

## A tour of Prism



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Following a tour is the easiest way to learn Prism.

### View a movie

Watch and listen to a ten minute introductory movie from Prism's Welcome dialog. Or view it [on the web](#).



### Read a step-by-step tour

The written tour includes more details than the movie, with lots of screen shots. Print the tour so you can try every step using Prism.

[Start the tour](#)

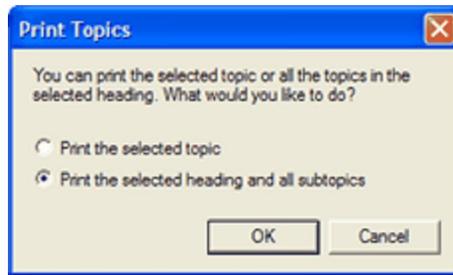
[How to print](#)

1. Click Print at the top of this help viewer.



Print

2. Choose "Print selected heading with all subtopics".



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## Tour overview

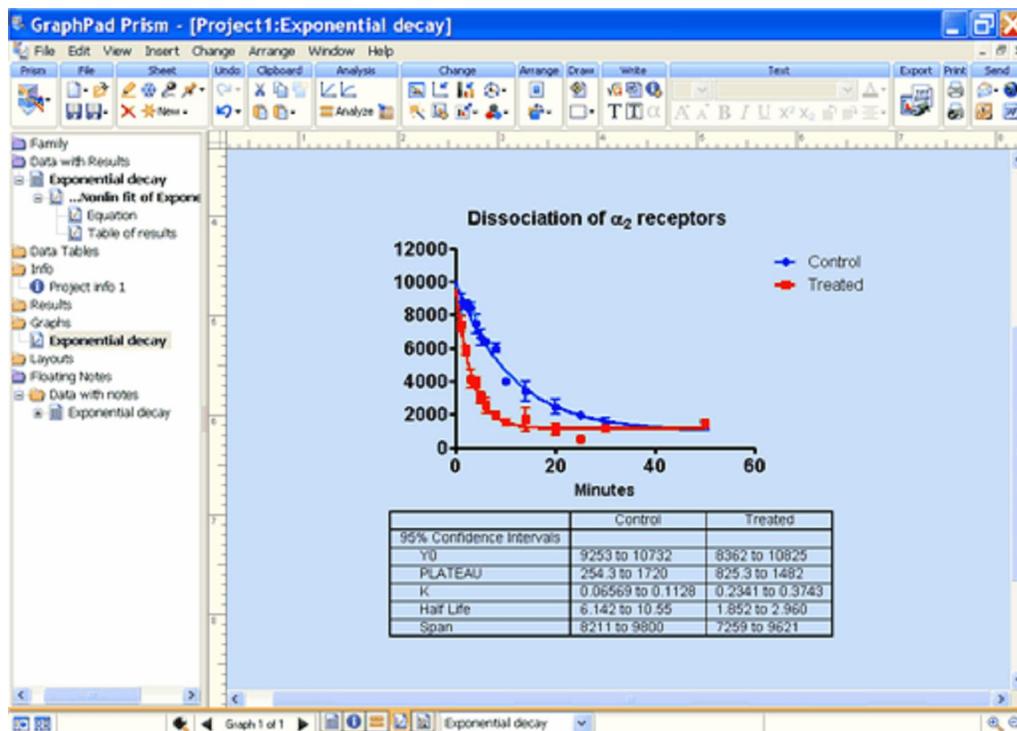


### To print this tour:

Go to the [main tour page](#), and then click Print on the help viewer toolbar.

### What is GraphPad Prism?

GraphPad Prism is a powerful combination of biostatistics, curve fitting (nonlinear regression) and scientific graphing in one comprehensive program. This tour will highlight key features of the program and provide the basic training you'll need to get started. Use it as inspiration, not a rigid method. We've worked hard to make Prism easy and intuitive to use. Explore Prism yourself -- try things, make a few mistakes. If you get stuck, search this help file for tips and answers, about the [Prism program](#) itself, or about [statistical principles](#) you might not understand. We're sure you'll be up to speed in no time.



## If you'd like to sit back and watch

If you prefer, you can watch an animated presentation of this tour. Launch Prism and from the Welcome dialog, select "Learn to use Prism."

## Learn by doing -- Take a quick tour to learn the basics

In the next few pages, you'll get a quick tour of GraphPad Prism version 5. If you're new to Prism, it's a good way to get oriented. If you've used an earlier version of Prism, it is a great introduction to some of the new features.

Learn how to begin a new project.

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## 1. Start a new project



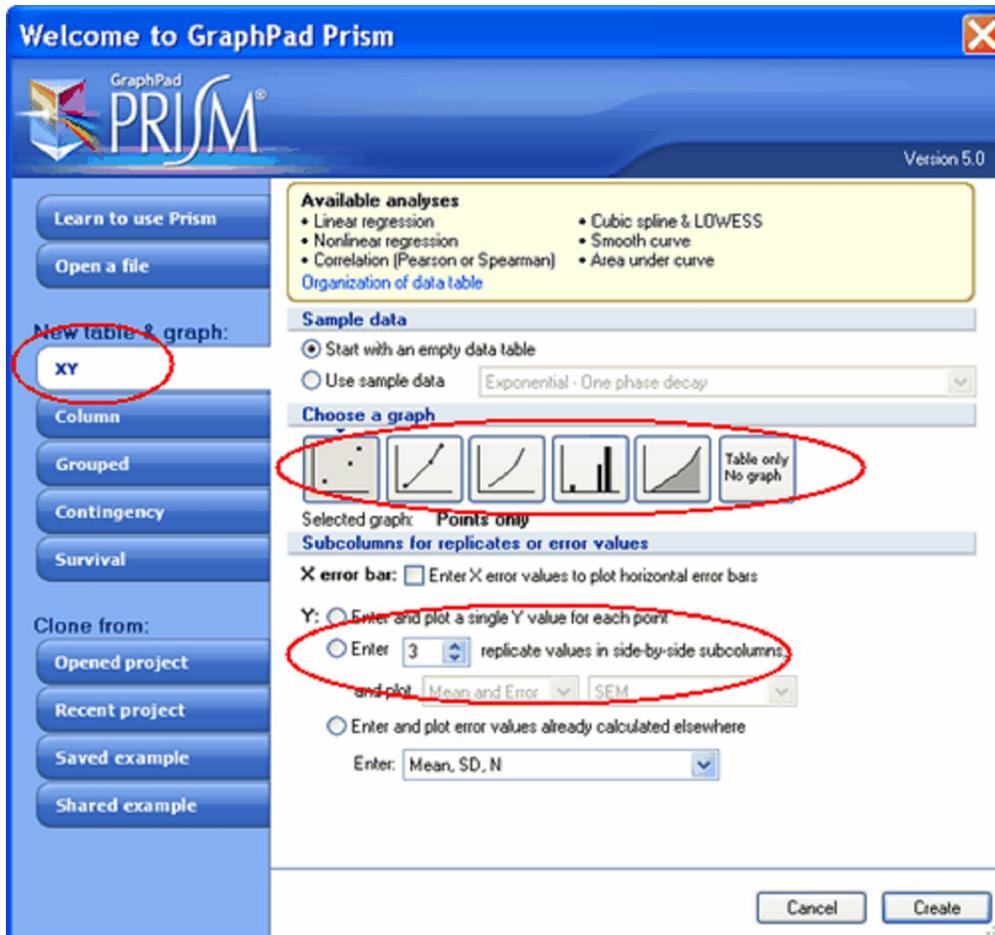
### Begin by choosing a graph type

The first thing you need to do to begin a new graph is to choose a basic type of graph you'd like to make, and to tell Prism how you want error bars on your graph to be calculated. From your choices, Prism will create a custom data table specifically formatted for your data.

### Graph and data table types

Prism offers five basic types of graph (and data table) -- [XY graphs](#), [Column graphs](#), [Grouped graphs](#), [Contingency tables](#), and [Survival plots](#). Each type of graph has its own tab on the Welcome dialog. In the main window, you'll see small pictures of the various types of graphs for each category. In the screenshot below, for example, you'll see the choices possible for an XY

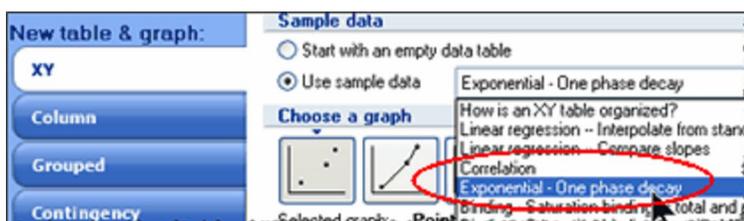
graph -- you might want to plot only points, points with a connecting line, or vertical bars instead of points. Pick the tab for the basic type of graph and then click on the picture that most closely resembles how you want your finished graph to look. Below the graph pictures, choose whether you have already calculated your error values, or whether you want Prism to calculate error bars from your data.



Starting off, it is more important to pick the correct category of data table than it is to choose a specific thumbnail. Because all the graphs in each category use data tables formatted in the same way, it's easy to change which thumbnail you'd like your graph to look like. It's less easy to change from one basic type of data table and graph to another -- say from an XY graph to a grouped column chart.

