Dark Adaptation Plotter

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CHAPTER

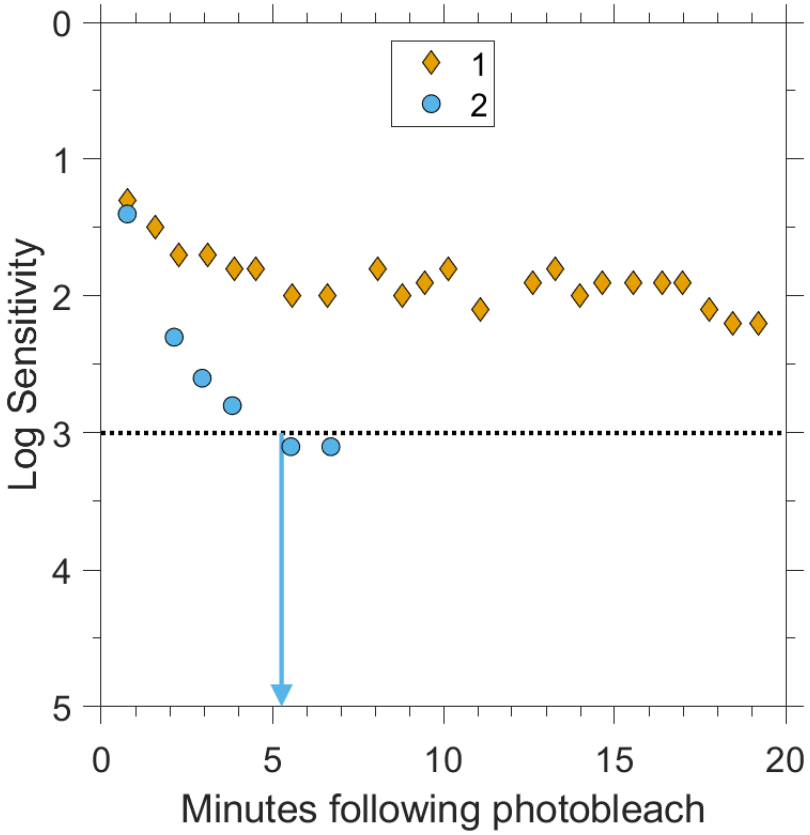
ONE

QUICKSTART GUIDE

The Dark Adaptation Plotter is a tool for creating publication-quality plots of dark adaptation data. It has a number of features for selecting data and changing the appearance of the plot. You can preview your plot before generating it, and output formats include `png`, `pdf` and `eps`.

1.1 Dark Adaptation Plots

The purpose of Dark Adaptation Plots is to compare the dark adaptation recovery of patients with different markers or features of disease, especially Age-related Macular Degeneration (AMD).

