Supplementary Materials of canvasDesigner2

Contents

Web URLs of tools and online user guide

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

canvasDesigner2: https://baohongz.github.io/canvasDesigner2

canvasDesigner2 source code: https://github.com/baohongz/canvasDesigner2

Example SVG files: https://github.com/baohongz/canvasDesigner2/tree/gh-pages/SVG

Inkscape: Tool to edit SVG files, convert image files from other formats to SVG format. https://inkscape.org

pdf2svg: A simple PDF to SVG converter using the Poppler and Cairo libraries. https://github.com/dawbarton/pdf2svg

SVGOMG: SVG Optimizer tool for optimizing SVG files. https://jakearchibald.github.io/svgomg

Coral: Clear and customizable visualization of human kinome data. http://phanstiel-lab.med.unc.edu/CORAL/

ComplexHeatmap: Complex heatmaps are efficient to visualize associations between different sources of data sets and reveal potential patterns. https://www.bioconductor.org/packages/release/bioc/html/ComplexHeatmap.html

Wikimedia Commons: media file collection of 59.4 million freely usable media files to which anyone can contribute. https://commons.wikimedia.org/wiki/Main_Page

WikiPathways: a database of biological pathways maintained by and for the scientific community. https://www.wikipathways.org/index.php/WikiPathways
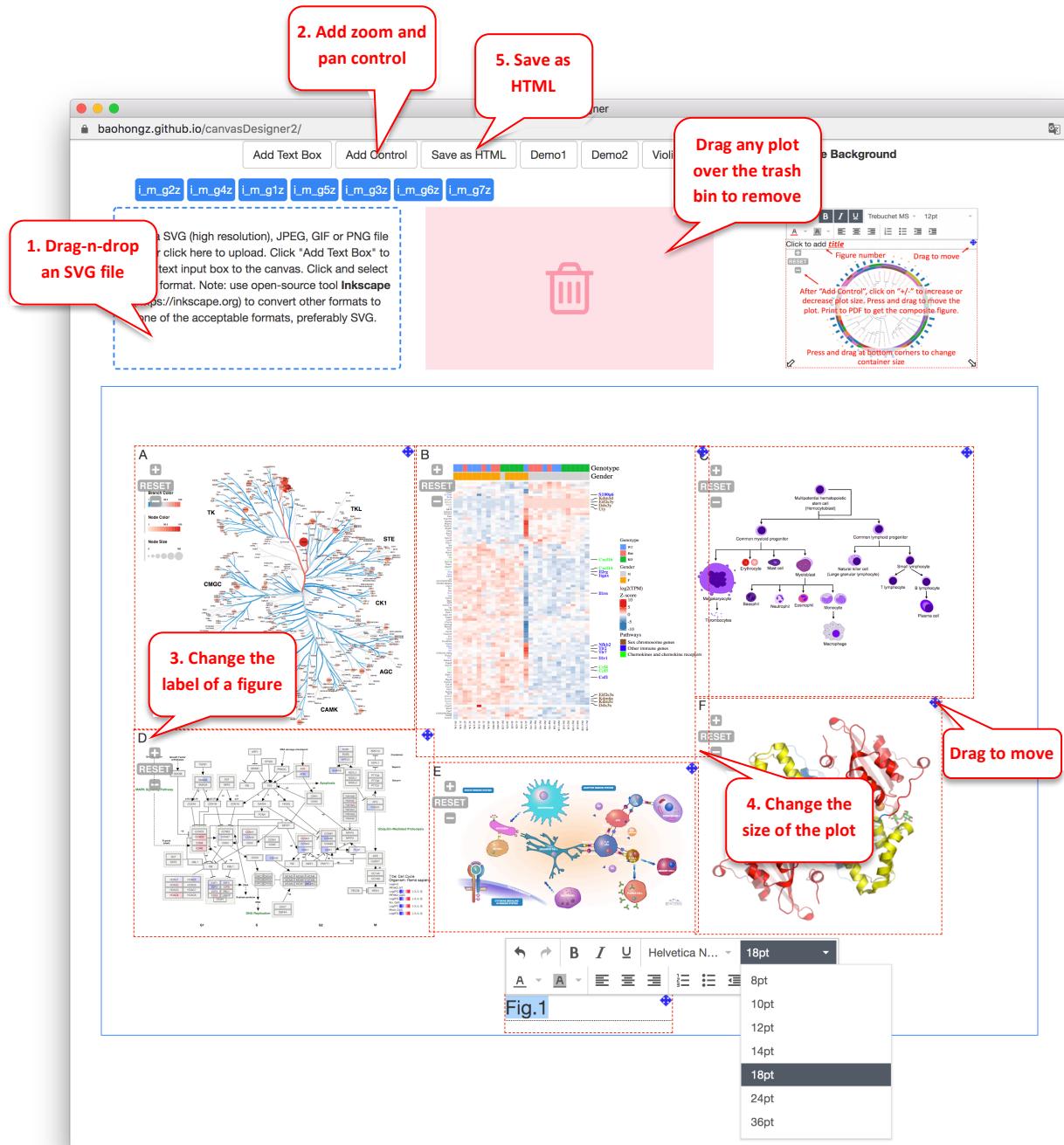
Reactome: a free, open-source, curated and peer-reviewed pathway database. Our goal is to provide intuitive bioinformatics tools for the visualization, interpretation and analysis of pathway knowledge to support basic research, genome analysis, modeling, systems biology and education. https://reactome.org/