## Try it yourself

1. Launch Prism and from the Welcome dialog, click on the tab to make an XY graph
2. For this tour, choose to use Prism's sample data and select for "Exponential - One phase decay."



\*\*We'll use sample data to help you explore Prism in this tour. When you start your own

data tables, you'll want to choose a graph thumbnail and how you want subcolumns for your error bars to be formatted.

## Next Step

In the next step, we'll learn how to enter data in a Prism data table.

Learn how to enter or import data.

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## 2. Enter or import data



### Prism's formatted data tables

From your choices on the Welcome dialog, Prism will create a [data table](#) that is formatted specifically for your data. In the [previous step](#), you told Prism to make a data table for an XY graph with triplicate data values. Prism, therefore, has created a data table with one column for X values and data columns that are each divided into three subcolumns for your triplicates.

### Try it yourself

1. By selecting the sample data in Step 1, your data table should look like the one below (with subcolumns for triplicate data). Note that it's OK to have some empty cells. Prism knows how to handle missing data points. You can always click on the "Table format" button in the upper left corner to change the type of table or number of subcolumns.

Table format XY		X	A			B		
		Minutes	Control			Treated		
		X	A:Y1	A:Y2	A:Y3	B:Y1	B:Y2	B:Y3
1	Title	1.0	8887	7366	9612	6532	7905	7907
2	Title	2.0	8329		8850	5352	5841	6277
3	Title	3.0	7907	8810	8669	5177	4082	3157
4	Title	4.0	7413	8481	6489	3608		4226
5	Title	5.0	7081	7178	5716	2559	3697	2816
6	Title	6.0	6249	6492		1671	3053	2891
7	Title	8.0	5442	6172	6409	2264	1658	1879
8	Title	10.0	4020	3758	4138	1905	1302	1406
9	Title	14.0	4559	3146	2547	2994	1338	739
10	Title	20.0	3033	1587	2754	1444		760
11	Title	25.0	2105	1707	2152	281	484	765
12	Title	30.0	1005	2156	1185	1103	1517	833
13	Title	50.0	820	1513	1591	1918	1128	1293

2. Note also, that the sample data has a floating note attached that explains how this specific data set is organized and what you'll need to analyze it. You can minimize the note by clicking on the upper-right corner. (Floating notes are a new feature in Prism 5. You can [add your own notes](#) to any Prism sheet.)

The screenshot shows the GraphPad Prism software interface. On the left is a data table with columns 'X' and 'A'. The 'X' column is labeled 'Minutes' and contains values from 1.0 to 50.0. The 'A' column is labeled 'Control' and contains values from 8887 to 1512. A yellow help window is overlaid on the right side of the data table, titled 'How the data are arranged' and 'To fit an exponential decay curve'. The help text explains that the X column records time and that the response at each time point is entered in triplicate for Control and Treated conditions. It also provides a 4-step guide to fitting an exponential decay curve.

X	A				
Minutes	Control				
X	AY1	AY2			
1.0	8887				
2.0	8329				
3.0	7907				
4.0	7413				
5.0	7081				
6.0	6249				
8.0	5442				
10.0	4020				
14.0	4559				
20.0	3033	1507	2754	1444	
25.0	2105	1707	2152	201	484
30.0	1055	2156	1185	1103	1517
50.0	020	1512	1591	1918	1120

## You can also enter or Import data

In the future, you probably won't want to start with sample data. You can either enter your data directly into the Prism data table, [import](#) it from an Excel or text file, or [copy and paste](#) from an Excel spreadsheet. To import data, click on the "Import" button on the Prism toolbar and browse to the file you'd like to import. As part of the import or copy and paste process, you can filter data, transpose columns to rows, or specify which rows and columns to import and which to skip. If you are using Prism for Windows, you also can choose whether to import data values only, or to [embed or link](#) to the original data source.

## Next step

Once you've entered your data in the data table, Prism will automatically create your graph.

[Learn about Prism's automatic graphing](#)

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## 3. Automatic graphing



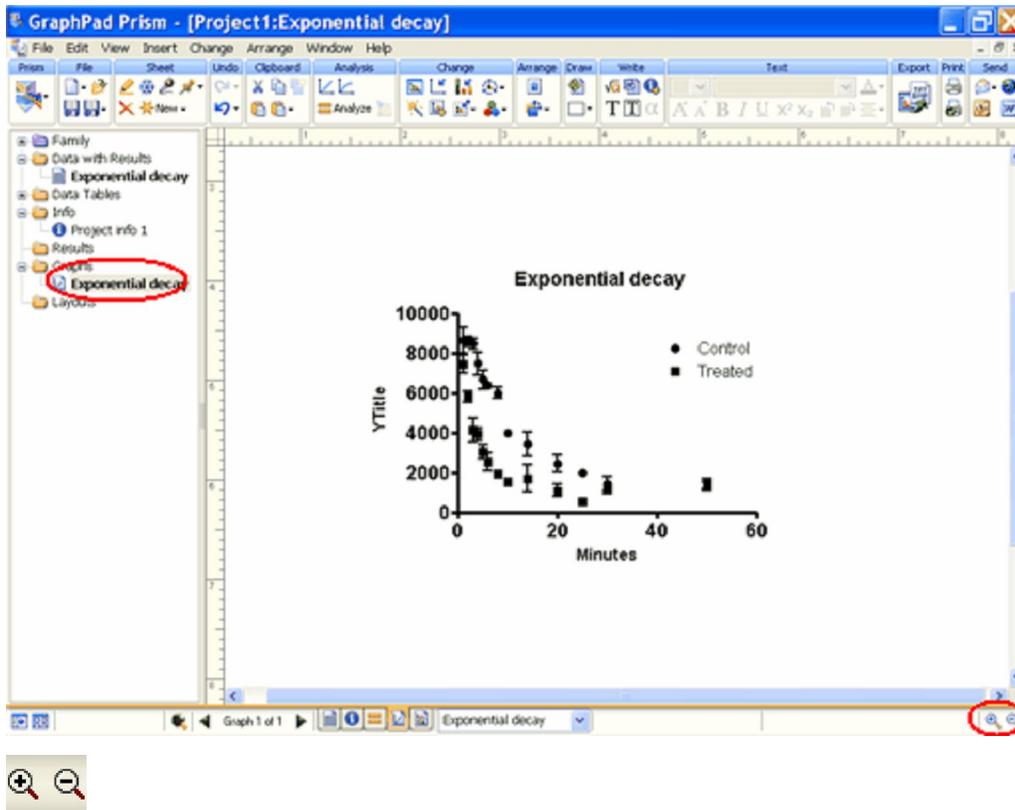
### Instant graphs

Once you enter your data, Prism automatically creates your graph using the default fonts, line thicknesses, error bar formats, and [color scheme](#) as set in Prism's [Preferences](#) section.

### Try it yourself

1. Click on the graph name in the Prism [Navigator](#) tree on the left side of the Prism window to go to your new graph. Note that both the data table and the related graph have the same name ("Exponential decay" if you used the sample data in Step 1) and are both shown in bold when either is selected. When you change the name of a data table, the graph's name, and the name of any other related sheets will also change to match.

Note: In this case, our error bars are standard error bars because that is the default setting in our [preferences](#) dialog. To plot standard deviation or individual replicates instead, double-click on a symbol to bring up the [Format Graph](#) dialog.



2. Use the Zoom tools in the lower right corner to size your graph to make it easier to work on. Note that the Zoom buttons change the view on your screen. It doesn't change the actual size of your graph when you print or export it. You can use the [Resize button](#) to actually make your graph larger or smaller.

## Next step

Learn about analyzing data with Prism

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## 4. Analyze your data



### Making analysis choices

Prism lets you perform a variety of statistical tests and analyses, as well as curve-fitting, transforming and normalizing your data.