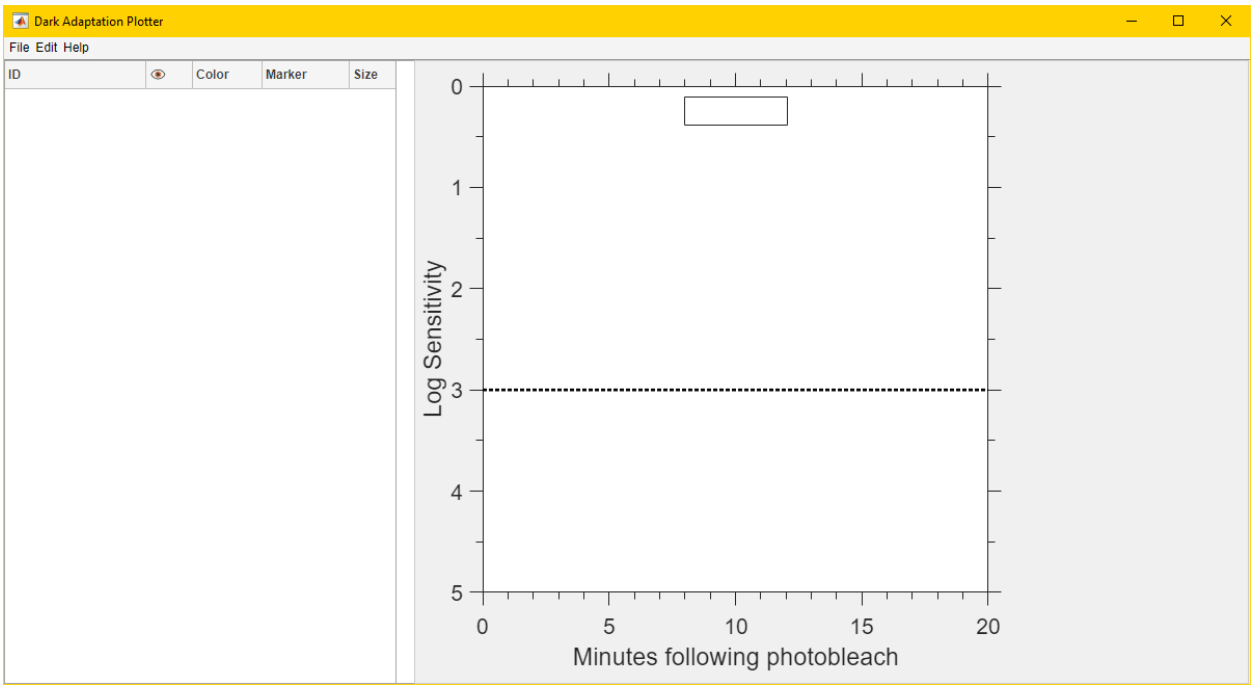


Above is a prototypical Dark Adaptation Plot. The plot is a scatter plot with arrows. The horizontal or X axis is time since the start of the experiment, and the vertical or Y axis is log sensitivity. Note that the vertical axis is flipped so that sensitivity to light increases downward. The flip is done because higher sensitivity means less light is needed to see the same target.

Each patient or subject has one set of data which generally has increasing sensitivity with increasing time so the scatter plots follow a down-right trend. Different patients will trend downward at different rates, and some may not trend downward at all in the visible space of the plot. An arrow is drawn at the location of the Rod Intercept Time (RIT) pointing to the estimated time of dark adaptation recovery. The arrow is only drawn if the RIT is within the visible X axis. The RIT will need to be supplied in the input data.

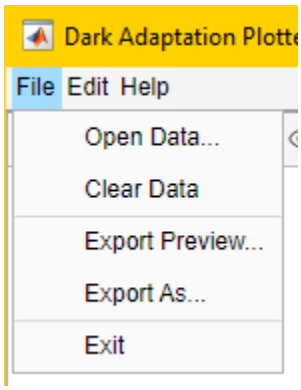
1.2 Typical Workflow

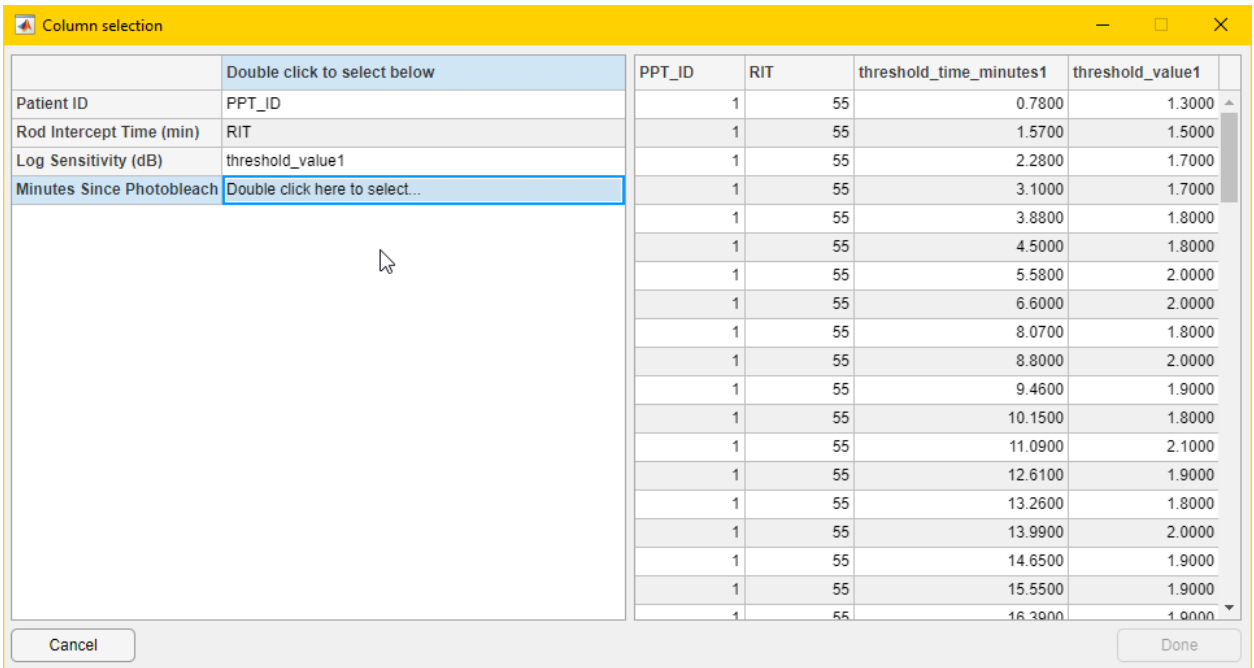
1. Start the application. The main window will be shown.