PyMOL: a user-sponsored molecular visualization system on an open-source foundation, maintained and distributed by Schrödinger. https://pymol.org/

Laying out multiple SVG files by canvasDesigner2 (Fig. s1)

The HTML based tool canvasDesigner2 can easily arrange multiple plots in SVG format exported by many tools. Each individual plot could be adjusted in size and positioned freely on the canvas.
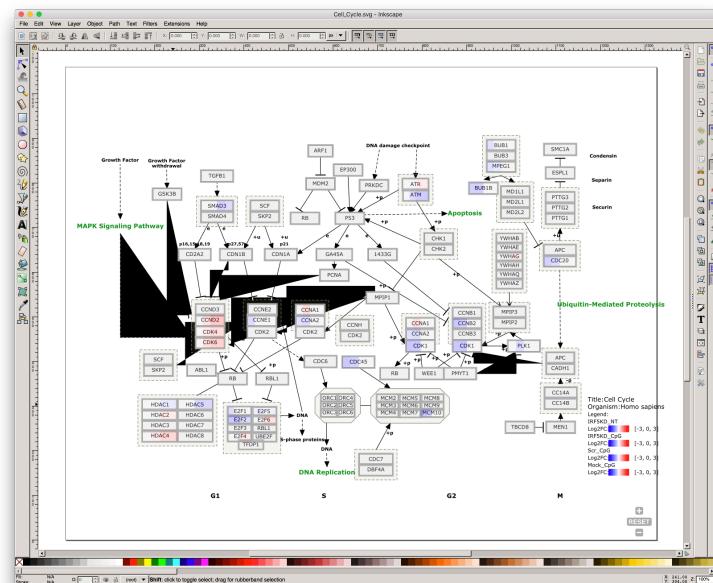
Limitation of SVG rendering by other popular tools (Fig. s2)
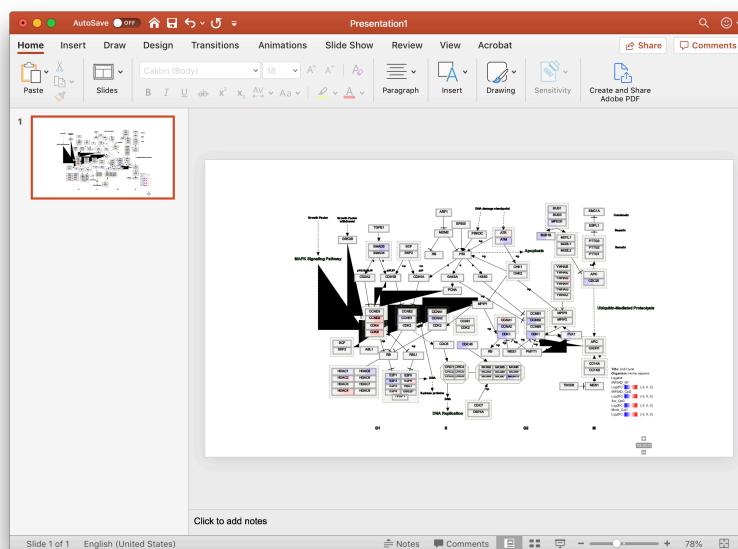
Rendering of some complex SVG files is flawed in many other tools, such as popular tools like open-source Inkscape and MS Power Point. Here is an example of pathway diagram (https://baohongz.github.io/canvasDesigner2/SVG/Cell_Cycle.svg) from Wikipathways rendered by Inkscape or MS Power Point. Please note unexpected black triangles generated by both tools. The same SVG file is rendered perfectly by canvasDesigner2 as shown in Figure 1D.

