What's new in GraphPad Prism 5?
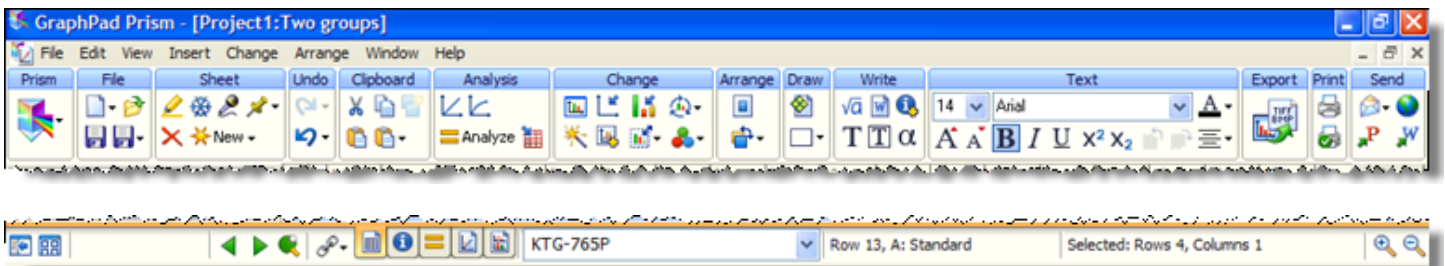
We've added a lot to Prism 5. We urge you to read the list of highlights and try the free demo before reviewing the details below.

Our goals were to improve all parts of the program so new users can get started more quickly, experienced users can work more efficiently, and to provide more choices when analyzing and graphing your data.

New look and feel

- You can use all of Prism's features using the top and bottom toolbars. The standard (File, Edit, View..) drop down menus still exist, but are not needed.

- Change font, etc. right from the toolbar.

- Totally revamped right-click context menus speed up your work.

- Multiple levels of undo.

- Automatically check for new versions, to stay up to date.

- Higher quality, resizable, previews in gallery.

- Vastly expanded help, which you can also view online.

- If you work on several Prism documents, each can have its own button in the Windows task bar.

## Get started quickly with the new Welcome dialog
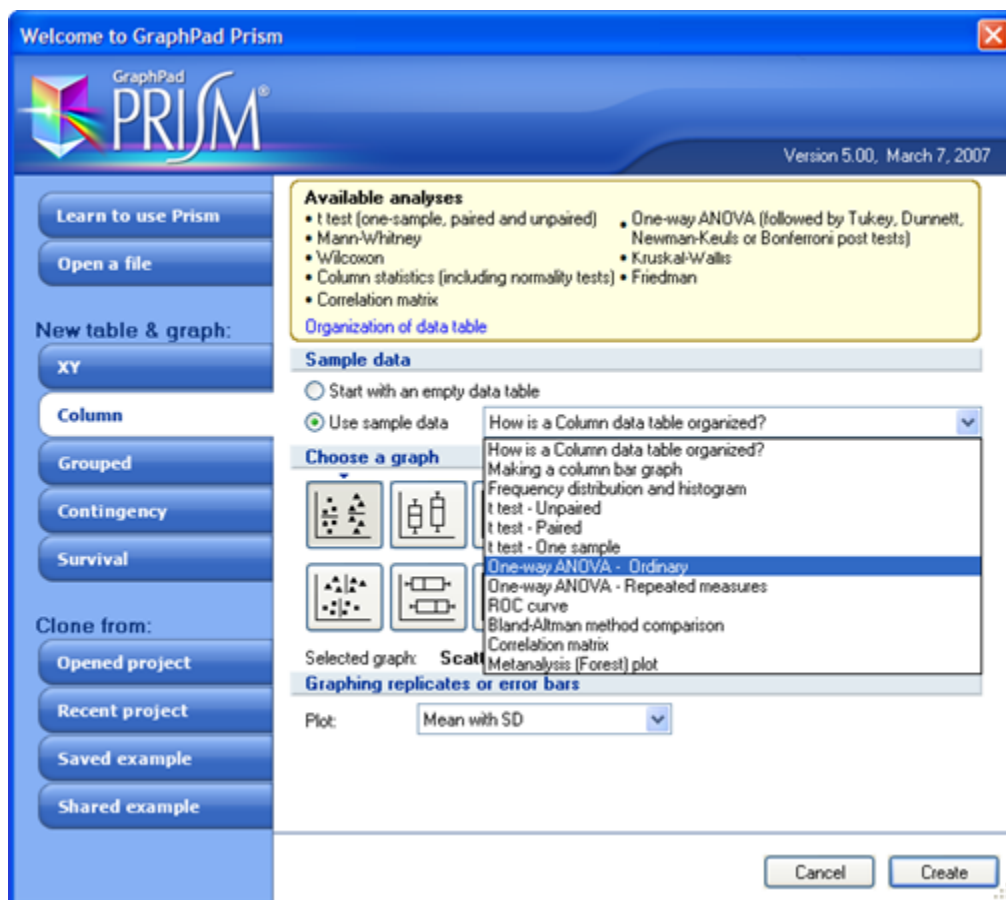
- More choices to pick graph type, and error bar formatting.