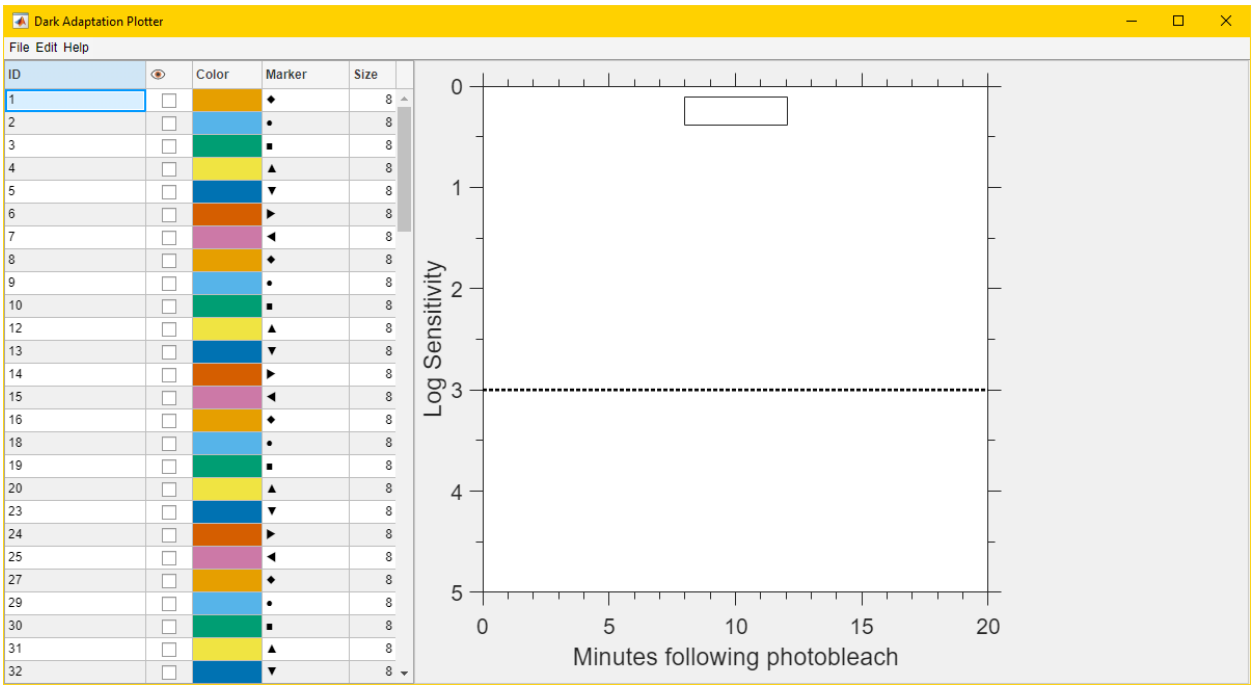


2. Load your data by clicking “File” and then “Open Data…” in the menu bar. Data should be in CSV format and the following fields must be available.
    a. Patient ID
    b. Rod Intercept Time (minutes)
    c. Log Sensitivity (dB)
    d. Minutes Since Photobleach

    The columns can have any name and will be selected in the next step.
3. Select which columns in your file contain which fields by double-clicking in the second column of the left hand panel, labeled “Double click to select below”. When you are done, click “Done”.
4. After a moment, the table on the left hand side of the main window will fill out.
6. Interact with the elements of the table to customize your data selection and appearance.
    a. Scroll up and down in the table if there is more data than can be shown in one page.
    b. Click the checkboxes in the cells in the “eye” column to select which data rows should be visible.