Inkscape
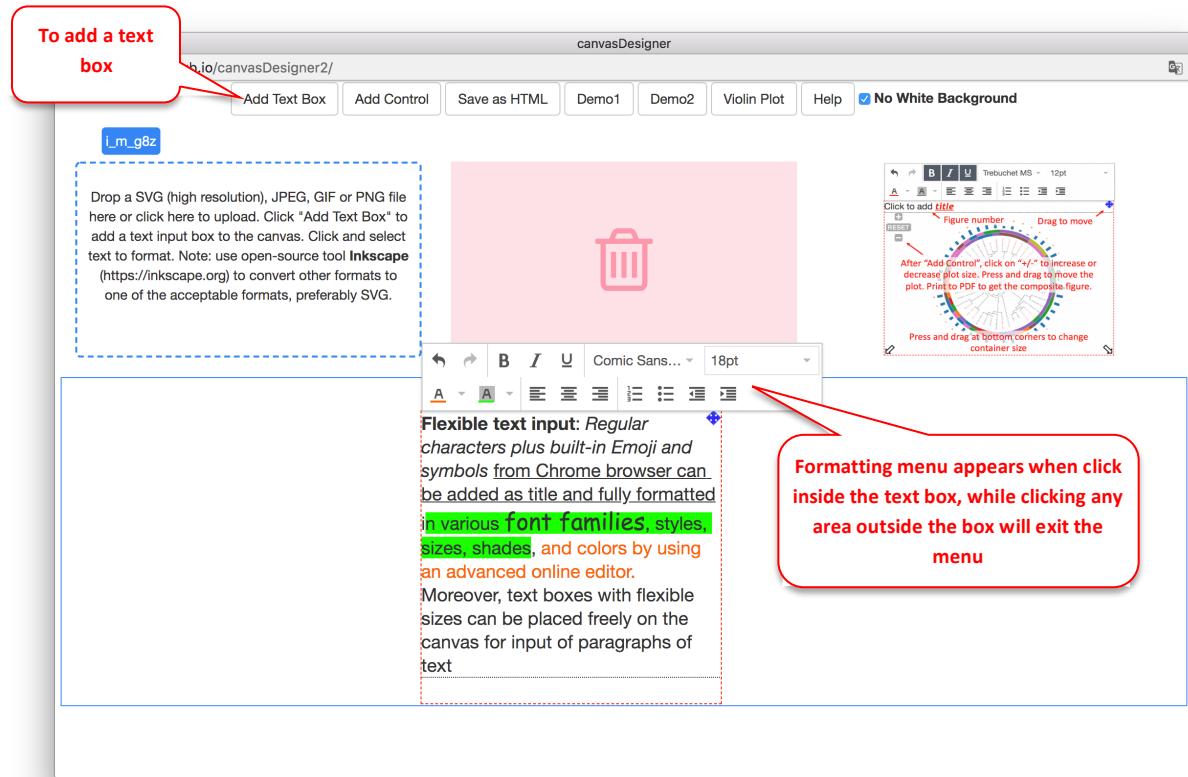
MS Power Point

Flexible text input (Fig. s3)

