header of the gene you want to visualize
- Select **XY Plot (Orig. Data)** from the pop-up menu (Figure 1)

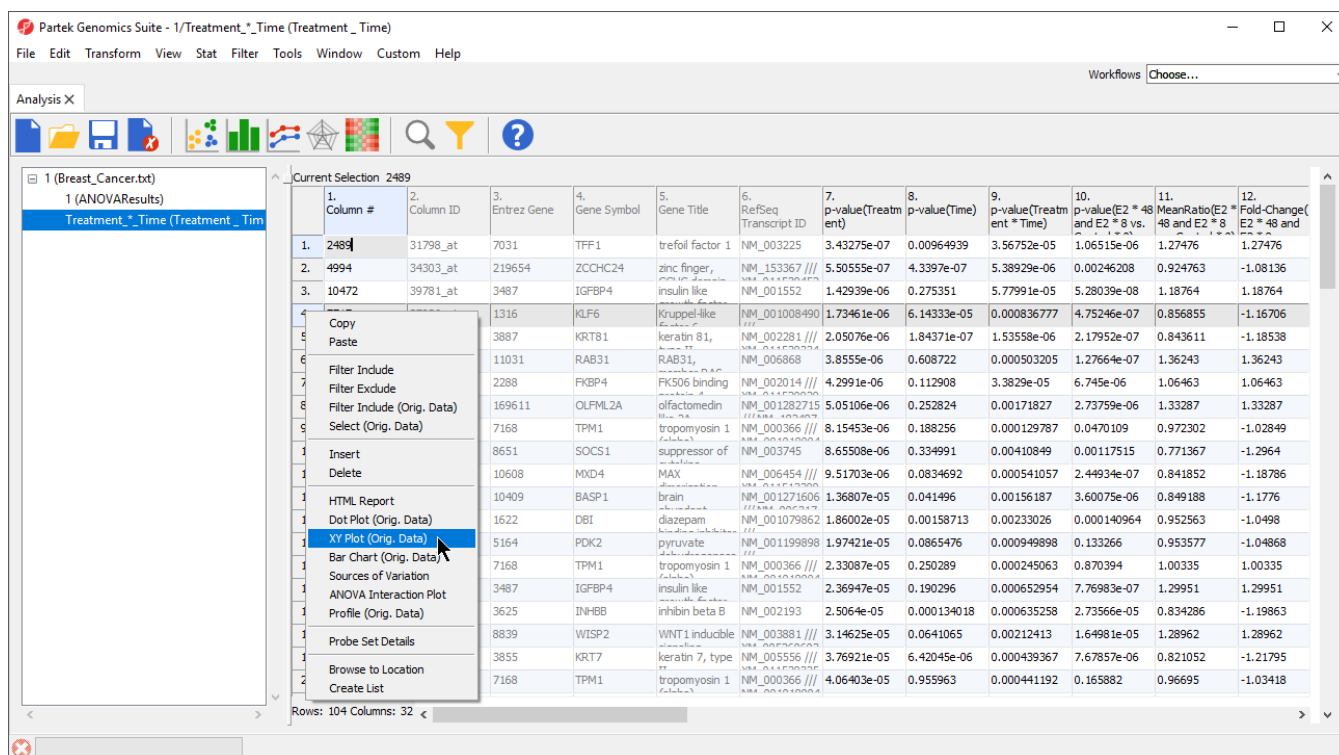


Figure 7. Invoking an XY Plot from a gene list child spreadsheet

An XY plot will be displayed in a new tab (Figure 2).

