

Supplementary Materials of canvasDesigner

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Web URLs to tools and online user guide

Google Chrome (<https://www.google.com/chrome>) is recommended for optimal use of the web-based tools.

canvasXpress: <https://canvasxpress.org>

canvasXpress download: <https://canvasxpress.org/html/download.html>

canvasXpress R source code: <https://github.com/neuhausi/canvasXpress>

canvasXpress user interface: <https://canvasxpress.org/html/user-interface.html>

canvasXpress example of violin plot: <https://baohongz.github.io/canvasDesigner/violin.html>

canvasDesigner: <https://baohongz.github.io/canvasDesigner>

canvasDesigner source code: <https://github.com/baohongz/canvasDesigner>

canvasDesigner demo video: https://baohongz.github.io/canvasDesigner/demo_video.html

canvasDesigner demo #1: all SVG files are generated by canvasXpress.

<https://baohongz.github.io/canvasDesigner/demo1.html>

https://baohongz.github.io/canvasDesigner/demo1_saved.html (Result of “Save as HTML”)

canvasDesigner demo #2: mixed SVG files from canvasXpress and other sources.

<https://baohongz.github.io/canvasDesigner/demo2.html>

https://baohongz.github.io/canvasDesigner/demo2_saved.html (Result of “Save as HTML”)

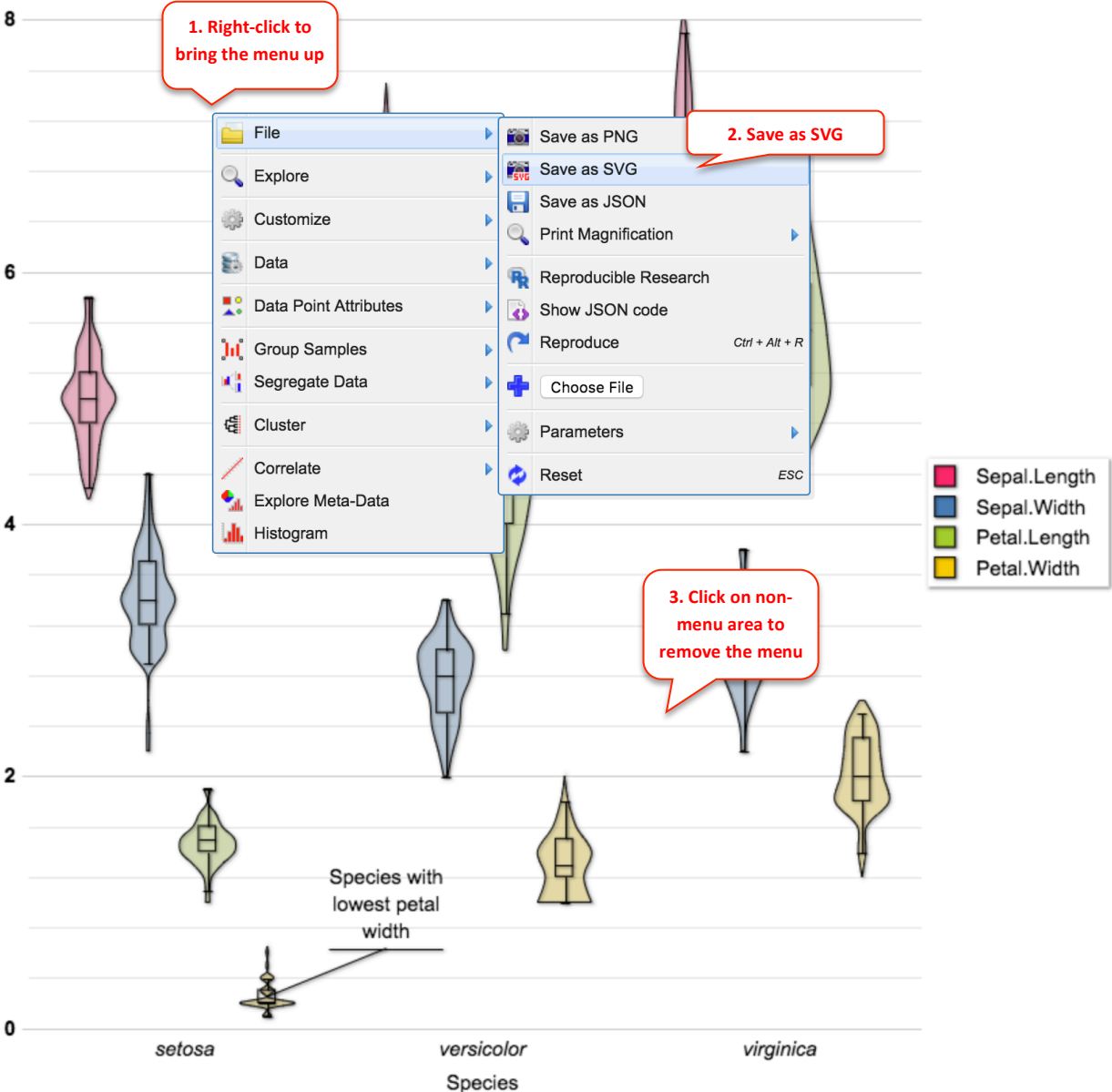
Example SVG files: <https://github.com/baohongz/canvasDesigner/tree/gh-pages/SVG>