Click on "Add Text Box" to add a box to the canvas. Selecting any text will fire up the formatting menu while clicking any area outside the box will exit the menu.
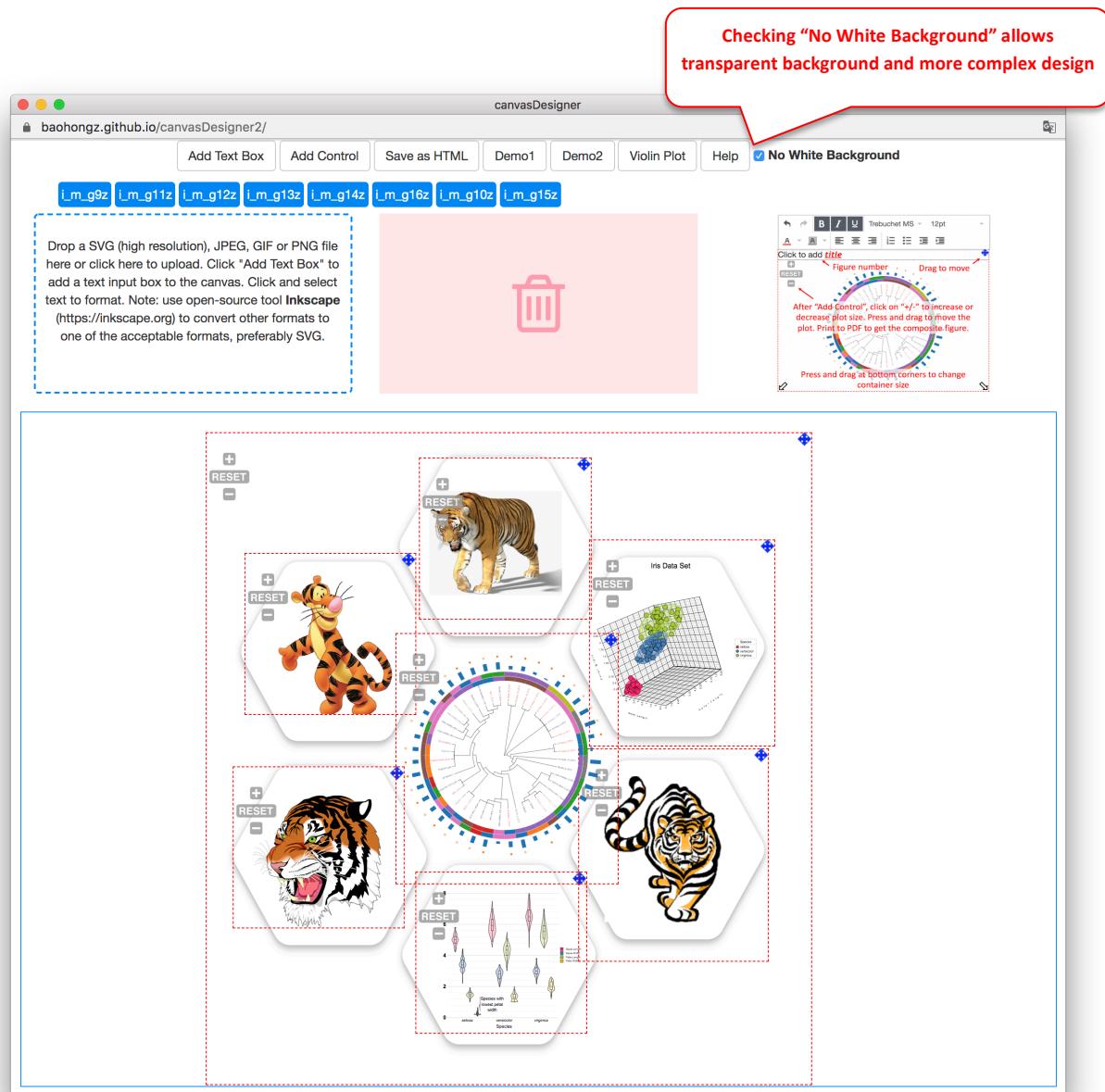
Conflicting Stylesheets (Fig. s4)

Human blood cell lineage plot loses all of its colors due to the conflict of the stylesheet defined in heatmap plot in the older version (version 1) of canvasDesigner. Localization of stylesheets in new version solves the issue as shown in Fig. s1.