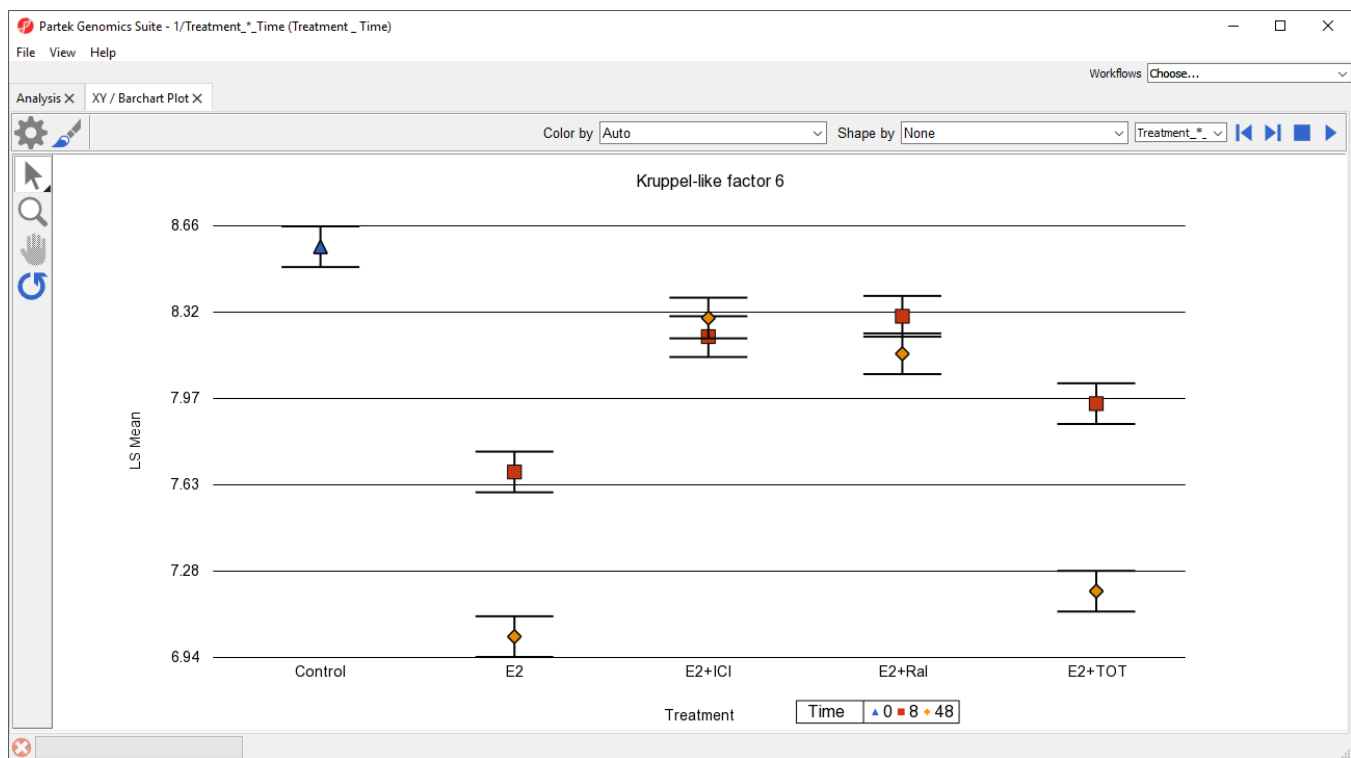


Figure 8. By default, an XY plot invoked from a gene list will have the first categorical variable as columns and the second categorical variable as shapes /colors

To display the change in gene expression over time for each treatment condition, we need to modify this plot.

- Select (⚙️) from the plot command bar
- Set *X-Axis* to **3. Time** using the drop-down menu
- Set *Separate by* to **2. Treatment** using the drop-down menu
- Select **OK**

To help visualize the connection between time points, we can add connecting lines.

- Select (🔗) from the plot command bar
- Set *Plot Style* to **lines** using the drop-down menu
- Select **OK**

The plot now shows time on the x-axis, plots treatments, and connects treatments across time points with lines (Figure 3). Each point is the LS mean value of all samples with the same values for the two selected categorical variables. The error bars are standard error.

