

ScientiFig: a tool to build publication-ready scientific figures

To the Editor: Scientists devote a substantial amount of time communicating their work to their peers and to nonscientists. Such communication, whether oral or written, is often illustrated with figures and line art. Creating a scientific figure can be a time-consuming process because most existing software has been implemented largely for graphic designers to produce artistic images and not for scientists to assemble scientific figures. This software is therefore often poorly suited for the latter task.

Scientific figures are usually montages containing regularly spaced rows and columns of figure panels that obey several conventions: for example, each panel is often given a letter for identification, and images in panels are labeled with a scale bar to indicate the size of the contained objects. Scientific publishers impose additional stylistic restrictions via their guidelines, such as the choice of a particular set of fonts and figure widths to best fit their layout. These font and width restrictions vary among journals; consequently, a formatted figure may need to be revamped when it is resubmitted to another journal. If an inappropriately sized figure is submitted, the journal production staff will rearrange the panels to fit one of the journal's allowed figure widths. This may result in a sizing or placement of panels that authors object to. Close attention to sizing before final submission can help avoid such situations.

Whereas a figure layout can be created using existing tools^{1–3}, changing the size of a figure inevitably affects the stroke width of line art, including graphs, and the font size of the text. When the latter parameter is restored after a graph has been resized, the text becomes misaligned. Similar problems occur when a manuscript bibliography is revised and journal style changes must be cascaded through the manuscript. But, for bibliographic information, several programs exist to make this task easy. Such a reformatting tool for figures has been missing. We now provide a free tool called ScientiFig, which can quickly build, format or reformat scientific figures (Fig. 1). This open-source plug-in for the popular ImageJ and Fiji software^{2,3} can

be downloaded from <http://srv-gred.u-clermont1.fr/labmirouse/software/> (see also Supplementary Software).

ScientiFig creates and maintains the layout of both simple figures consisting of similarly sized images or graphs and complex figures containing panels with a variety of sizes. ScientiFig automatically takes care of the alignment of the text with respect to the images, and it has tools to make annotating and reformatting bitmap images easy. The software optimally positions scale bars and allows image annotation using regions of interest (ROIs), brackets and floating text. Because figures often contain graphs, we also provide a plug-in called Figur that can be used with the open-source software R^{4–6} to dynamically generate and import vector-based graphs into figures created by ScientiFig.

Finally, ScientiFig ships with a library of styles compliant with journal-specific guidelines, such as font family and size, column width and stroke size for line art. This library can easily be extended using the editor embedded in ScientiFig, which allows the press and the scientific community to contribute custom styles. Once a journal style is selected, the tool allows the user to perform 'quality controls' to verify the compliance of the figure with the journal guidelines. If some figure parameters conflict with the journal recommendations, ScientiFig automatically offers solutions: it can, for example, change the stroke width of ROIs, remove grids from graphs, replace fonts and even correct text inconsistencies.

The figures produced by ScientiFig can be exported as vector images that can be further edited or supplied for publication, as publication-ready bitmaps at any resolution or as transparent images for integration in office documents.

We think that both scientists and publishers will benefit if this kind of software becomes a standard.

Note: Any Supplementary Information and Source Data files are available in the online version of the paper (doi:10.1038/nmeth.2692).

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The authors declare no competing financial interests.

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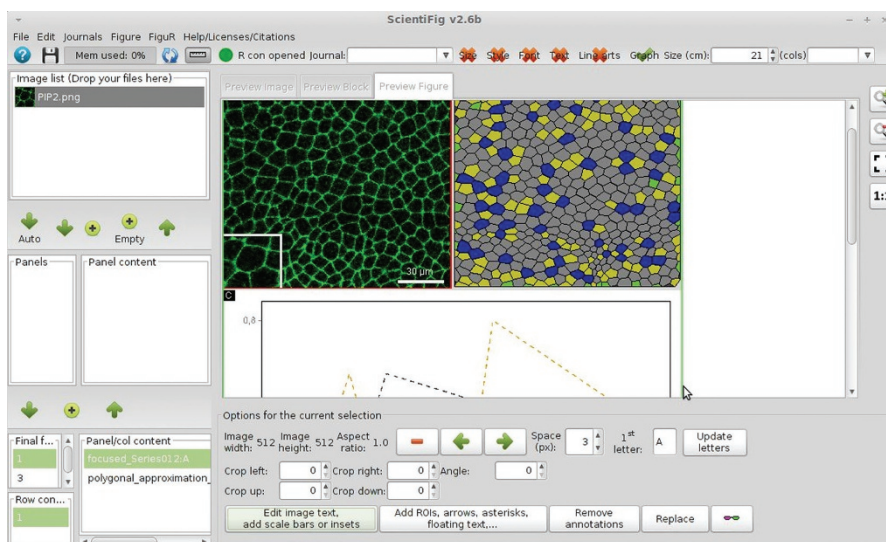


Figure 1 | Figure construction using the ScientiFig software. Screenshot of a figure in construction showing the image drop zone, various panels and their content, the figure preview window and several editing tools.