Color gets lost due to stylesheet conflicts with heatmap plot
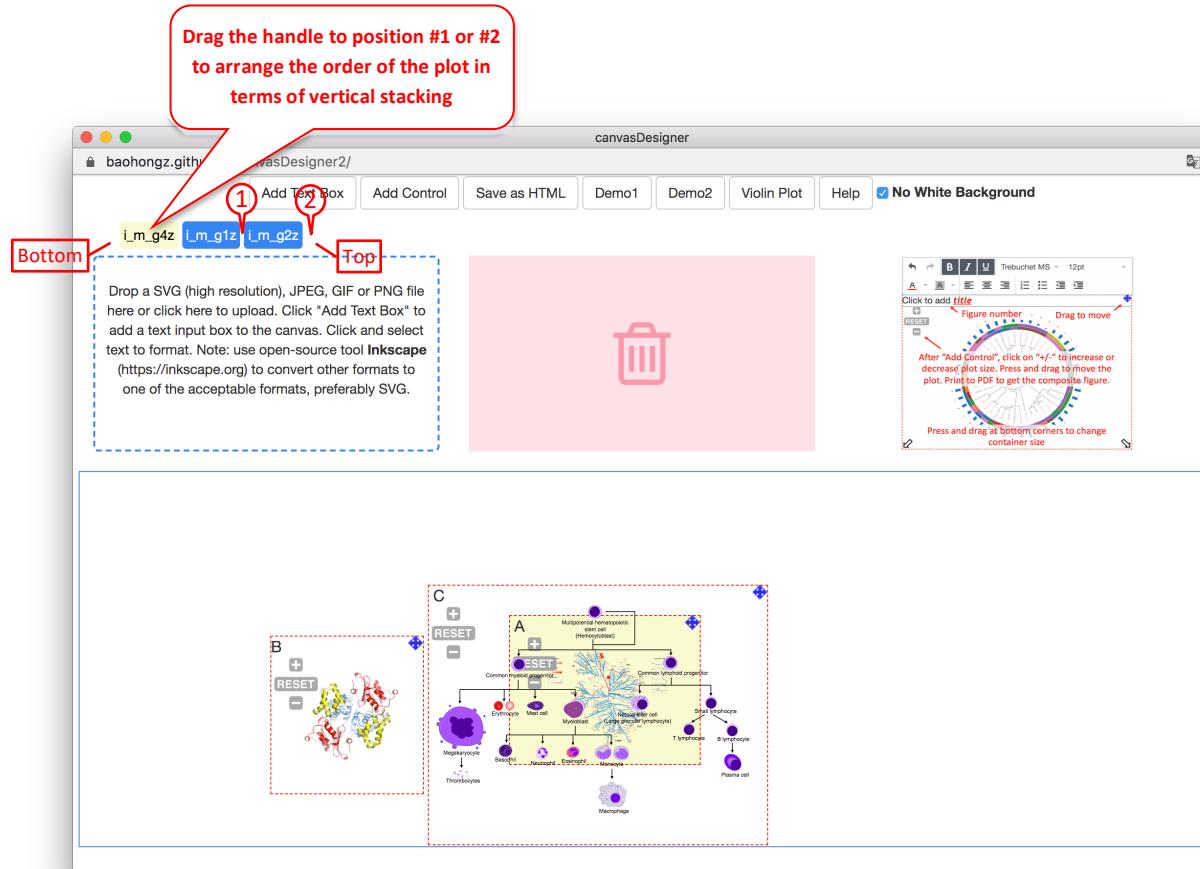
Optionally removing white background (Fig. s5)