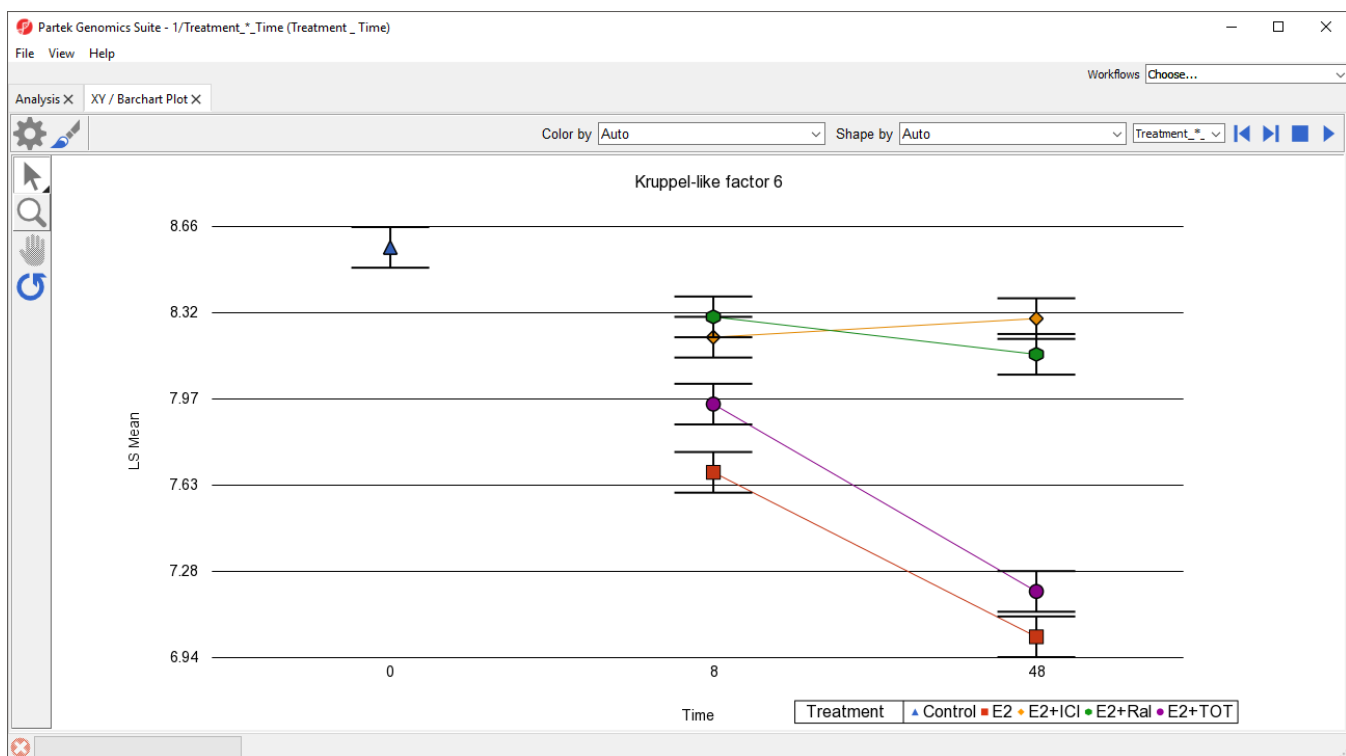


Figure 9. Modifying the XY plot to enable analysis of gene expression changes in a treatment condition over a time course. In this experiment, only the control was measured at time 0.

While most of the plot controls are shared with the dot plot, XY plot does have a few unique options.

- Select () to automatically cycle through each row (gene) in the source spreadsheet
- Select () to stop the cycling

This feature is useful when performing visual analysis of patterns in gene expression changes in a list of genes.

The drop-down menu adjacent to the previous/next () controls lets you switch source spreadsheets.

Lines, but not points, can be selected when using Selection Mode ().

Invoking from the parent spreadsheet

It is also possible to invoke an XY plot from the parent spreadsheet using the main toolbar.

- Select the parent spreadsheet in the spreadsheet tree

- Select **View** from the main toolbar
- Select **XY Plot / Bar Chart ...**

The *Create XY Plot / Barchart* dialog will open (Figure 4).