- New users learn quickly by choose sample data, which include explanations.

- Clone a graph from the current project, a graph from a recently used project, or any graph you have saved as an example. All you have to do is enter new data to make a matching graph with analyses.

Make Graphs Consistent -- Prism Magic

Our #1 request has been to make it easy to format a bunch of graphs at once to make them look the same. To do this, we create a new command in Prism 5 that we call Prism Magic (Make Graphs Consistent). Follow these steps:

1. Start from one graph you want to change. Or select several graphs on the gallery to change them all at once.

2. Click the Magic wand button.

3. Choose an example graph. Examples can be in the current project, another open project, or a graph you have saved to use as an example.

4. Check and uncheck features to change. Preview those changes, and click OK to finalize.
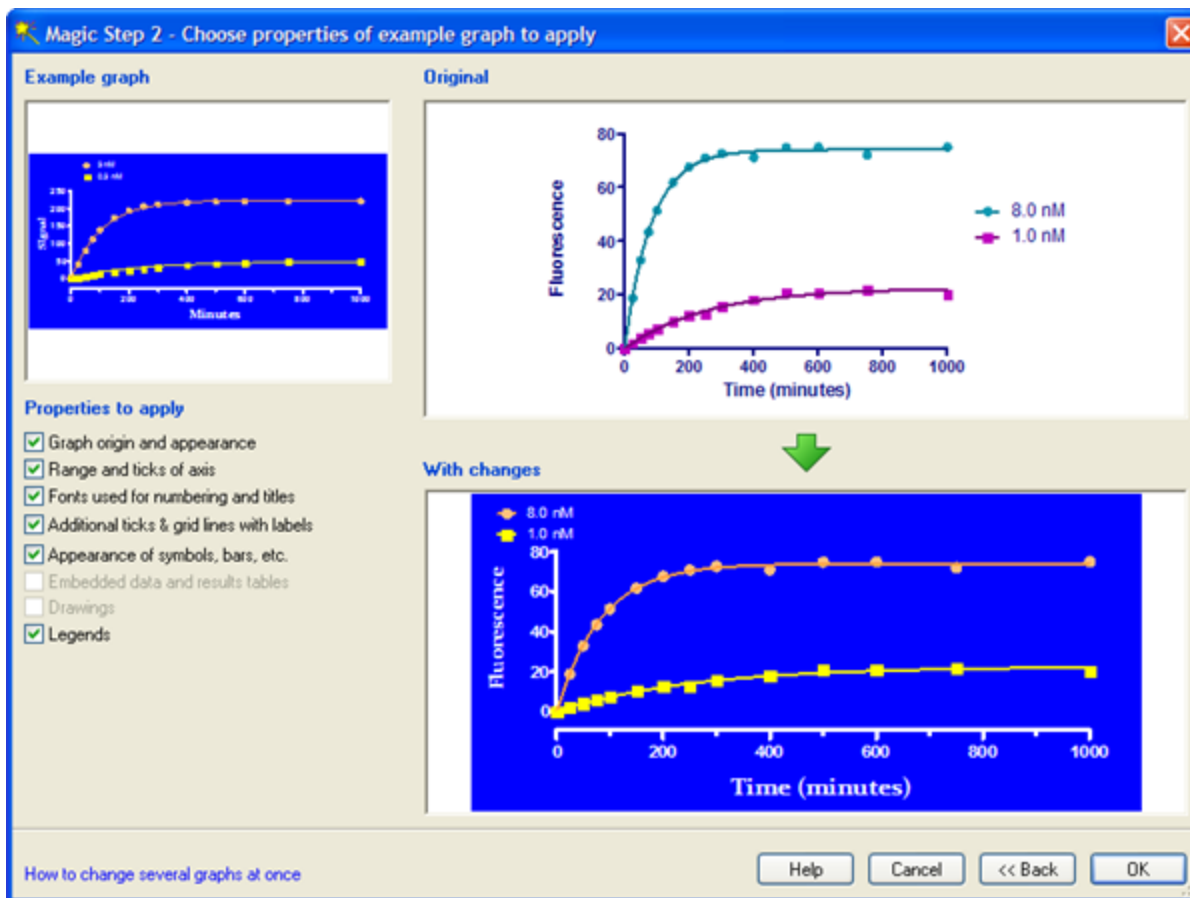
Identification of outliers

- When fitting curves with nonlinear regression, to identify (and optionally exclude) outliers.