Overlaying plots onto each other to create more complex design is possible by optionally checking "No White Background" on the top menu. Moreover, images, tigers as example, in jpg, png, gif and svg formats can be loaded to the canvas directly for arrangement. The saved final HTML file is available at https://baohongz.github.io/canvasDesigner2/figure/Fig.s5.html .
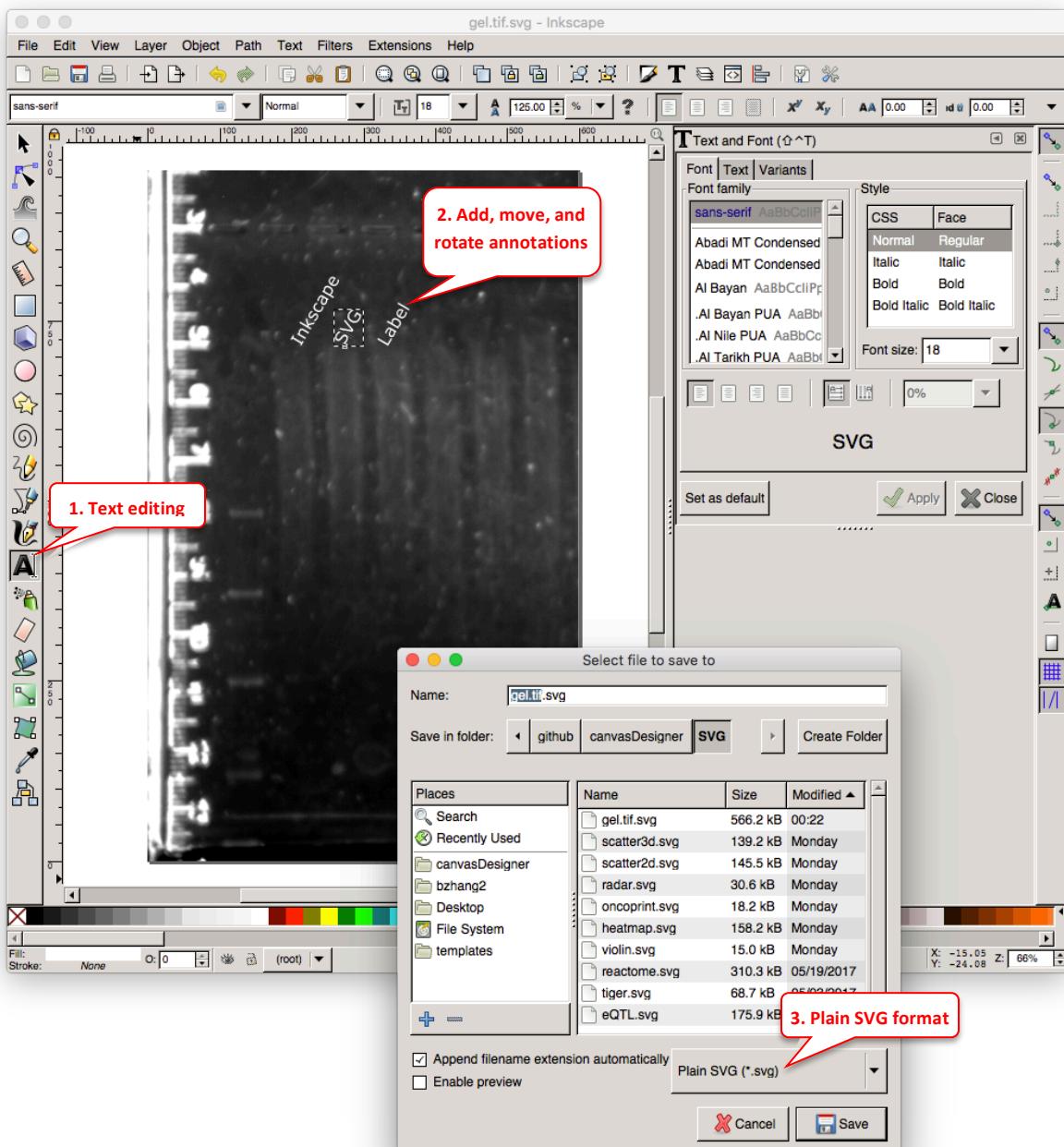
Vertical stacking (Fig. s6)

Each plot will get a button handle when it is loaded onto the canvas. A plot and the linked handle will be highlighted in yellow when hovering mouse over the handle. Dragging the handle and dropping it at desired position among these buttons will change the relative vertical stacking, also known as z-index of the plot. The rightest horizontal position represents the top layer of the stack of plots on the canvas.

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 canvasDesigner2 tool. The example here is showing how to add annotations to a TIFF image and then save as SVG format.

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.