Inkscape: Edit SVG files, convert image files in other formats to SVG format. <https://inkscape.org>

SVGOMG: Optimize SVG files. <https://jakearchibald.github.io/svgomg>

SVG (Scalable Vector Graphics) files generated by canvasXpress

All plots generated by canvasXpress can be saved as SVG file by following the menu as shown in the example. (<https://baohongz.github.io/canvasDesigner/violin.html>)



Layout multiple SVG files by canvasDesigner

The HTML based tool <https://baohongz.github.io/canvasDesigner> can easily arrange multiple plots in SVG format exported by canvasXpress or other tools. Each individual plot could be adjusted in size and positioned freely on the canvas.

The screenshot shows the canvasDesigner interface with several callouts explaining its features:

- 1. Drag-n-drop a SVG file**: A dashed box indicates the area where users can drop or upload SVG files. A note says: "Drop a SVG file here or click to upload. Then click 'Add Plot' to add to the designing canvas. Note: use Inkscape to convert PNG, JPG, GIF, TIFF to SVG format."
- 2. Add the plot to the canvas below**: Points to the "Add Plot" button in the top toolbar.
- 3. Add zoom and pan control**: Points to the "Add Control" button in the top toolbar.
- 4. Change the size of the container**: Points to the blue handles around the plot containers.
- 5. Change the size of the plot**: Points to the "RESET" button on a plot.
- 6. Change the label of a figure**: Points to the "Edit" button on a plot.
- 7. Print to PDF by right-click on canvas**: Points to the right-click context menu on the canvas.
- 8. Save as HTML**: Points to the "Save as HTML" button in the top toolbar.

Other callouts include: "Drag a plot over the trash bin to remove" (pointing to a trash bin icon) and "Drag to move" (pointing to a plot's blue container).

canvasDesigner demo video: https://baohongz.github.io/canvasDesigner/demo_video.html

canvasDesigner demo #1: all SVG files are generated by canvasXpress.

<https://baohongz.github.io/canvasDesigner/demo1.html>

https://baohongz.github.io/canvasDesigner/demo1_saved.html (Result of "Save as HTML")