- The first step of outlier identification is robust nonlinear regression, and you can choose to fit your data with robust regression (which cannot report confidence intervals, and cannot compare models).

- Robust nonlinear regression and outlier identification use a novel method we developed and published.

http://www.biomedcentral.com/1471-2105/7/123

Improved nonlinear regression

- Vastly expanded library of built in equations, with explanations.
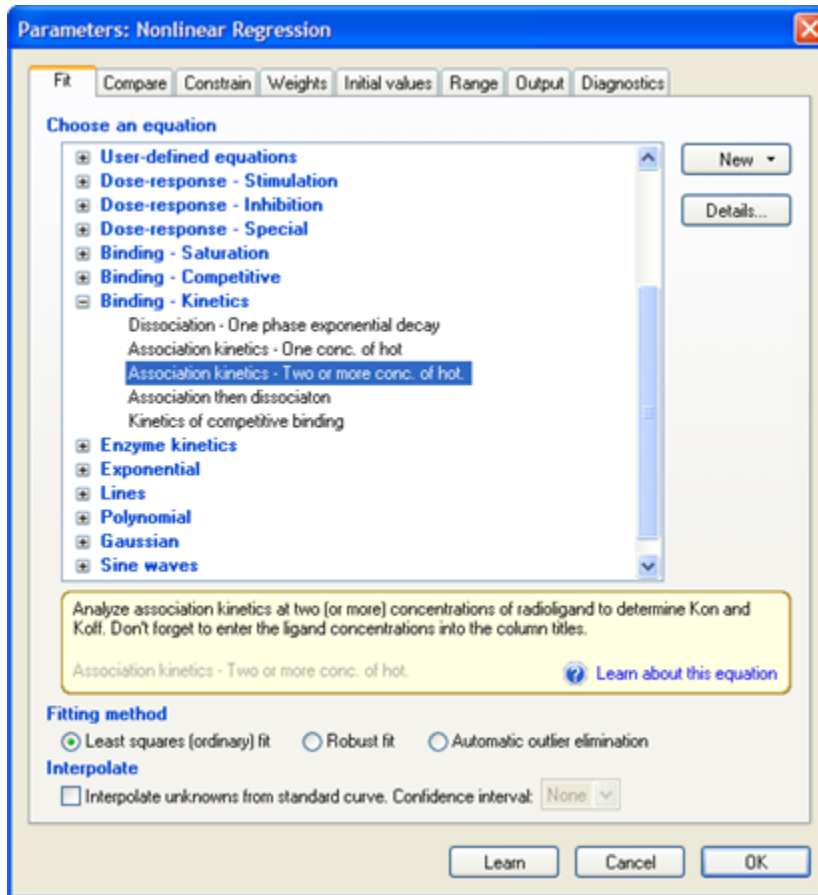
- The replicates test compares the distance of the points the curve with scatter among replicates. A low P value means you have probably not chosen the right model.

- Covariance matrix and dependency quantify the degree to which parameters are intertwined.

- Switch X axis from linear to log scale, and plotted curves remain smooth.

- Interpolated values from standard curve can now include confidence intervals.

- "Interpolating" from a standard curve now includes extrapolating a bit to the left and right of the curve limits.

- Easier to create user-defined equations. Start by cloning any existing equation.

- More rules for initial values let you fit more equations without fussing with initial values each time.

- Report transforms of parameters of user-defined equations (i.e. reciprocal of rate constants, or antilogs of logEC50, etc.)

- Constraints can be hooked to info constants (which can be changed by a script).

Annotate your work

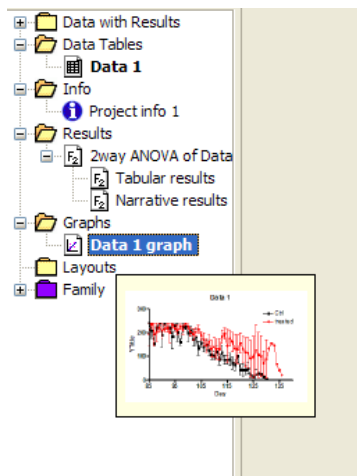- Add floating notes, in various colors, over any sheet.
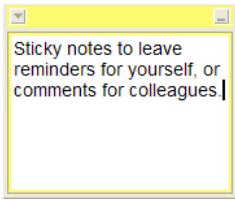
- Floating notes can include a link to a web site.

- Dictate spoken notes, and attach to any graph or layout.

- Highlight sheets with one click so you can easily go back to them.
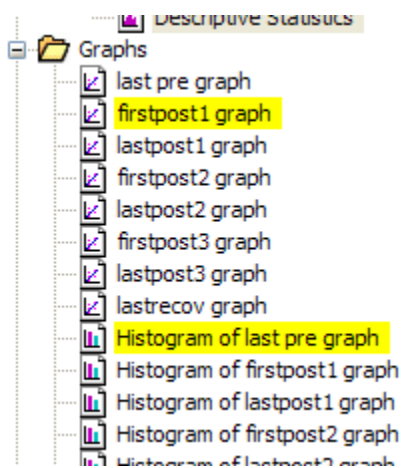

Easier to navigate around a large project

- Navigator tooltips to find the sheet you want.