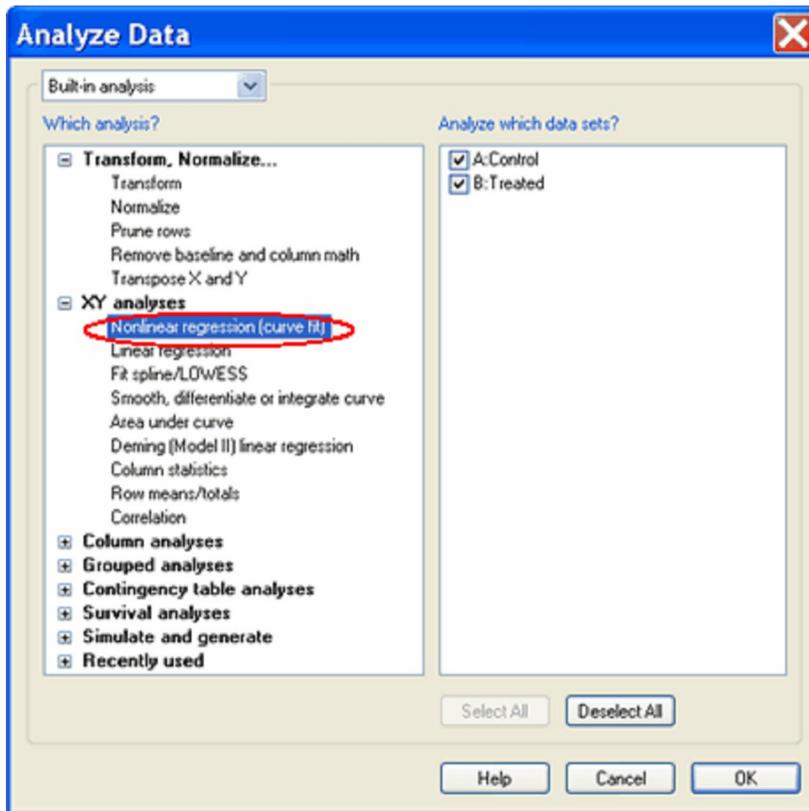
### Try it yourself

1. While viewing either the data table or graph, click on the "Analyze" button on the Prism toolbar.

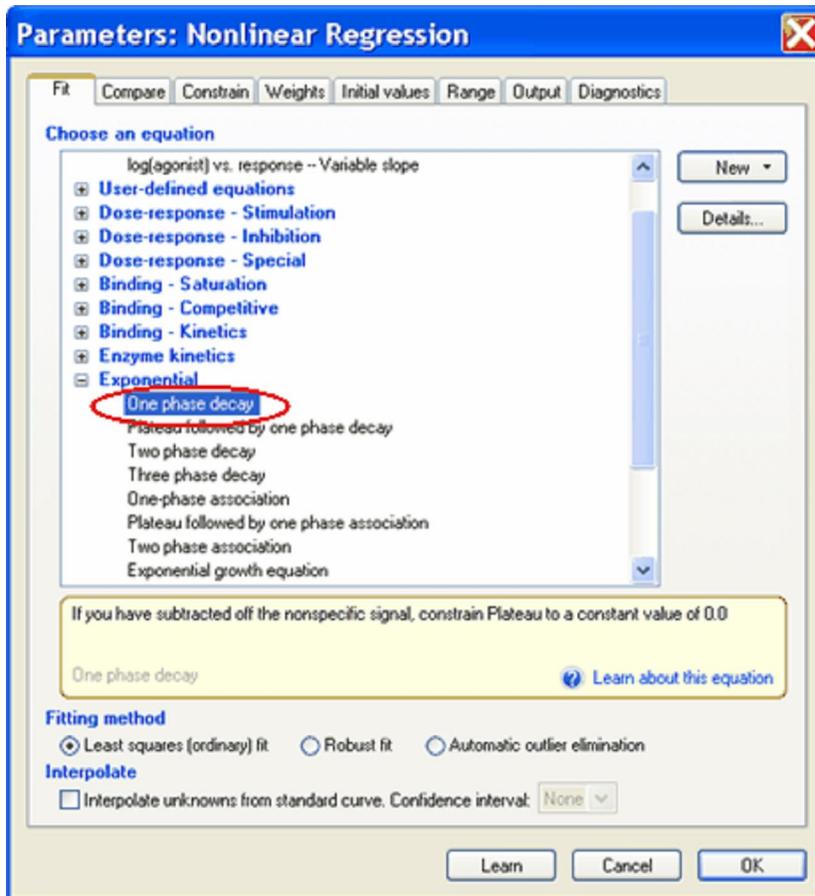
 Analyze

2. Select the type of [analysis](#) you would like to perform. For this tour we'll ask Prism to fit a curve to our data. In the first Analyze Data dialog, choose "Nonlinear regression (curve fit)" from the list of XY analyses as shown below, and press OK. By default, Prism will apply

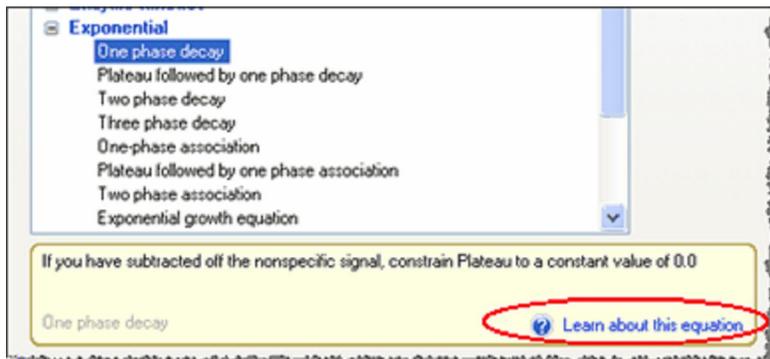
the analysis to all the data sets on your data table as shown in the right pane of the window (In this case, Control and Treated). If you like, you can uncheck any data sets you don't want to analyze.



3. After you choose an analysis, Prism shows a Parameters dialog where you choose the details of that analysis. The Parameters dialog for nonlinear regression includes many options, but you don't have to learn these right away. The only choice you need to make in order to get started with curve fitting is to choose an equation. For this tour, select a one-phase exponential decay model and accept the default setting by pressing OK.



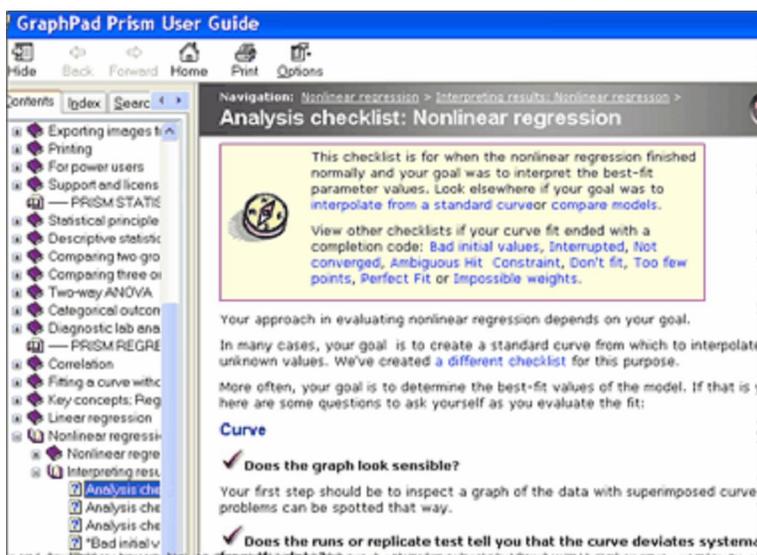
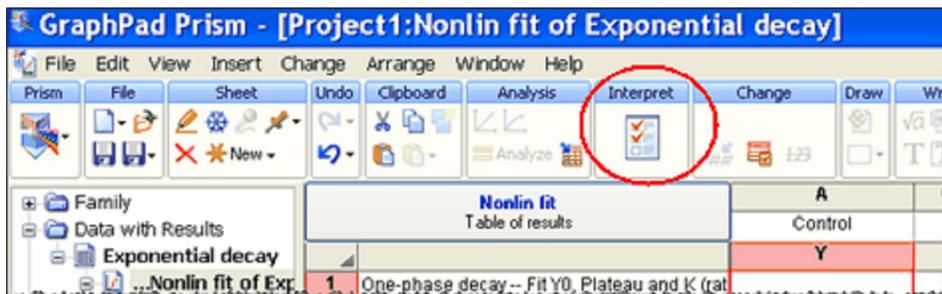
If you're unsure about a particular equation, click on the Learn more about link to read about an equation before you select it.



4. Prism will place your results in a new Analysis Results table. Click on the "Table of Results" sheet in the Prism Navigator to view the results of the curve fit.

Nonlin fit Table of results		A	B	C	D	E
		Control	Treated	Tide	Tide	Tide
1	One-phase decay -- Fit Y0, Plateau and K (rat	Y	Y	Y	Y	Y
2	Best fit values					
3	Y0	9992	9593			
4	PLATEAU	987.0	1154			
5	K	0.00927	0.3042			
6	HalfLife	7.765	2.278			
7	Span	9035	8440			
8	Std. Error					
9	Y0	363.7	605.5			
10	PLATEAU	360.3	161.5			
11	K	0.01159	0.03446			
12	95% Confidence intervals					
13	Y0	9253 to 10732	8362 to 10825			
14	PLATEAU	254.3 to 1720	825.3 to 1482			
15	K	0.00569 to 0.1128	0.2341 to 0.3743			
16	HalfLife	6.142 to 10.55	1.852 to 2.960			
17	Span	8211 to 9800	7259 to 9821			
18	Goodness of Fit					
19	Degrees of Freedom	34	34			
20	R <sup>2</sup>	0.9401	0.9198			
21	Absolute Sum of Squares	1.689e+007	1.256e+007			
22	Syx	704.8	607.7			
23	Constraints					
24	K	K > 0.0	K > 0.0			
25	Number of points					

5. Click Analysis checklist, the only button in the Interpret section of the toolbar, to read about the test you used and to learn about interpreting your results.



6. Finally, click on your graph's name in the Navigator tree to see the new curves plotted on your graph. Remember, Prism links related data tables, graphs, and analyses. If your data

changes, your graphs and analyses will update automatically.