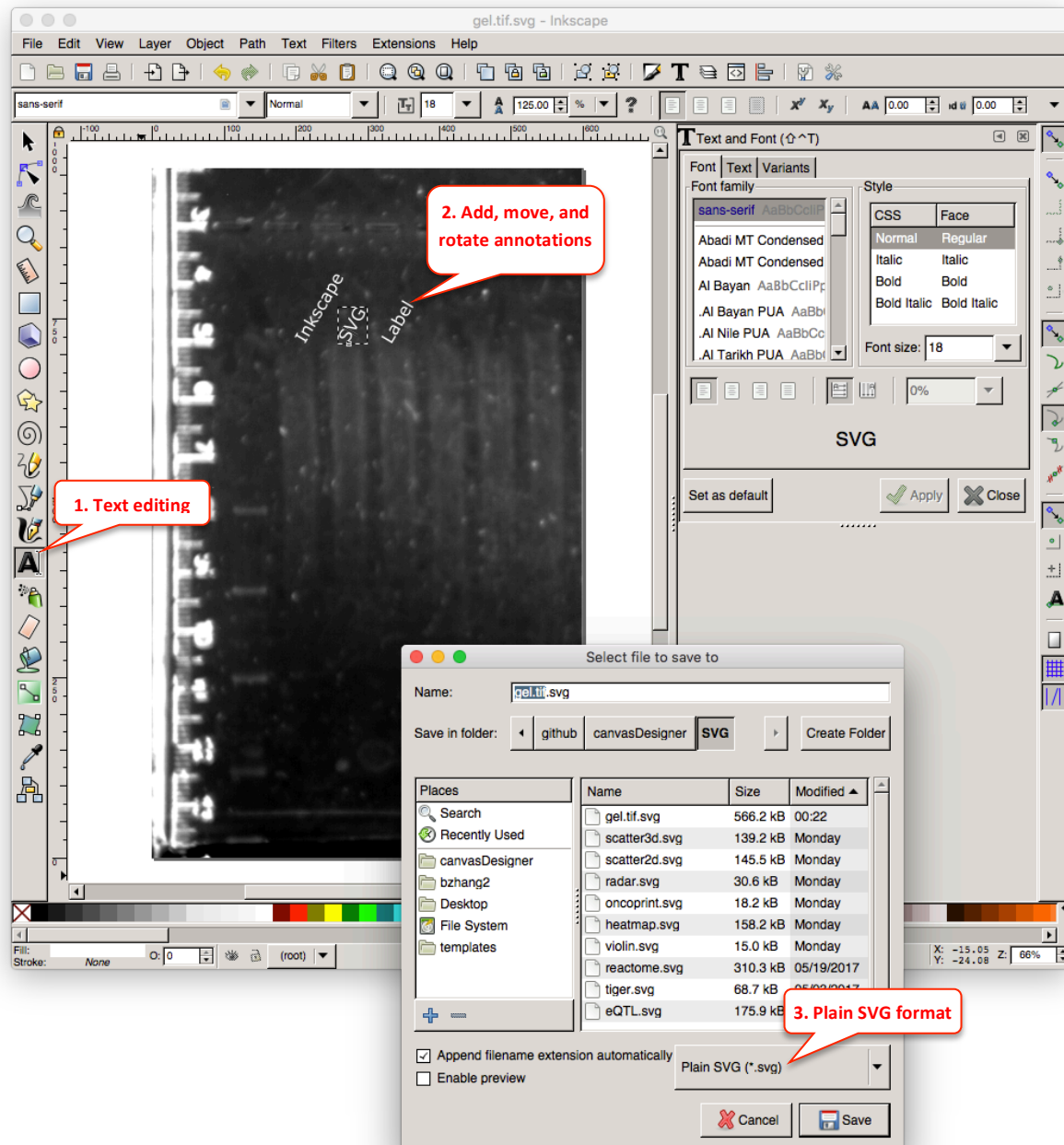
canvasDesigner demo #2: mixed SVG files from canvasXpress and other sources.