- Family folder to easily jump back and forth between related sheets.
- Ping-pong button (bottom toolbar) to flip back and forth between two sheets.

- Next and previous buttons in bottom tool bar let you review an entire project.

- Tooltip on each data point (bar) has link to edit that value.
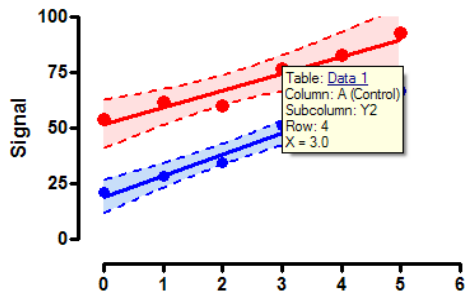
- Tooltip on each graph in a layout has link to take you back to that graph.

- Tooltip on linked data objects have links to take you to that file.

- Quickly go to sheets linked to the current sheet via context (right-click) menus in the navigator and gallery, and a link button in bottom toolbar.

- Reorder sheets by drag-n-drop in the navigator or gallery.

Data table

- Clearer distinction between XY, Column (used to be "one-grouping variable"), Grouped (used to be 'two grouping variable'), Survival and Contingency tables.
- Enter row titles for XY tables. Used to label individual points on graphs and also to label unknowns determined by interpolating regression lines or curves.


- Instant paste transpose.

- Enter error values directly as %CV.

- Enter asymmetric error values as either the upper and lower limit or the plus or minus distance.
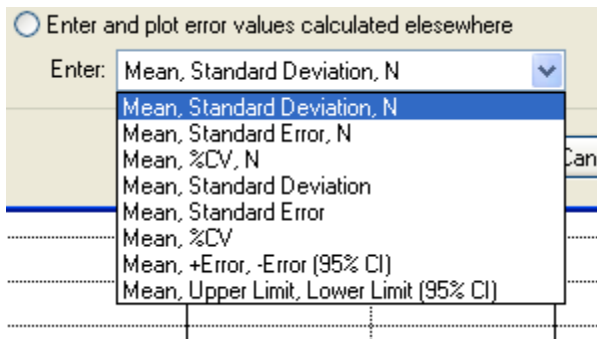
- Sort rows by X value (as before), by row titles (new), or simply reverse current order (new).

- Auto complete column and row titles. This also works in info tables.

- Export (and import) in XML format.

Work on multiple sheets at once
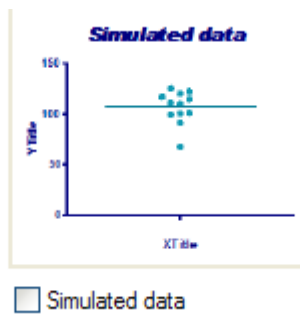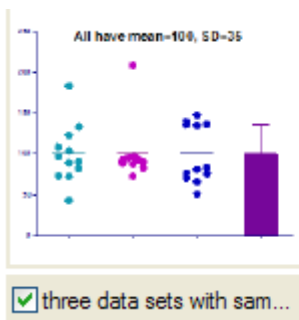
Select any number of sheets in the gallery, and then work on them as a batch:
- Print

- Export

- Send to Word or PowerPoint

- Change color scheme

- Change background color

- "Magic" to make appearance consistent with another graph

- Duplicate

- Rename

- Resize

- Highlight

More analysis choices

- Correlation. Compute a correlation matrix from a column (one grouping variable) table. Or choose any column to be X and Y and compute correlation between those two columns.

- Frequency distribution. Create exact cumulative distributions, and plot on linear or probability Y axis. Choose the range of the frequency table, so a set of graphs can be consistent (even if many bins have zero values).

- Smoothing. Create the second derivative of a curve (as well as the first derivative as before). Create smoother curves by averaging a larger number of neighbors, or using a higher order smoothing polynomial.

- Column statistics. Compute any percentile you choose. If you enter replicates into subcolumns, compute column statistics for each subcolumn separately or for the means.

- Row statistics. Compute coefficient of variation.

- Remove baseline. Prism propagates error so results show confidence intervals.

- Survival analysis. Compare survival curves with Gehan-Wilcoxon-Breslow method (which emphasizes early deaths) as well as logrank. Improved calculation of confidence interval of hazard ratio.

- Constants used in transforming, normalizing (and more) can be linked to analysis constants. For example, this means you can normalize to plateau values fit by nonlinear regression.