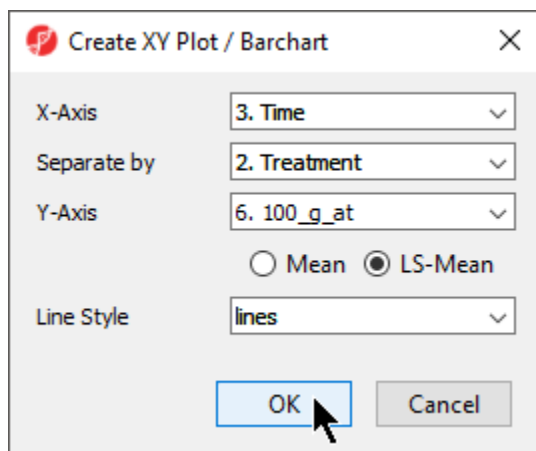


Figure 10. Invoking an XY Plot from the main toolbar

An XY plot will be displayed in a new tab (Figure 5).

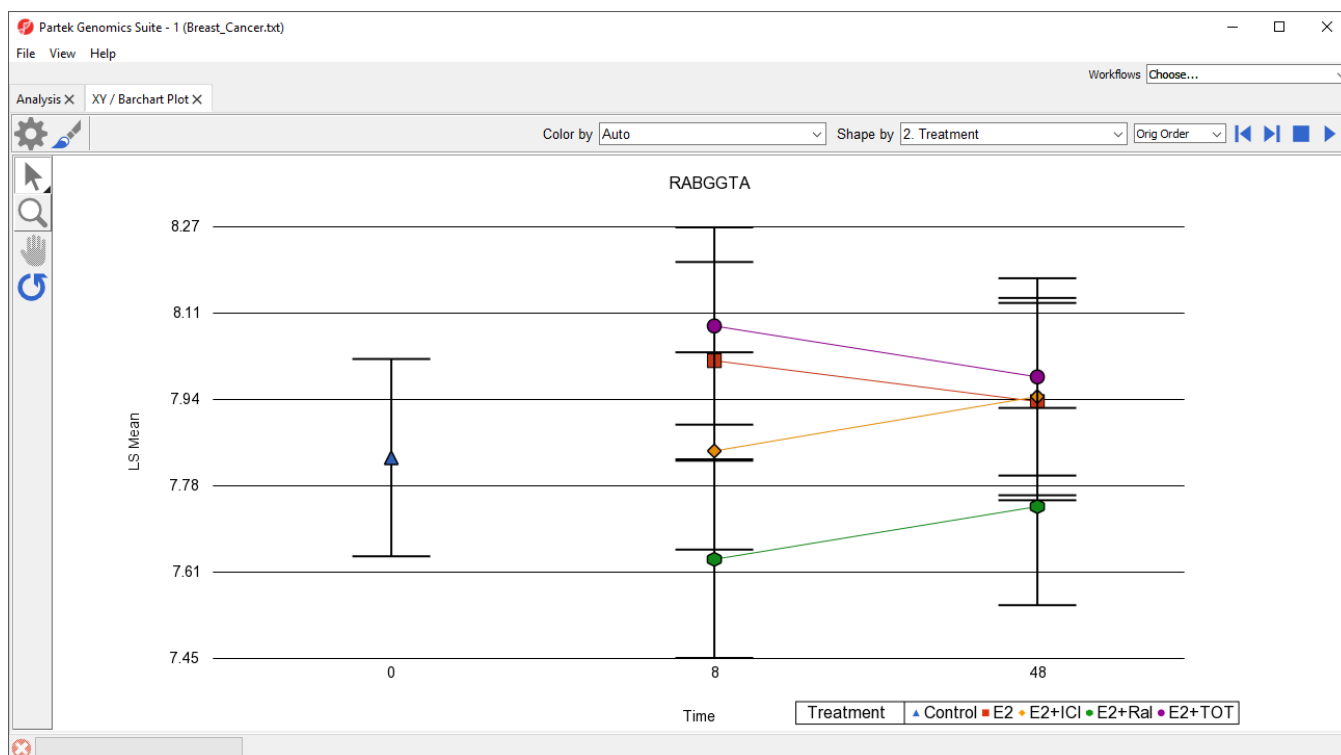


Figure 11. The gene name associated with the probe(set) column is displayed as the chart title by default

Selecting previous/next (◀▶) will navigate along either rows or columns, whichever has probe(set)/gene information.