<https://baohongz.github.io/canvasDesigner/demo2.html>

https://baohongz.github.io/canvasDesigner/demo2_saved.html (Result of "Save as HTML")

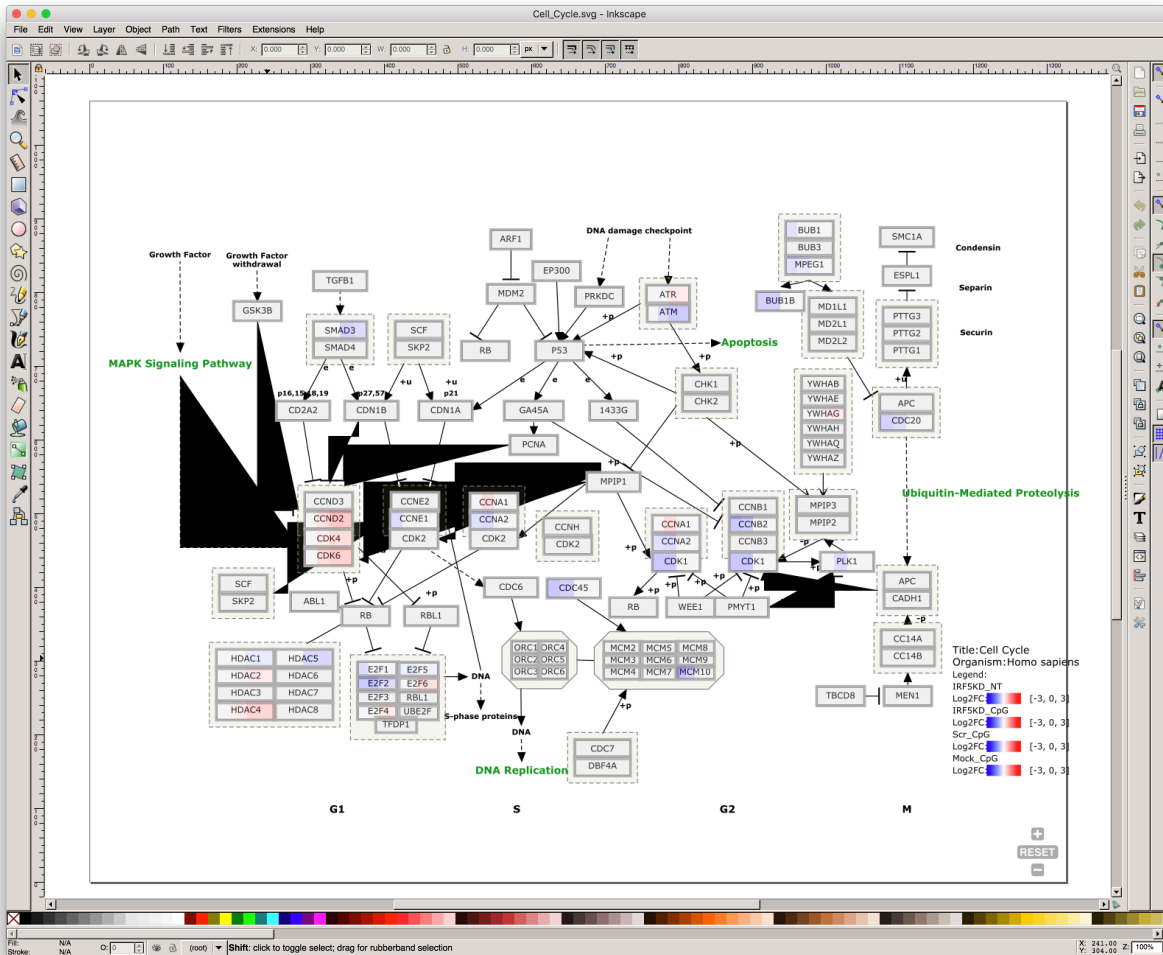
Inkscape to annotate and convert images to SVG if needed

Inkscape (<https://inkscape.org>) is a powerful open-source vector graphics editor. You can add text annotations to an image in jpeg, png, gif, or tiff format and save it as “Plain SVG” file to be used in canvasDesigner tool. The example here is showing how to add annotations to a TIFF image and then save as SVG format.