Easy ways to change graphs

- More color schemes, easier to choose. Preview colors as you try on various schemes. For bar graphs, some schemes include bar fills and some don't.
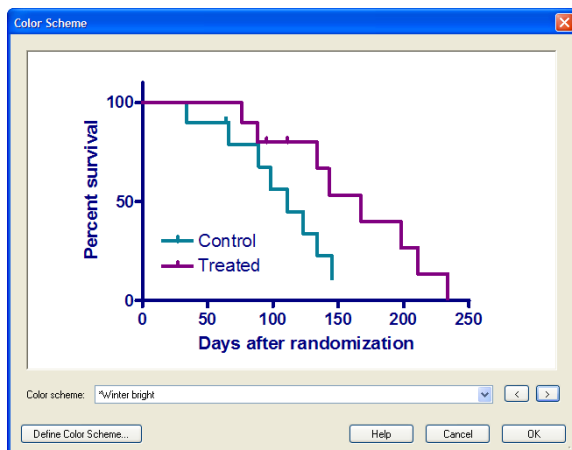
- Reverse left-to-right or front-to-back order of data sets in one click.

- Auto complete when entering titles or legends.

- Text automatically snaps to center over a bar or group of bars, or align with other text objects.
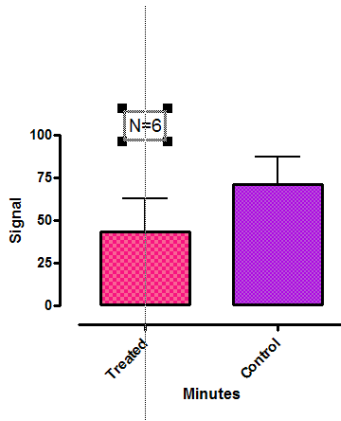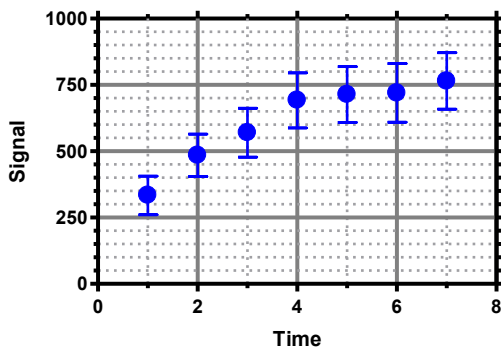

- Position of additional ticks and grids can be entered on the dialog or hooked to an analysis constant (i.e. a best fit parameter of a curve fit) or a info constant.
- Auto complete when entering graph or axis titles, to easily reenter the titles you've used before.

Customize your graphs

- Change symbol size or color of individual data points or bars. Right click on any point or bar and change its look.
- Probability scale axes, for fractions or percentages.
- Full frame graph can have ticks opposite or mirrored to main axis
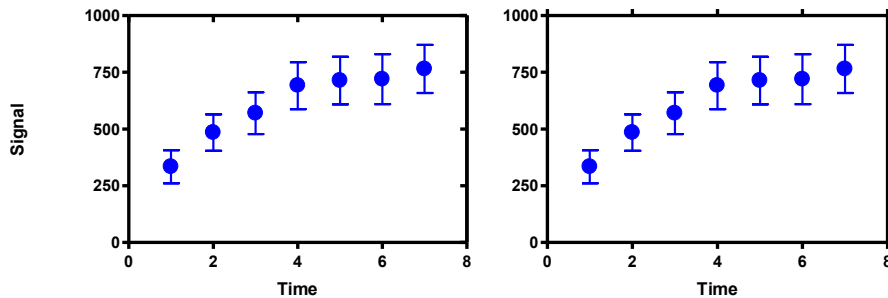
- Axis grids. Choose color and thickness for major and minor grids.

- Additional ticks and grids. Use Greek, superscripts, subscripts. Tick labels can have two rows of text. Change color, thickness, pattern of grid lines. Fill between grid lines.
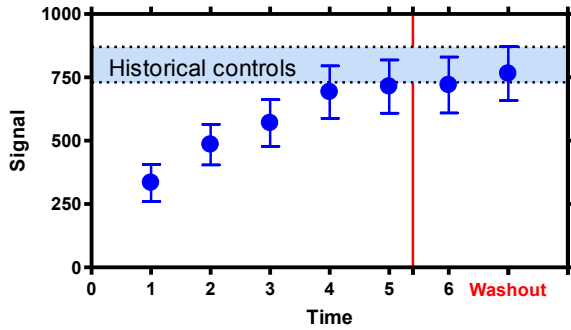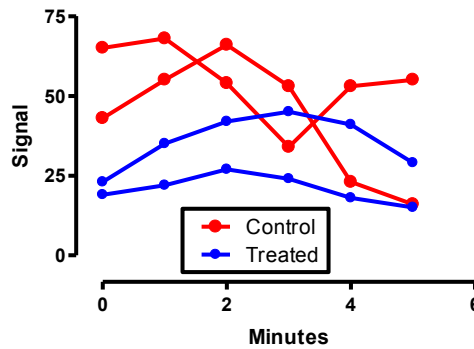

- Position of additional tick or gridline can be hooked to an analysis or info constant.