To switch this plot from to one of the gene lists we have created, we can use the drop-down menu next to the previous/next controls.

Bar Chart Plots

The displayed by a XY plot can instead be displayed as a bar chart with overlaid bars, vertically stacked bars, or horizontally stacked bars. A bar chart can be directly invoked or an XY plot can be converted into a bar chart (and vice versa).

- Invoke the plot from a gene list using the **Bar Chart (Orig. Data)** option in the pop-up menu (Figure 1)
- Invoke the plot from the main toolbar by selecting one of the bar chart options in the *Line Style* drop-down menu (Figure 4)
- Invoke the plot as an XY plot, select (), then select one of the bar chart options from the *Plot Style* drop-down menu in the *Plot Rendering Properties* dialog (Figure 6)

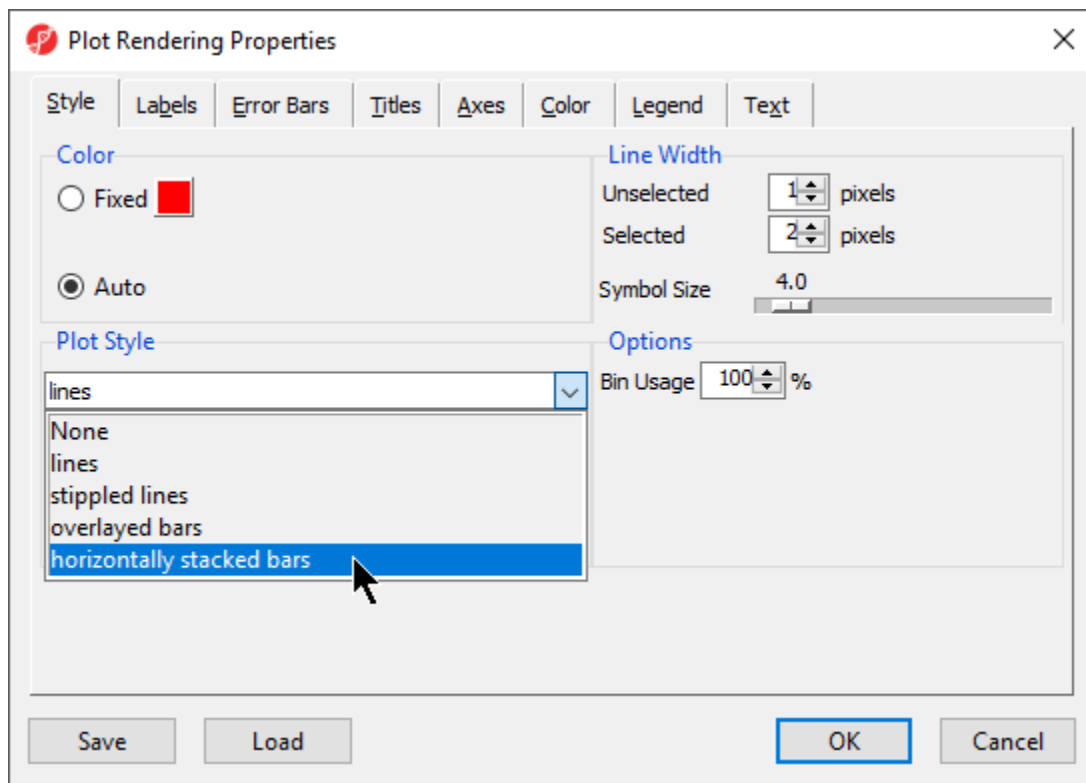


Figure 12. An XY Plot can be converted to a Barchart using the Plot Rendering Properties dialog

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