Limitation of SVG rendering by Inkscape

Rendering of some complex SVG files is flawed even using the latest version of Inkscape v0.92. Here is an example of pathway diagram (https://baohongz.github.io/canvasDesigner/SVG/Cell_Cycle.svg) from Wikipathways rendered by Inkscape. Please note unexpected black triangles generated by Inkscape. The same SVG file is rendered perfectly by canvasDesigner as shown in the Chrome browser, https://baohongz.github.io/canvasDesigner/demo2_saved.html (Figure E).



Optimize SVG files by SVGOMG

SVG files, especially exported from various tools, usually contain a lot of redundant and useless information such as editor metadata, comments, hidden elements, default or non-optimal values and other stuff that can be safely removed or converted by the online tool SVGOMG (<https://jakearchibald.github.io/svgomg>) without affecting SVG rendering result.

The screenshot displays the SVGOMG web interface. At the top, there are tabs for 'IMAGE' and 'CODE'. The main area shows a box plot titled 'Gene expression of TUFM' for SNP rs7187776. The y-axis is labeled 'log2(CPM+1)' and ranges from 6.40 to 7.20. The x-axis has categories 'High' and 'Low' for each of the three SNP genotypes: AA (red), AG (blue), and GG (green). A legend on the right indicates the SNP colors. Three callout boxes provide instructions: '1. Drag-n-drop a SVG file' points to the main plot area; '2. (Optional) Change optimization parameters' points to the settings panel on the right; '3. Save' points to the download button at the bottom. The settings panel includes 'Global settings' (Show original, Compare gzipped, Prettify code, Multipass), a 'Precision' slider, and a 'Features' list with various optimization options like 'Cleanup attribute whitespace', 'Remove/tidy enable-background', 'Clean IDs', etc. A status bar at the bottom shows '3.24k - 72.62% saving' and a download icon.