## Next step

Learn how to customize your graph

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## 5. Customize your graph



### Format your graph any way you like.

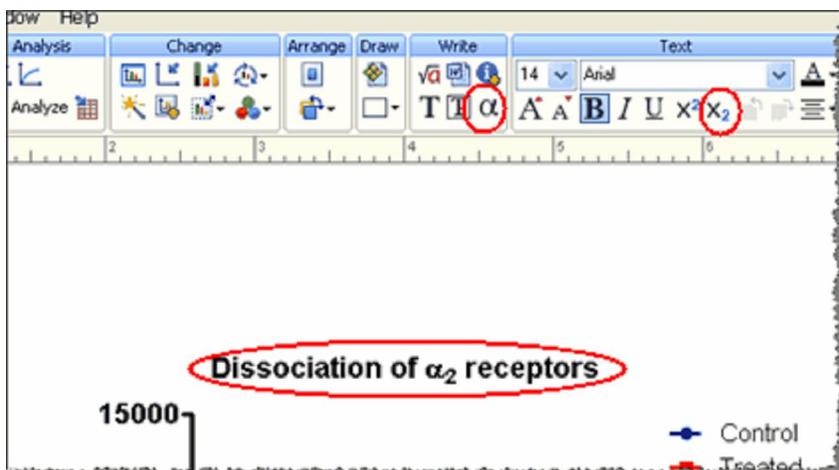
Prism makes it easy to customize any part of your graph. Double-click on any data point to change [symbol size, shape or color](#). Right-click to [change only that symbol](#). Use the formatting tools on the Prism toolbar to [change the background color or apply a color scheme](#). Add [arrows, circles, boxes and text, including Greek letters and formulas](#). You can even [copy blocks of text from an analysis results sheet and paste it onto your graph](#). Because Prism links related sheets, if your data changes, the points on your graph, and the pasted analysis results information will both update.

### Try it yourself

1. Double-click on any symbol in the top data set and change the color of the symbols to blue. You can change the symbol shape if you like.
2. Change the color of the other data set symbols to red.
3. Double-click on each curve and change their colors to match.

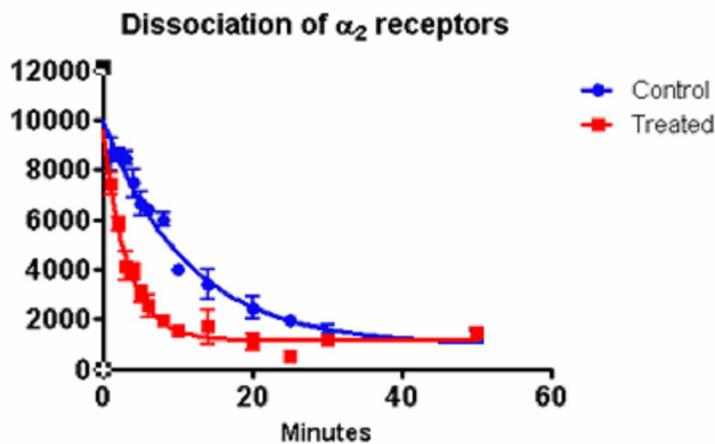
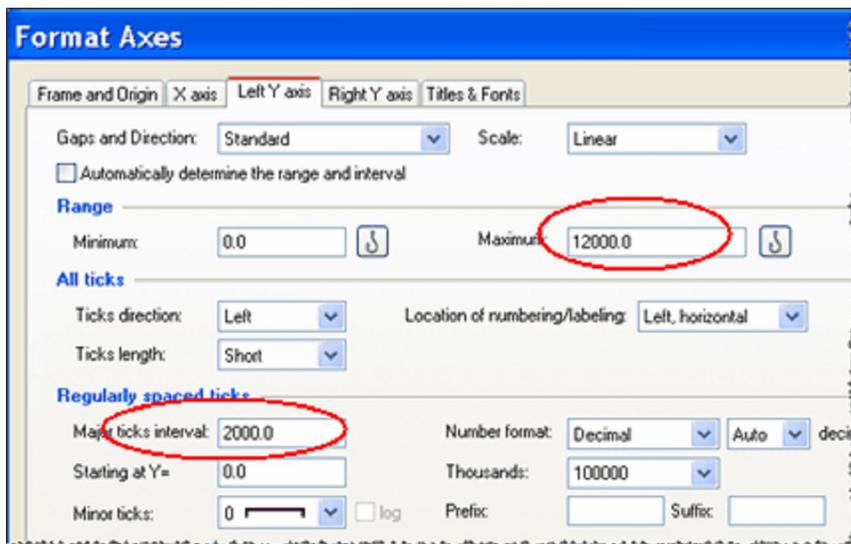


4. Click on the graph title ("Exponential decay") and edit it.
5. Use the Insert Greek button in the Write toolbar to add a Greek letter and the subscript button in the text toolbar to format the title.

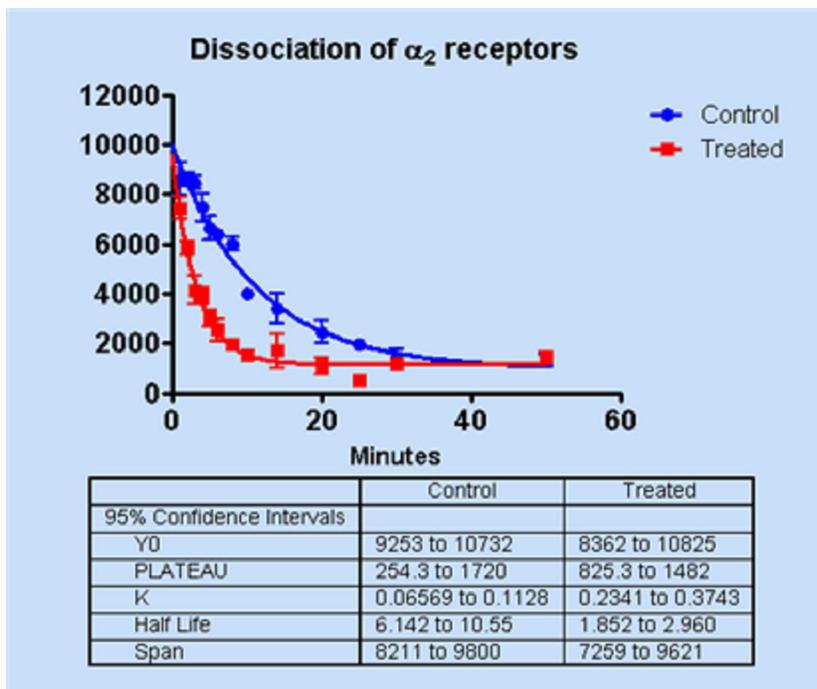


6. Double-click on the Y axis of your graph to open the Format Axis dialog. Uncheck the box

to "Automatically determine the range and interval," and change the axis maximum limit to 12,000 and the major tick interval to 2000.



7. Click the Color  button in the Change toolbar to change the graph background to light blue.
8. Then, copy a section of your analysis results table and paste it onto your graph. Remember, if your data changes this pasted table will update as well.



## Next Step

Learn how to print or export your graph

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## 6. Print or export



### Use the Export button

[Export](#) graphs or layouts as wmf, emf, pdf, eps, tif, jpg, png, bmp, or pcx formats for publication or to import into other programs.



### Use the Send buttons

Send graphs or layouts by [email](#) or to an FTP server. Send them to [Word](#) or [PowerPoint](#) with a single click.



### Use the Print buttons

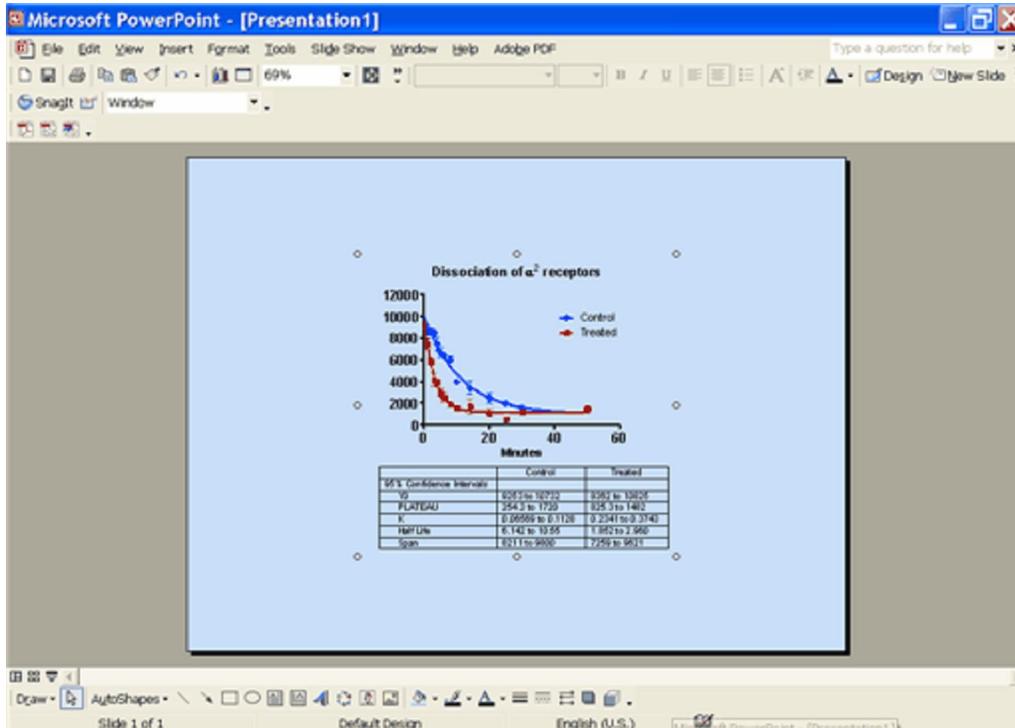
[Print](#) one or more graph, or layout, or any of the sheets in your Prism project file. The top button brings up the Print dialog; the bottom button prints only the current sheet.