Dark Adaptation Plotte
File Edit Help
Open Data...
Clear Data
Export Preview...
Export As...
Exit


Column selection
Double click to select below
Patient ID
PPT_ID
Rod Intercept Time (min)
RIT
Log Sensitivity (dB)
threshold_value1
Minutes Since Photobleach
Double click here to select...
PPT_ID RIT threshold_time_minutes1 threshold_value1
1 55 0.7800 1.3000
1 55 1.5700 1.5000
1 55 2.2800 1.7000
1 55 3.1000 1.7000
1 55 3.8800 1.8000
1 55 4.5000 1.8000
1 55 5.5800 2.0000
1 55 6.6000 2.0000
1 55 8.0700 1.8000
1 55 8.8000 2.0000
1 55 9.4600 1.9000
1 55 10.1500 1.8000
1 55 11.0900 2.1000
1 55 12.6100 1.9000
1 55 13.2600 1.8000
1 55 13.9900 2.0000
1 55 14.6500 1.9000
1 55 15.5500 1.9000
Cancel
Done



c. Double-click on a colored cell in the "color" column to open a color picker for that data row. There is a known-issue that once a box is selected and the color picker is opened and closed, the picker can't be reopened while that cell is selected. Select another cell and then try again.

d. Double-click on a cell in the "marker" column to select a different marker for that data row.

e. Click on a cell in the "size" column to change the marker size for that data row.

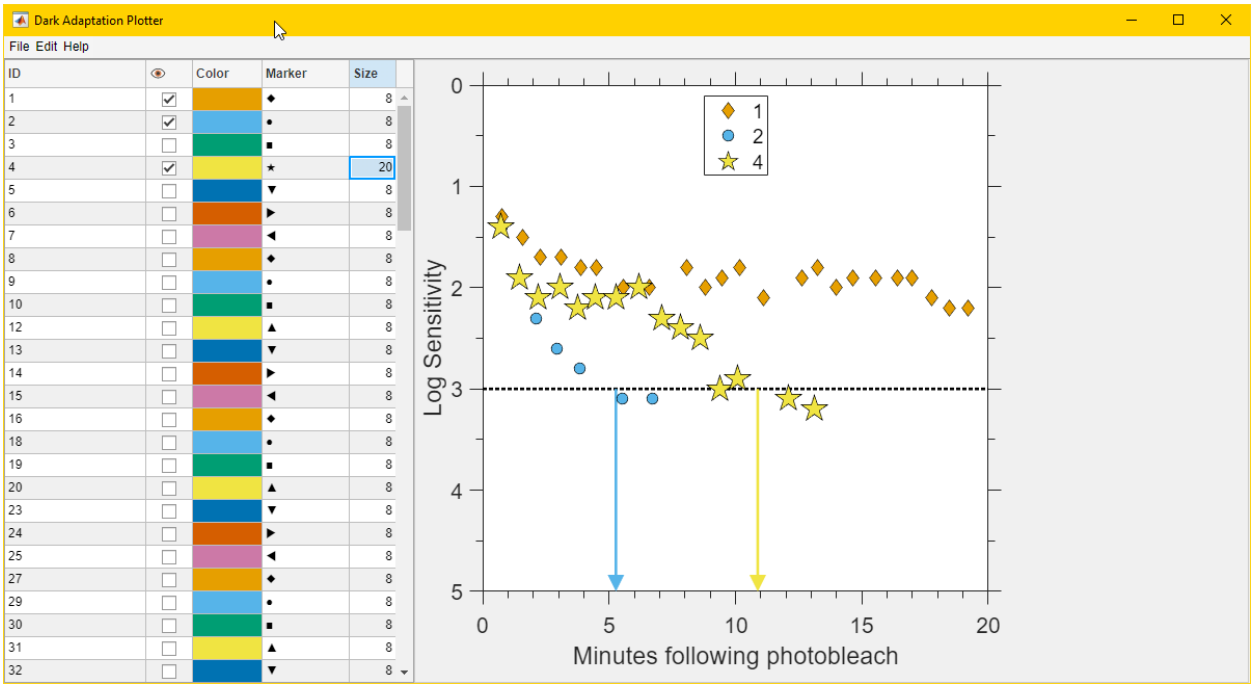
7. Further customization can be performed using tools in the "Edit" menu in the menu bar.

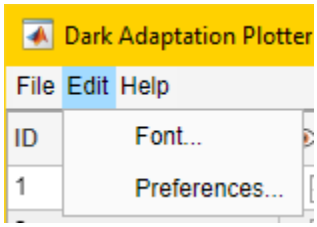
   a. Clicking "Font…" in the "Edit" menu will open a font selection dialog, where you can change font, typeface and size.