- When plotting on a discontinuous Y axis, choose whether to leave gaps in lines and bars.
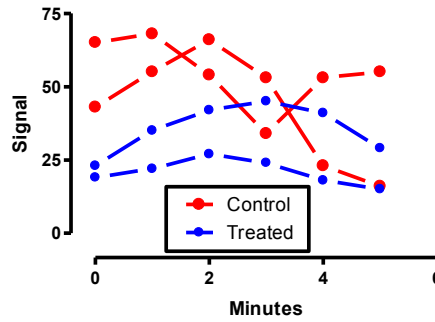
New choices for XY graphs

More choices of symbols (click 'more' to use any character from any font).
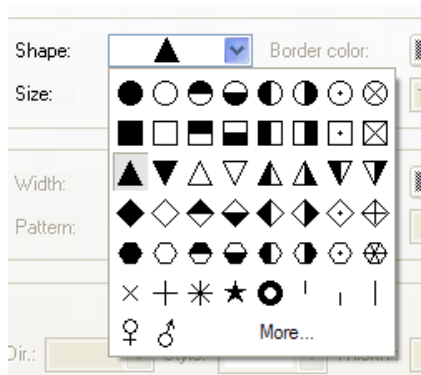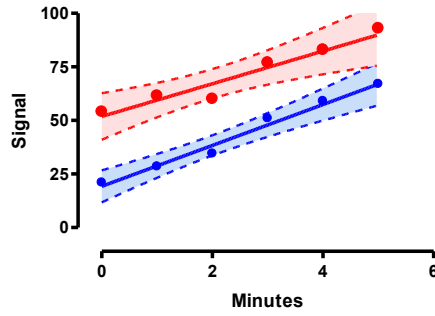

Plot each subcolumn as a separate point-to-point line.
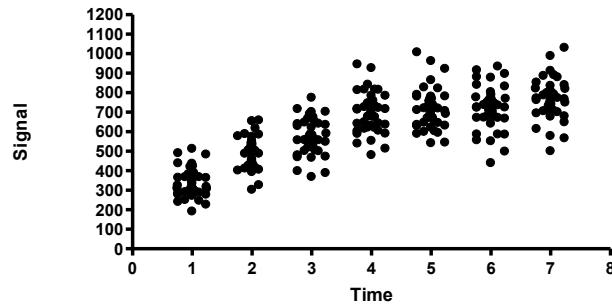
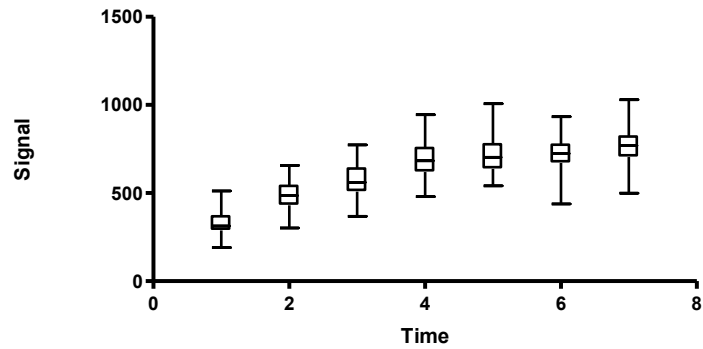Point to point lines can have gaps at each symbol.

Fill within confidence or prediction bands of linear or nonlinear regression.
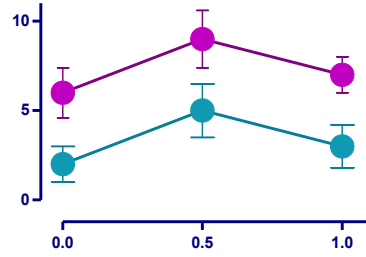

Stagger points on XY graph.

Plot replicates on XY graph as box-and-whiskers.
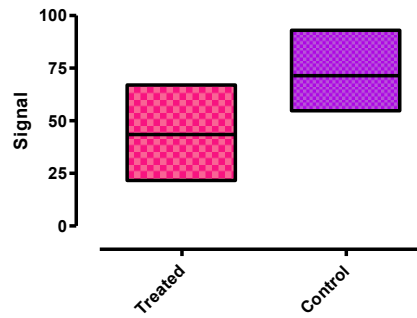

Legends can show symbols, lines or both.