## Try it yourself



Click on the send to PowerPoint button  to create a new PowerPoint slide.



Note that Prism changed the background of the PowerPoint slide to match the background color in Prism.

## Next step

[Learn how to clone a graph](#)

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## 7. Repeating work by cloning

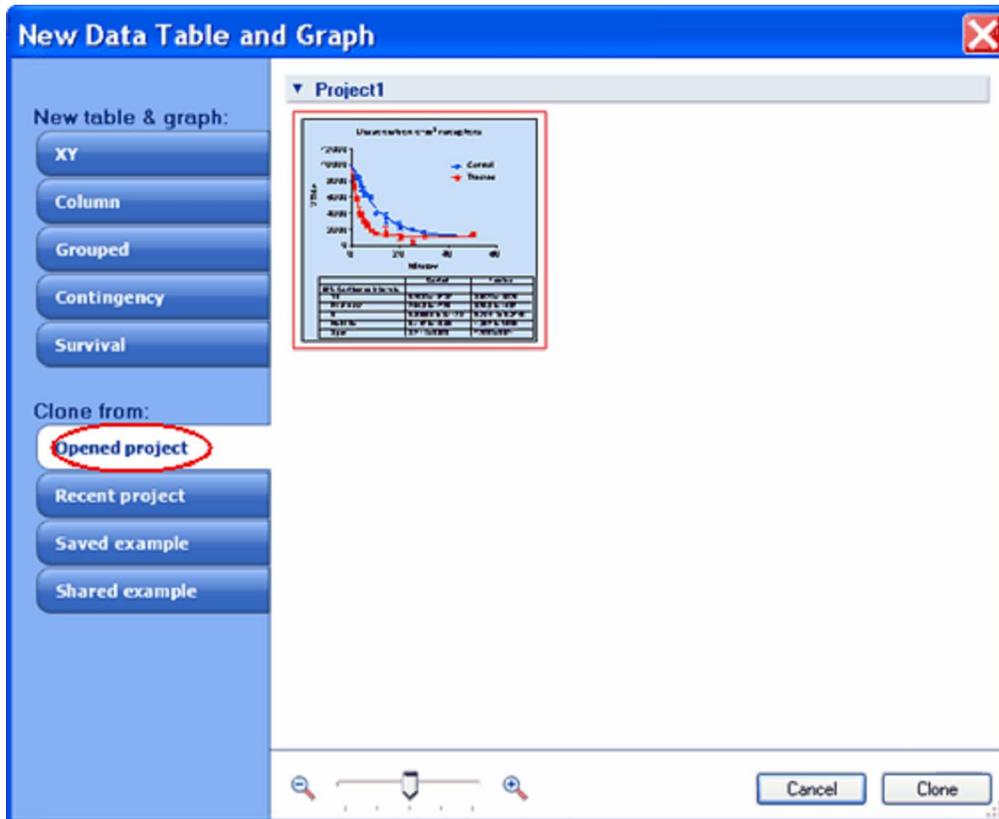


### Cloning

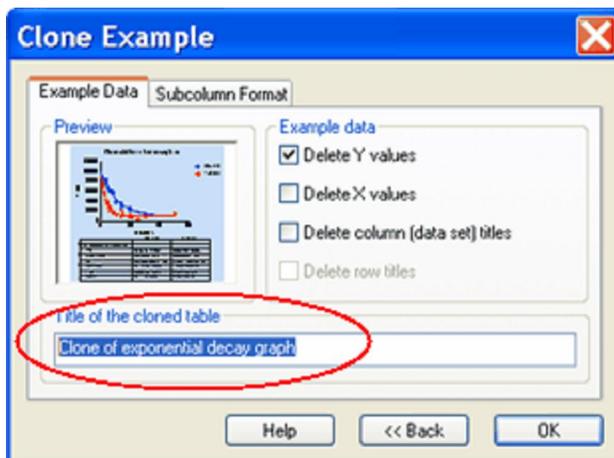
The Welcome dialog also lets you [clone](#) any graph that you've already made. You can clone a graph from an open project, a recently-used project, or a graph that you've saved as an example. Cloning copies all the features of a graph, but lets you replace the data and other parts that you'd like to change.

## Try it yourself

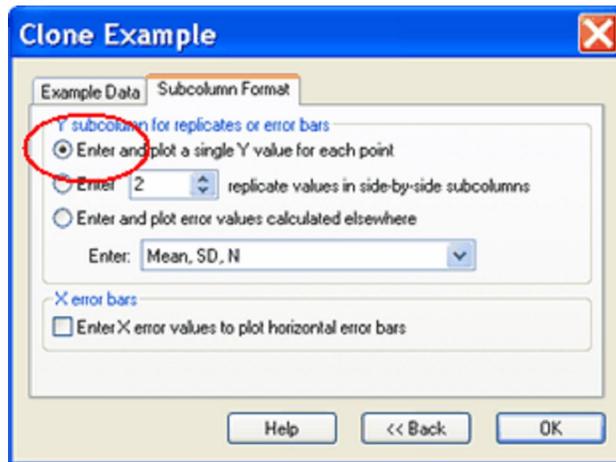
1. To add a new data table, graph, and analysis to your existing project, click the New button in the Sheet section of the toolbar and choose "New data table and graph."
2. Click on the tab for Cloning a graph from an opened project. You also can clone from recently-used projects, or saved example files.



3. Select your sample graph and click the Clone button in the lower right corner.
4. You will then get to choose which parts of the graph to include on your new cloned graph. The default is to delete the Y values, but keep X values and column titles. At this step, you could also change your subcolumn format if you have more or fewer replicates than you had on the original graph. You can also rename your new graph. For this tour, call "Clone of exponential decay graph."



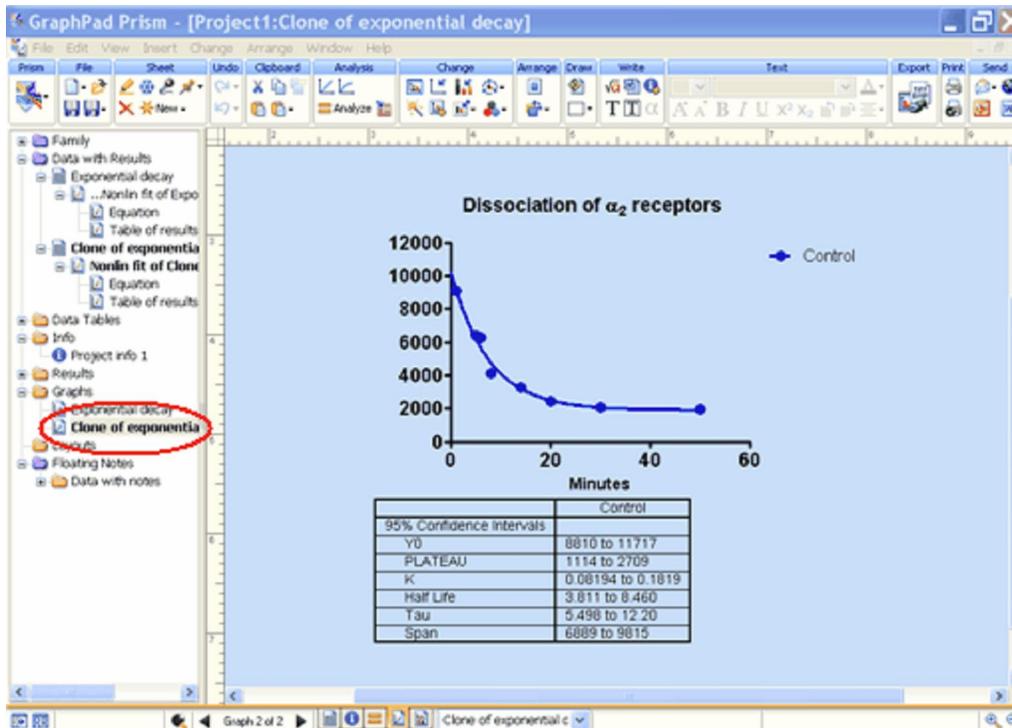
5. Let's make another change. Click on the Subcolumn Format tab and choose to have only one Y value for each X. Prism will then create a new data table with the same X column, but with only a single column for Control and for Treated.