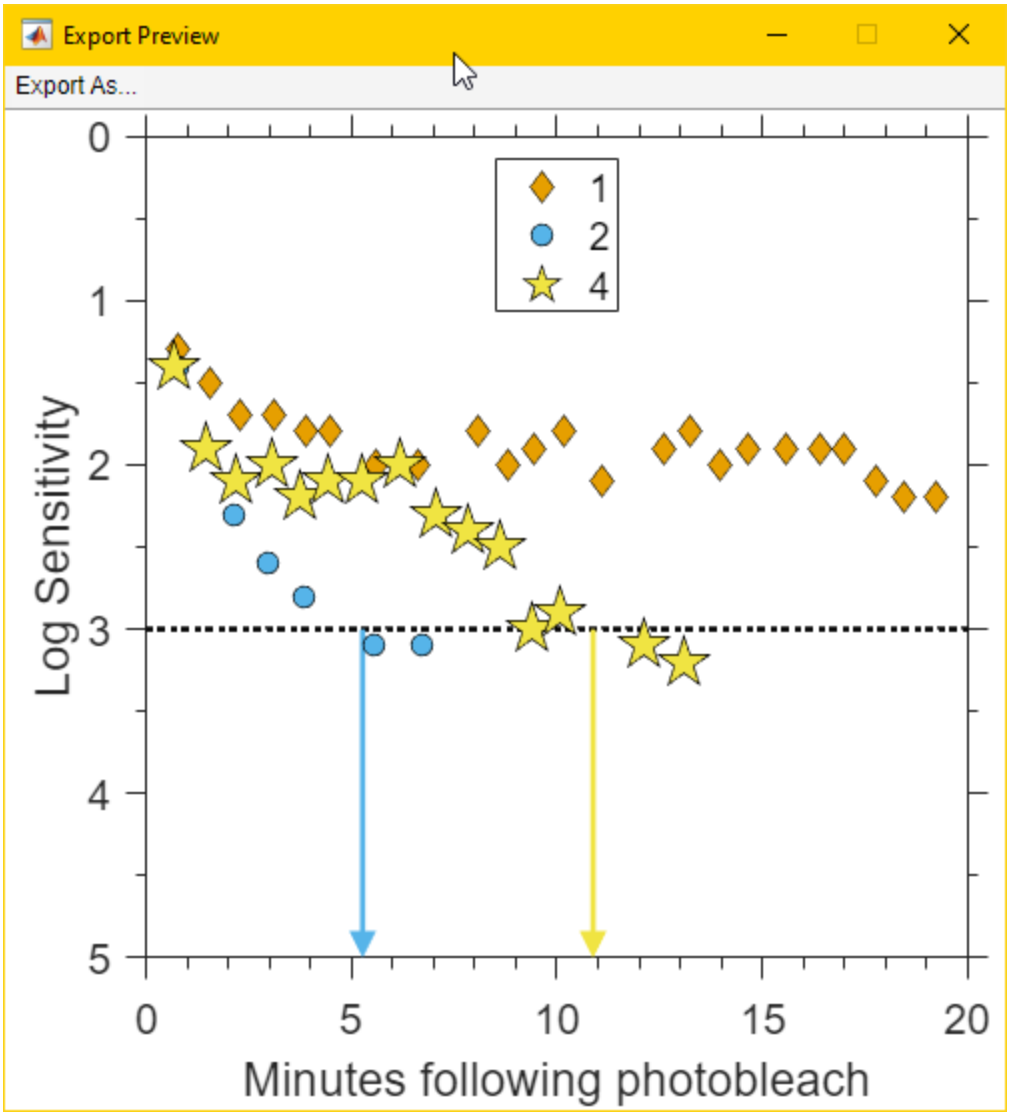
   b. Clicking "Preferences…" will open a dialog with additional options.

8. Once the plot has been customized, click "File" and then "Export Preview…" to open a new window with a preview of the plot as it will be saved. The "Export As…" menu selection in the preview window will allow exporting as in the next step. It is recommended to preview at least one plot to ensure it looks as desired before making additional plots.

9. Click "File" and then "Export As…" to open a save file dialog and export without previewing.


Dark Adaptation Plotter
File Edit Help
ID
Color
Marker
Size
Log Sensitivity
Minutes following photobleach
1
2
4


Dark Adaptation Plotter
File Edit Help
ID
Font...
1
Preferences...