Symbol & line
Symbol only
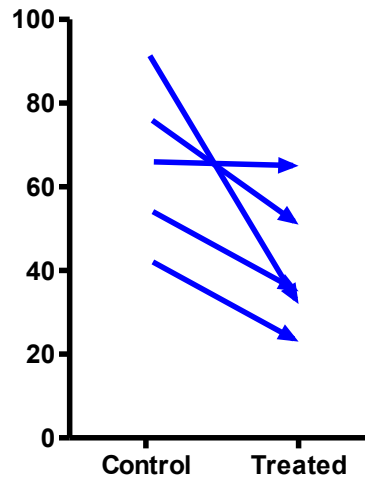Line only

Error bar caps can be wide or narrow.

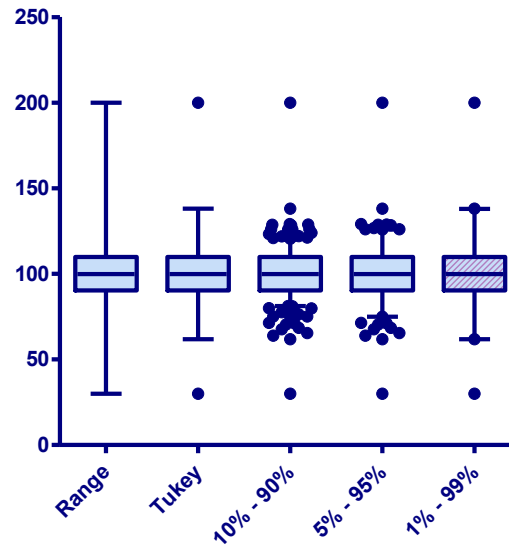## New choices for Column graphs (one grouping variable)

Floating bars from lowest to highest value,
with line at mean or median or neither.
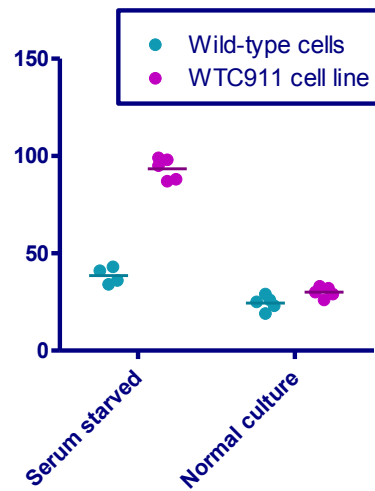
Before-after graphs with arrows.
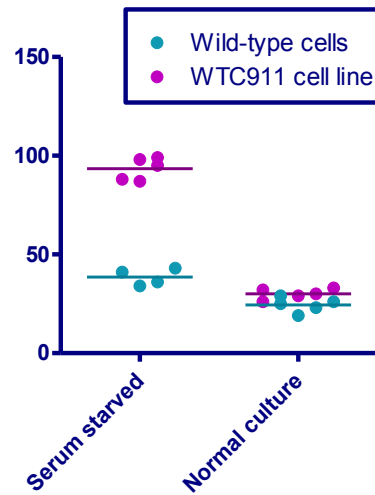
Five ways to create box and whiskers.

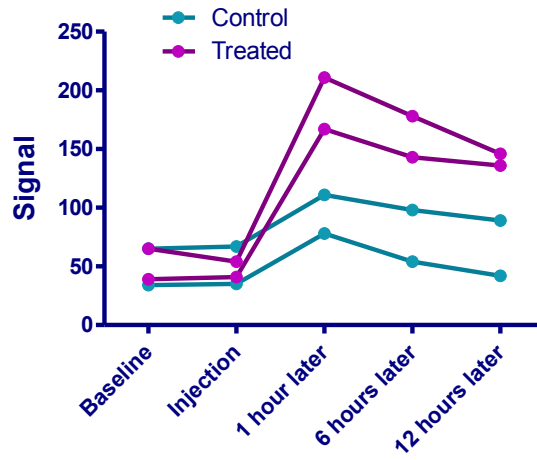## New choices for Grouped graphs (two grouping variables)
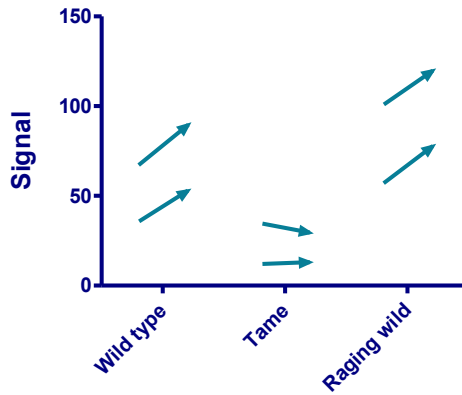
Grouped scatter graph, interleaved.