6. Enter the new values as below.

Table format:		X	A
XY		Minutes	Control
	x	X	Y
1	Title	1.0	9100
2	Title	2.0	
3	Title	3.0	
4	Title	4.0	
5	Title	5.0	6400
6	Title	6.0	6300
7	Title	8.0	4100
8	Title	10.0	
9	Title	14.0	3277
10	Title	20.0	2444
11	Title	25.0	
12	Title	30.0	2099
13	Title	50.0	1987

7. Then click on the name of your new graph in the Prism Navigator. Prism has recreated a new graph and curve from the new data. All the graph's formatting -- colors, fonts, etc. -- matches the original. Even the embedded table of results have been recreated.



## Next step

Learn how to make one or more graphs match another one

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## 8. Change a graph to match another

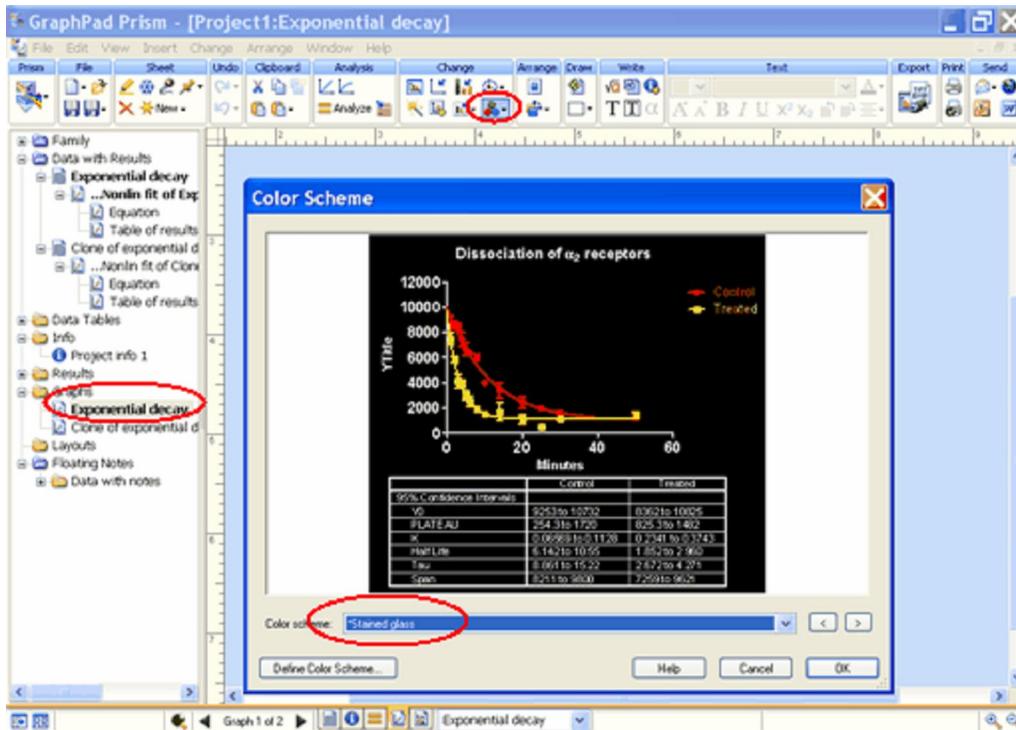


You can use the [Prism Magic](#) (**M**ake **G**raphs **C**onsistent) tool to make one or more graphs look like another one.

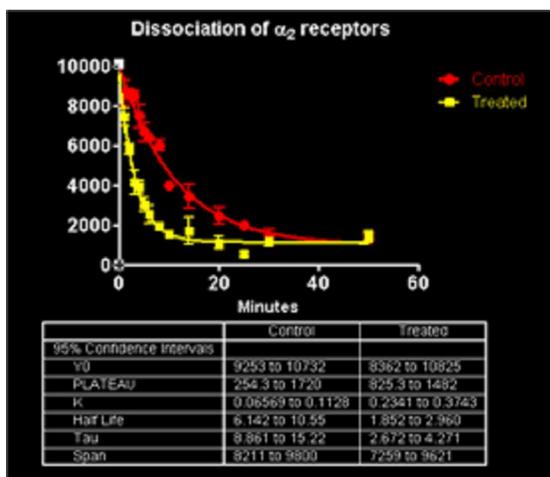
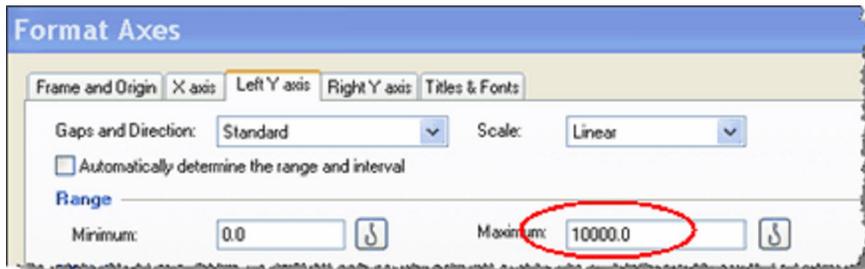
### Try it yourself

First let's make some changes to the first graph you were working on.

1. Select your original graph in the Navigator tree (Exponential decay), and use the Color Scheme button in the Prism toolbar to change the color scheme of this graph. For this tour, choose the color scheme called "Stained glass."



2. Then double-click on the Y axis to open the Format Axis dialog and change the Maximum range to 10,000.



## Prism Magic

Now, let's see how Magic can make other graphs match this one.

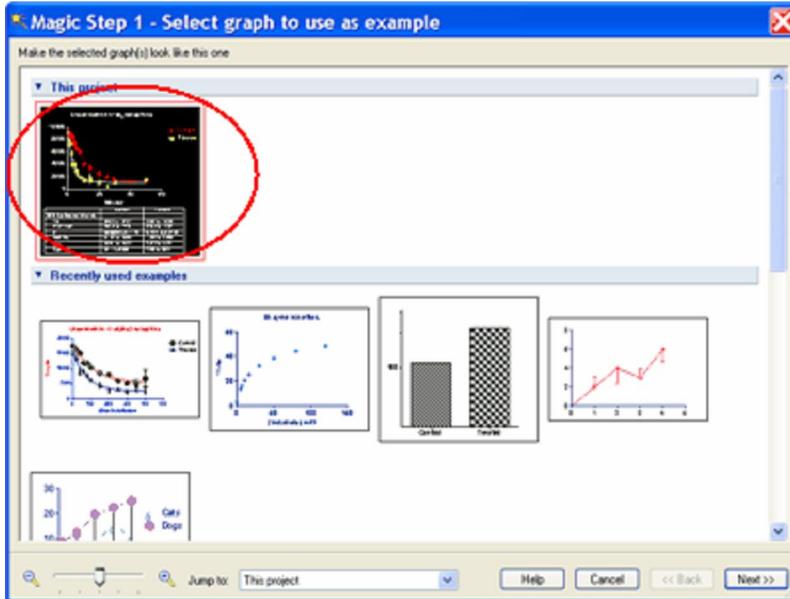
1. Select your second graph (Clone of exponential decay) in the Navigator tree. This is the

graph we're going to change.

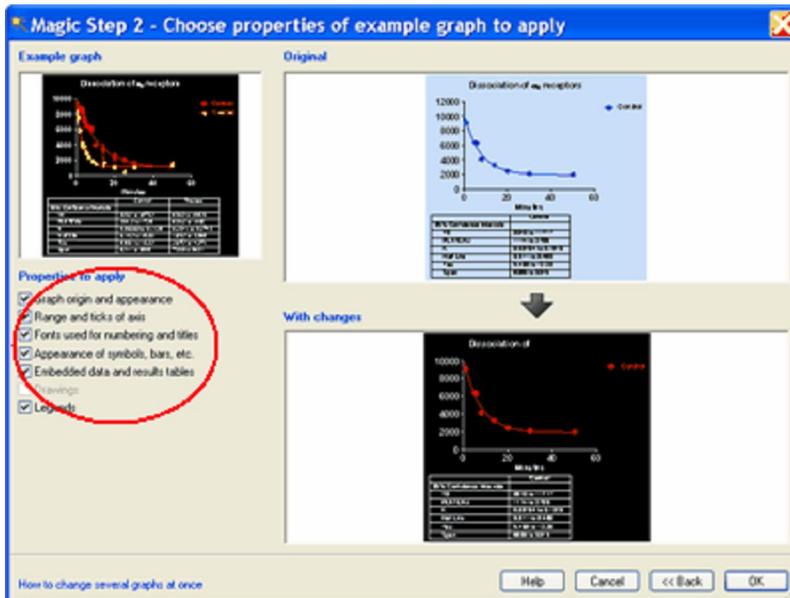
- Click on the Magic button (The magic wand) on the Prism toolbar



This will open the Magic dialog. Click on the thumbnail of the graph you have just modified to select it as the example graph to match.



- Click the Next button and choose which aspects of the example graph you would like to apply to your current graph. Preview how the change will look in the lower-right pane.



- Click OK to apply the changes.