1. Drag-n-drop a SVG file

2. (Optional) Change optimization parameters

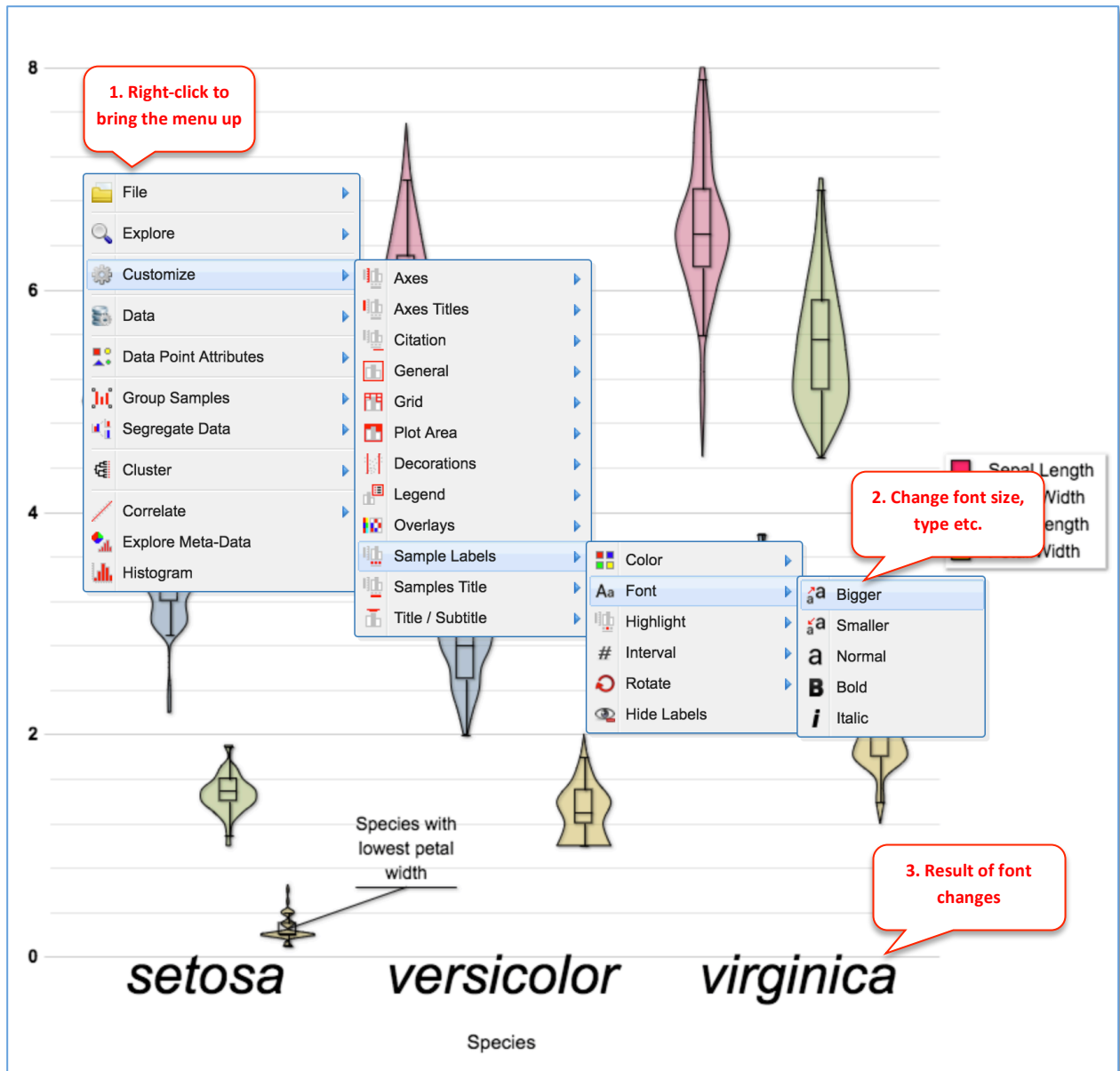
3. Save

3.24k - 72.62% saving

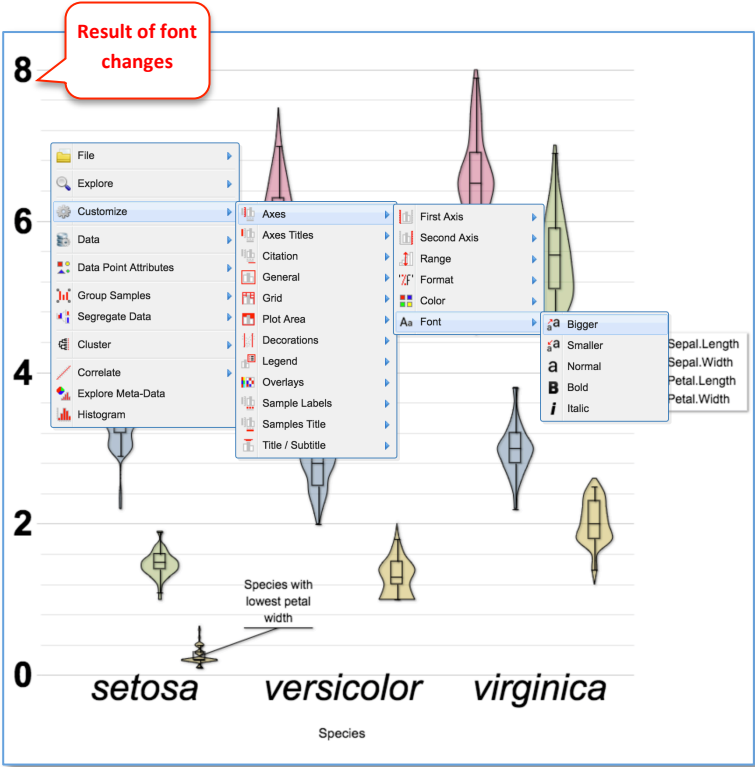
Change Font Sizes

Font sizes of the title, axial labels and legend of a canvasXpress plot can be changed through the menu of each individual plot as shown in the following steps. After font customization, the plot can be saved in SVG format to be used in canvasDesigner tool. We will use figure D (<https://baohongz.github.io/canvasDesigner/violin.html>) in demo 1 as an example.