Grouped scatter graph, superimposed. Lines can be at mean or median, for each data set, or one line at grand mean or median.
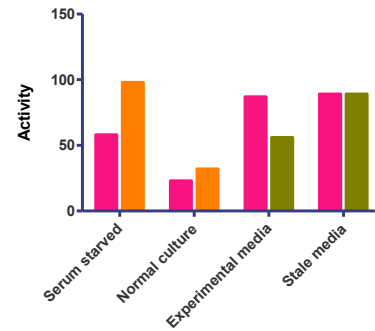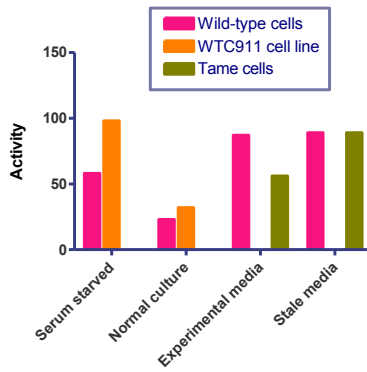
Repeated measures by column, showing repeated measures.

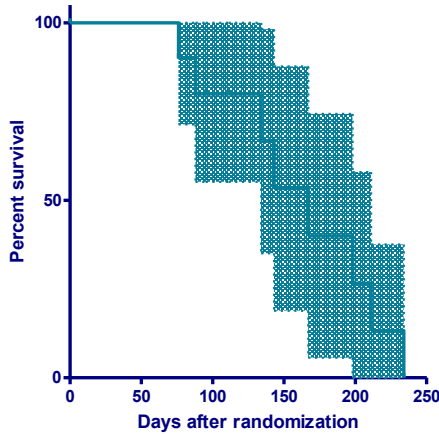

Repeated measures by row, showing repeated measures.

If a value is blank, choose if you want to plot as zero (as Prism 4 did) or simply skip that point.

New choices for Survival graphs

Fill between error bands

Exporting, sending and printing

- Export graphs and layouts to PDF and EPS files.

- Improved exporting to TIFF.

- Export several selected graphs or layouts at one time.

- One click to Word, as well as PowerPoint (Windows only).

- When sending to Word or PowerPoint, choose to send a picture, a link to the Prism file or a Prism object to embed (Windows only).

- Copy a Prism data or results table and paste into Word, and it actually pastes as a table rather than unformatted text.

Layouts

- When you assign a graph to a layout that already has graphs, it will try to make the size match (even if means extending beyond the placeholder).
- When you change the size of one graph on a layout, Prism will offer to also change the others so they continue to match.
- Drag and drop a graph onto a layout, even if there are no extra placeholders.
- Put a graph on a layout by copy and paste.
- Automatic snapping to align graph axes.
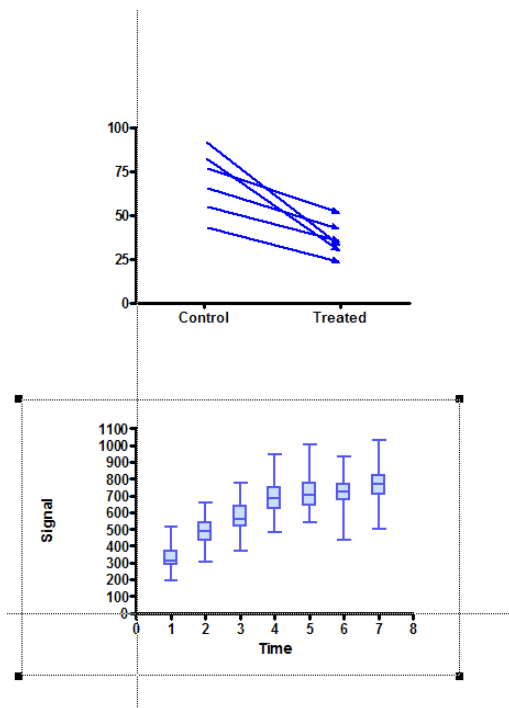
New PZFX optional file format

- Optional format for saving complete Prism projects.

- Data and info tables are in plain text, with XML formatting.

- Safer. Even if the file is damaged or truncated, it might be possible to extract the data.

- Great for automation. Other programs can create Prism files complete with data, results, graphs, by starting with a PZFX file saved by Prism and replacing the data.

- Compact. Smaller than PZF files in most cases.

Scripting

- Sample scripts make it easier to get started.

- "Cheat sheet" displays while you edit a script, so you don't have to remember syntax details.

- Save a script within a Prism project, rather than an external file.

- Configure a script to run automatically when a project opens or closes.

- Add multiple line comments.

- New ForEachSheet command to loop over all sheets in a section.

- New commands to change axis limits, color scheme, or title of axis, sheet or graph

- New commands to export in EPS, EMF or PDF format or to send to Word or PowerPoint.

- New commands to make it much easier to output tabular results. Output to files formatted as tab-delimited text, CSV, HTML or XML. Or output directly to a Prism file or to a SQL database.