## Next step

Learn how to combine graphs and other objects in a layout

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## 9. Combine graphs in a layout



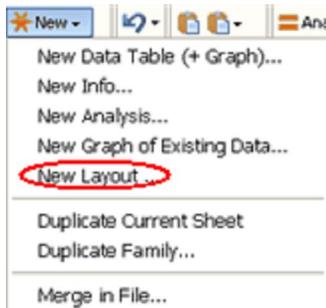
### Collect several graphs in a Layout.

Use a Prism [Layout](#) to assemble multiple graphs on a single page.

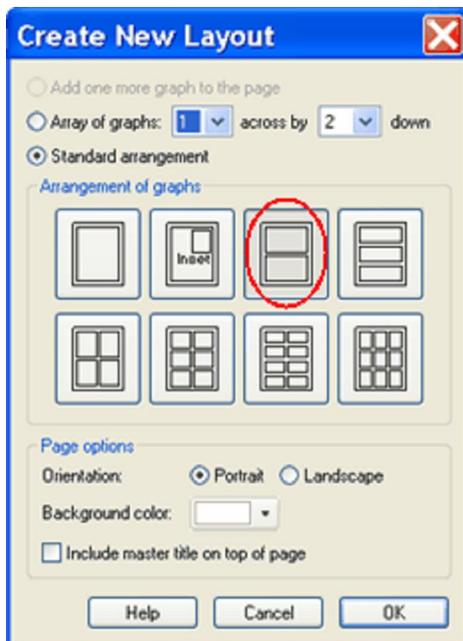
### Try it yourself

After you've made a few graphs, you can combine them in a layout.

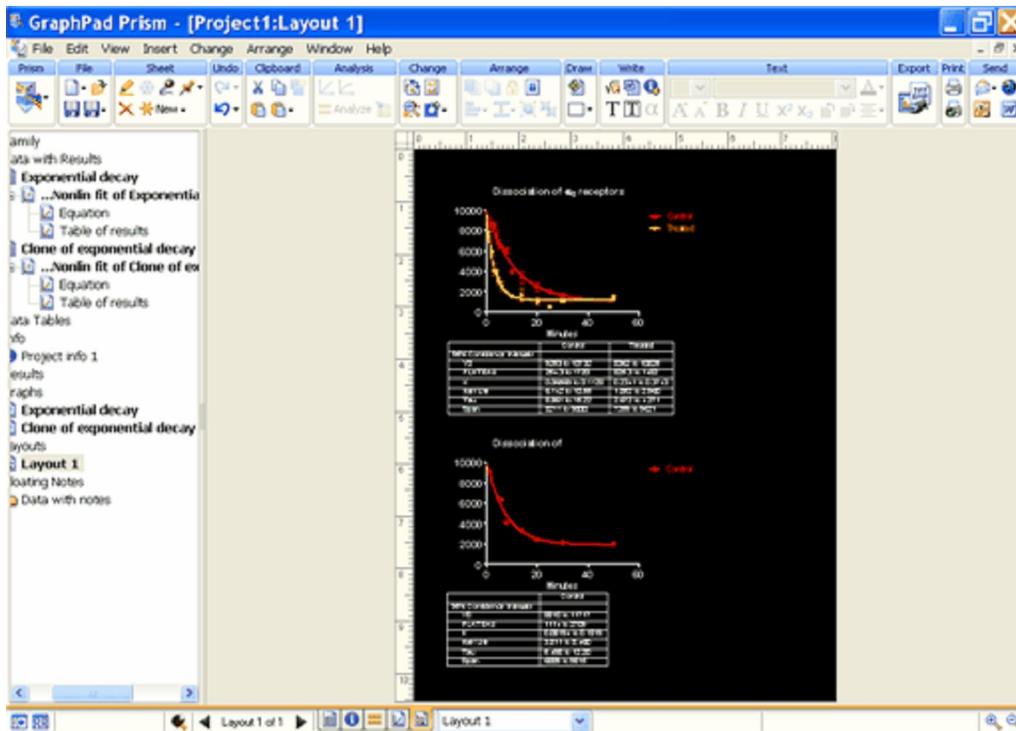
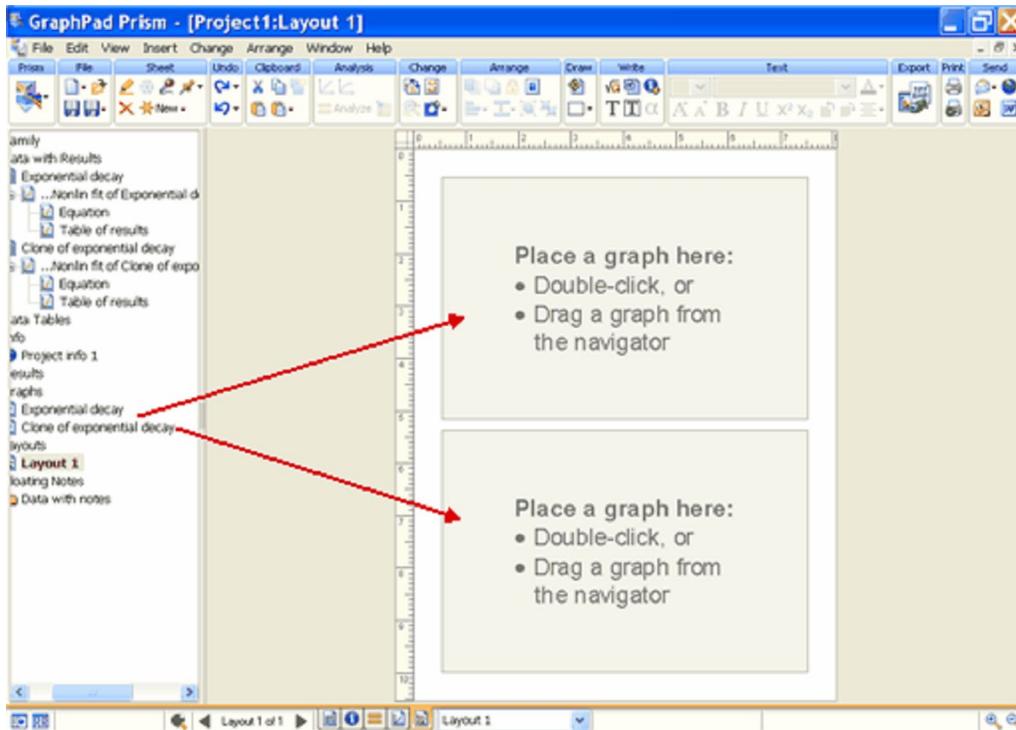
1. Click the New button on the Prism toolbar and choose New Layout.



2. Then select the number and arrangement of graphs you want. For this tour, choose a page with two graphs, one above the other.



3. Drag and drop graphs from the Graphs section of the Prism Navigator onto the layout. Or [browse](#) to find graphs in other files.
4. Use the [Draw](#) and [Write](#) toolbars to add text and arrows or pictures to your layout. Use the [Arrange](#) toolbar to size and align multiple graphs.



## Next step

Learn about Prism's automatic linking

## 10. Automatic linking and updating



### Automatic linking and updating

Prism keeps track of everything you have done and remembers all logical links between data tables, info sheets, results tables, graphs, and layouts.

- If you edit data, Prism automatically recomputes linked [analyses](#) and redraws linked graphs. When data changes, all analysis results are recomputed. You or your colleagues can always see exactly what you have done to get your analysis results.
- If you edit [Info](#) constants, Prism automatically recomputes linked analyses, and recreates graphs and layouts where those info constants are used.
- If you edit a graph, Prism automatically redraws linked page [layouts](#).

### Try it yourself

Go to the results sheet for Exponential decay. Click on the upper-left corner to bring back the parameters dialog. You can check the choices you made or change them.

	Control	Treated
1 One phase decay	Y	Y
2 Best-fit values		
3 Y0	9992	9593
4 PLATEAU	907.0	1154
5 K	0.08927	0.3042
6 Half Life	7.765	2.278
7 Tau	11.20	3.287
8 Span	9005	8440
9 Std. Error		
10 Y0	363.7	605.5
11 PLATEAU	360.3	161.5
12 K	0.04159	0.03446
13 Span	390.6	590.8
14 95% Confidence Intervals		
15 Y0	9253 to 10732	8362 to 10825
16 PLATEAU	254.3 to 1720	825.3 to 1482
17 K	0.06569 to 0.1128	0.2341 to 0.3743
18 Half Life	6.142 to 10.55	1.852 to 2.960
19 Tau	8.861 to 15.22	2.672 to 4.271
20 Span	8211 to 9800	7259 to 9621
21 Goodness of Fit		
22 Degrees of Freedom	34	34
23 R <sup>2</sup>	0.9401	0.9196
24 Absolute Sum of Squares	1.699e+007	1.259e+007
25 S <sub>y.x</sub>	704.8	607.2
26 Constraints		
27 K	K = 0.0	K = 0.0