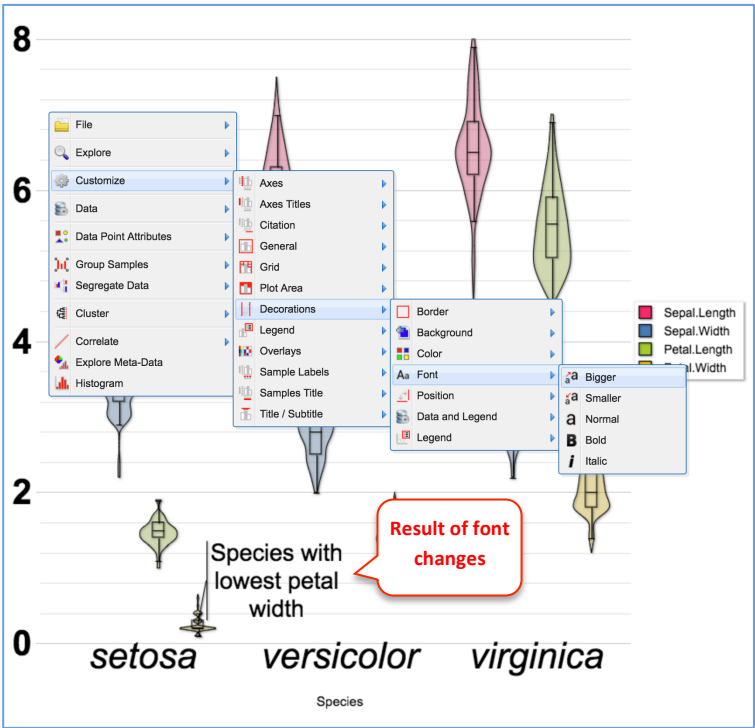
1) Change font size of sample label



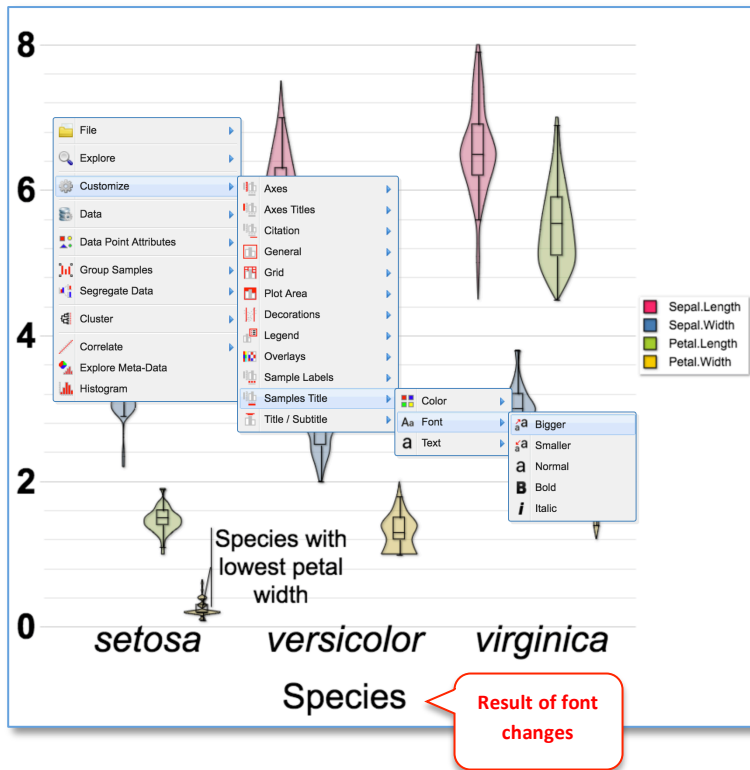
2) Change font size of y-axis label



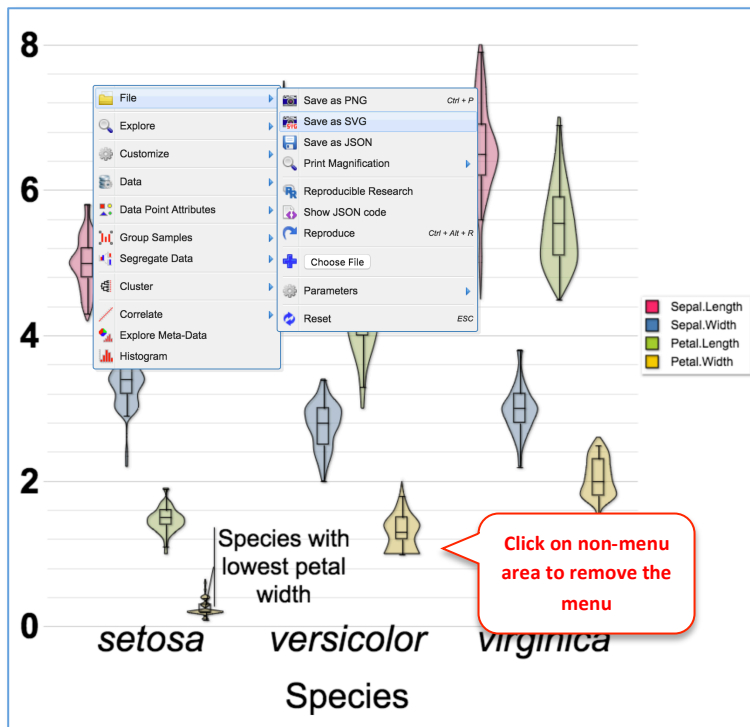
3) Change font size of plot decoration



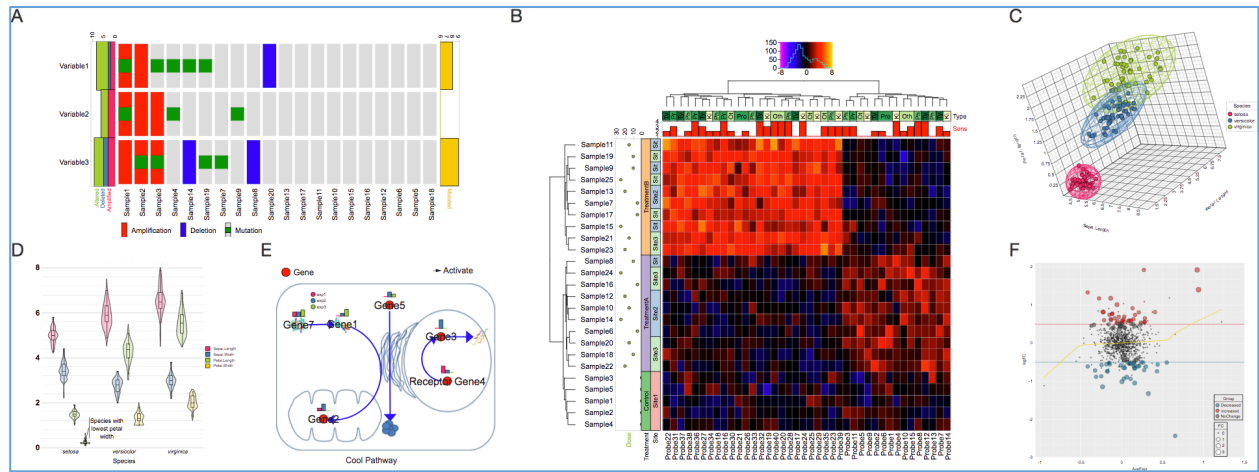
4) Change font size of sample title



5) Save the plot with bigger font in SVG format as violin_bigfont.svg



6) Before the replacement of figure D



7) Replace figure D in demo 1 (<https://baohongz.github.io/canvasDesigner/demo1.html>) by violin_bigfont.svg, see the video guide at <https://twitter.com/baohongzhang/status/987500399702790144>

8) After the replacement, please note the enlarged font in figure D

