Basic Linear Regression tutorial using GraphPad Prism

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Introduction
GraphPad Prism, available for both Windows and Mac computers, combines scientific graphing, comprehensive curve fitting (nonlinear regression), understandable statistics, and data organization.

GraphPad Prism was originally designed for experimental biologists in medical schools and drug companies, especially those in pharmacology and physiology. Prism is now used much more broadly by all kinds of biologists, as well as social and physical scientists. More than 200,000 scientists in over 110 countries rely on Prism to analyze, graph and present their scientific data. It is also widely used by undergraduate and graduate students.

1. Downloading GraphPad Prism
This software is shareware and a fully functional 30-day trial can be downloaded from http://www.graphpad.com/demos/

2. Constructing a Linear regression
1. Open Prism and the welcome screen will appear.

2. Select XY from New Table & Graph Menu

3. Select your preferred way to input Y-values from Enter/import data list

4. Select linear regression – compare slopes from the Use sample data list

5. Input the title and the values for the independent (x) variable

6. Input the title and the values for the dependent (Y) variable

Note: More than one dataset can be inputted which would result in more than one linear regression on the same plot

7. To perform the linear regression click on Analyze
8. Select Linear regression from XY analyses menu

9. Select which datasets to be analyzed

10. Tick this option to test if the slopes are significantly different

Note: Usually the following are reported:
- Slope (+/-)
- Intercept (+/-)
- Regression coefficient (R-square)
- Sy.x (Standard Error of the Estimate)
- P-value (the p-value for determining the slope if it is significantly non-zero). A p-value below 0.05 means that the difference is statistically significant.

11. Click on Results to report the required linear regression parameters

12. Click on Graphs to go to the plot
13. Choose XY from Graph Family

14. Choose Points with error Bars (if an average is used)

15. Select Mean and Error from Plot drop-down menu

16. Select SD (Standard Deviation)

17. Click OK when done

18. To modify or format the graph, double click the area you like to change

19. The graph can be exported as image or editable object in MS Word or MS PowerPoint using either copy|paste function or the export/send options