### Next step

Add notes and learn about other useful tools

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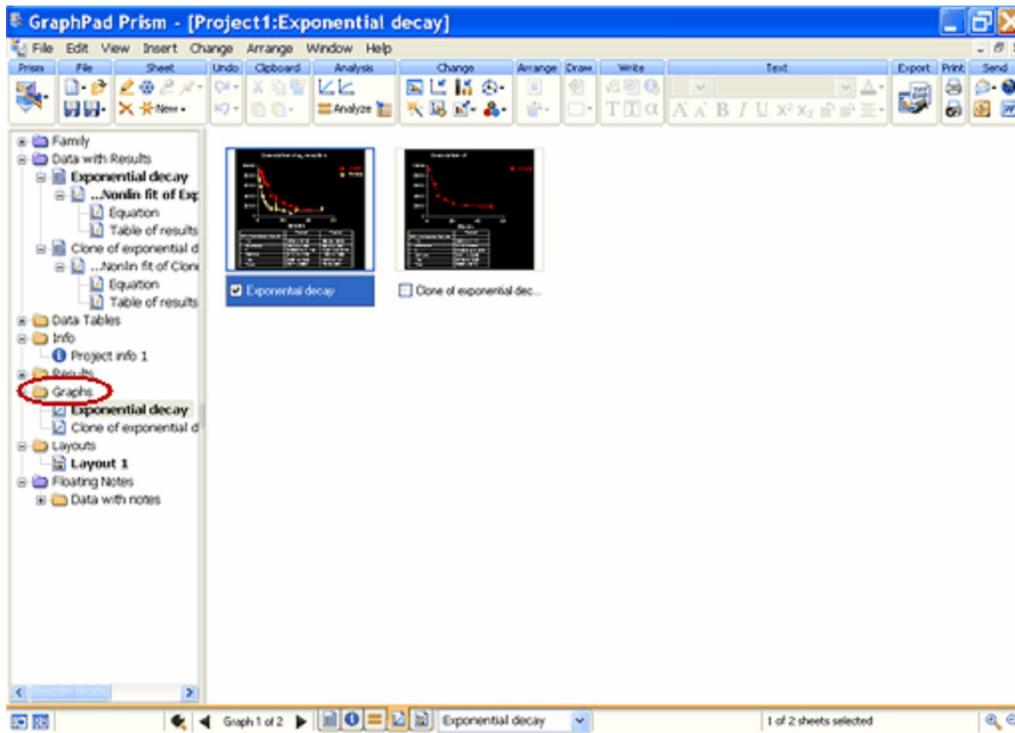
## 11. Adding notes and other helpful tools



Prism gives you several useful tools to help organize your work and collaborate with others.

### Prism Gallery

Click on the main heading for any category in the Navigator to display the [Gallery](#) of all the sheets in that section. Select sheets for [exporting](#), [printing](#), [sending to PowerPoint](#), formatting with [Magic](#), etc.



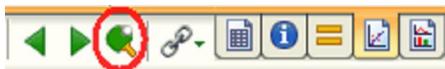
## Info sheets

Use Prism's [Info sheets](#) to keep track of the details of a project. Info sheets can be links to a specific data table or they can apply to an entire project. The main section of an Info sheet is for structured information, with the left column for constant names and the right column for values. Values entered as constants can be "[hooked](#)" and used as constraints in nonlinear regression or when transforming, and even as axis limits or to specify custom tick locations.

Constant	Value	Notes
Experiment Date	Mar-3-2006	
Experiment ID	007	
Notebook ID	2006-C	
Project	Omega	
Experimenter	Bond, James	
Protocol	Shaken, not stirred	
Protein Conc.	0.345	
Lot number	345-45	

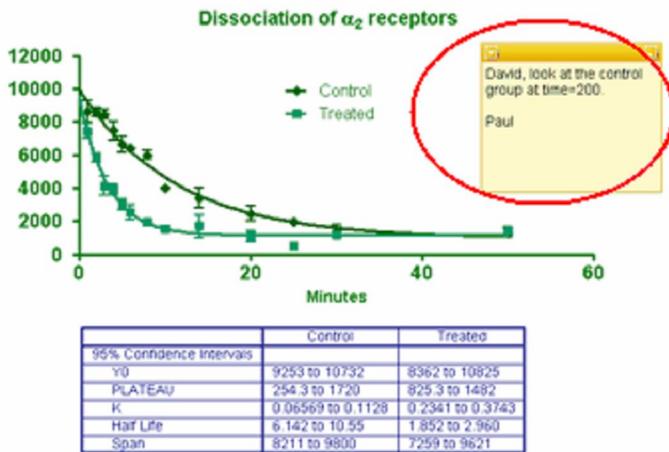
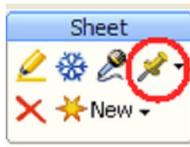
## Ping Pong

Use Prism's Ping Pong button (bottom toolbar) to toggle back and forth between the last two sheets you've worked on. It's much faster than using the Navigator.



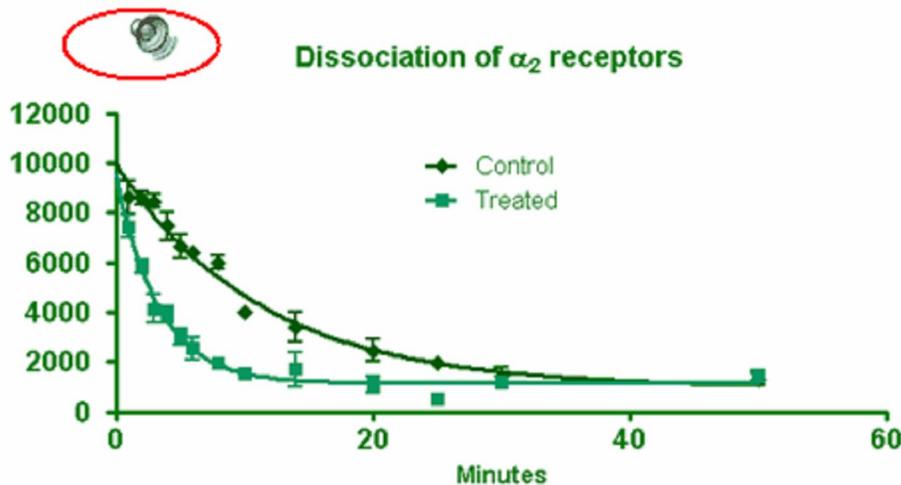
## Floating notes

Use the [Floating Note](#) tool to add notes to any sheet. You can have different colored notes and you can even insert hyperlinks. Floating notes won't show when you print or export sheets.



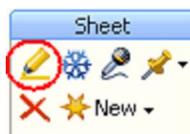
### Audio notes

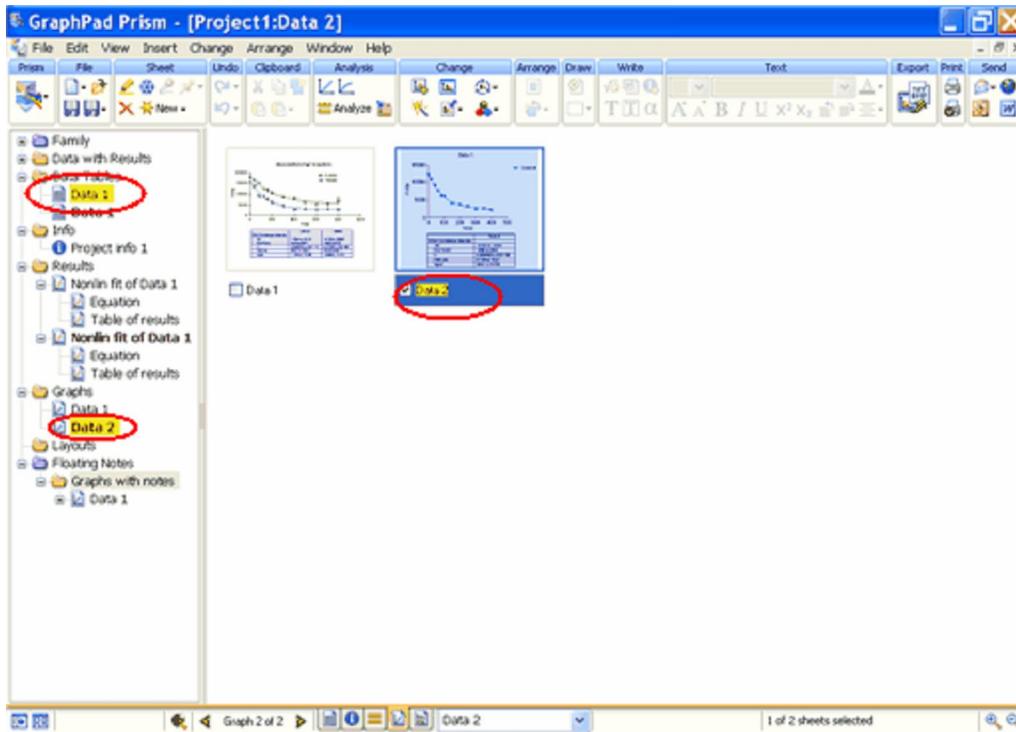
Use the [Audio Note](#) tool  to record voice messages. When you are finished recording, you can click on the speaker symbol on the sheet to replay the message. (The speaker symbol won't show on printed or exported sheets.)



### Highlighting

Use the [Highlight](#) tool to mark sheets in the Navigator that you want to go back to, or that you want your colleagues to look at.





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