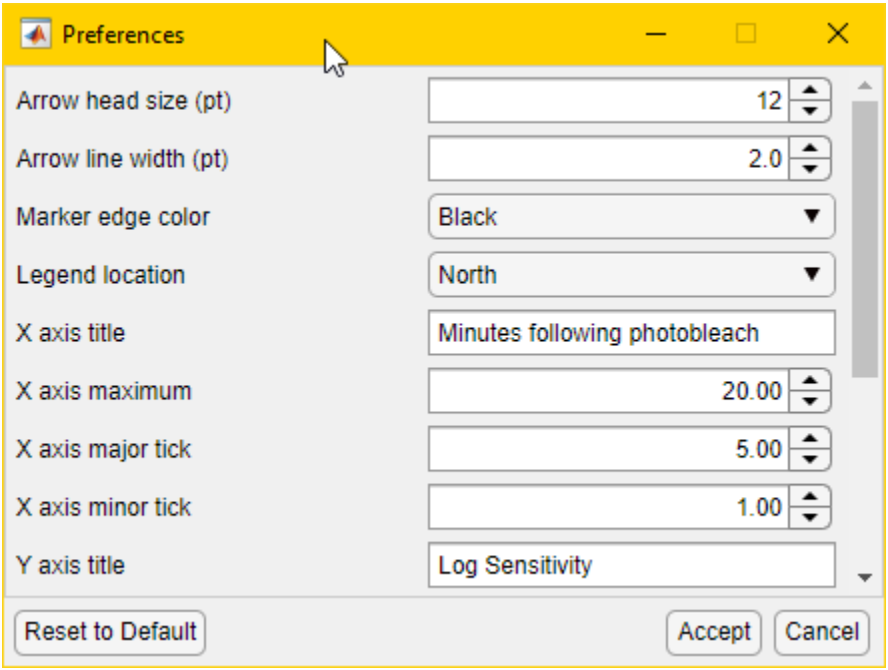

Export Preview
Export As...
0
1
2
3
4
5
Log Sensitivity
1
2
4
0
5
10
15
20
Minutes following photobleach

CHAPTER

TWO

PREFERENCES

The preferences dialog contains customization options that affect the entire plot. These options will be reflected in the plot as you change them, but will only be saved once you click “Accept”. Clicking “Cancel” will revert any changes made since opening the dialog. Closing the dialog without clicking any buttons has the same effect as “Cancel”. Clicking “Reset to Default” will revert all preferences to their default values. This can be undone by clicking “Cancel” or closing the dialog without clicking “Accept”.



2.1 Arrow Appearance

1. Arrow head size (pt) - Changes the height and width of the arrowhead in points. *Default: 12*
2. Arrow line width (pt) - Changes the width of the arrow line in points. *Default: 2.0*

2.2 Marker Appearance

3. Marker edge color - Allows selecting the edge color of all markers. *Default: Black*
    a. Same - same as the marker color selected in the table. Effectively, this means no marker edge color.
    b. Black - solid black marker edge.
    c. Invert - The closest CIELAB inverse color in the sRGB space. This should always produce high hue contrast, but may not give very good lightness and saturation contrast.

2.3 Legend

4. Legend location - The location of the legend based on MATLAB built-in options. Not all options are available for aesthetic and practical reasons. *Default: North*
    a. North, NorthEast - inside the axes, near the top
    b. South, SouthEast - inside the axes, near the bottom
    c. East - inside the axes to the right
    d. NorthOutside, SouthOutside, EastOutside - outside the axes, as above
    e. Best - inside the axes, minimizes overlap of legend and plot data
    f. BestOutside - outside the axes, top-right corner

2.4 Axes

5. X axis - Time since start of experiment
    a. title - Title or label of X axis. Default is research publication standard. *Default: Minutes following photobleach*
    b. maximum - Maximum value in minutes. *Default: 20.00*
    c. major tick - enumerated ticks. *Default: 5.00*
    d. minor tick - non-enumerated ticks, set equal to major tick to hide. *Default: 1.00*
6. Y axis - Sensitivity to light
    a. title - Title or label of Y axis. *Default: Log Sensitivity*
    b. minimum - Minimum value in dB. *Default: 0.00*
    c. maximum - Maximum value in dB. *Default: 5.00*
    d. major tick - enumerated ticks. *Default: 1.00*
    e. minor tick - enumerated ticks. *Default: 0.50*

2.5 Export

7. Desired export size (px) - Size of exported rasterized `png` file in pixels. This value affects the relative size of objects in vector `pdf` and `eps` files as well. Use a consistent value if you need multiple plots in the same publication. *Default: 500*.
8. Default export extension - Which extension should be the default choice when exporting. *Default: .png*