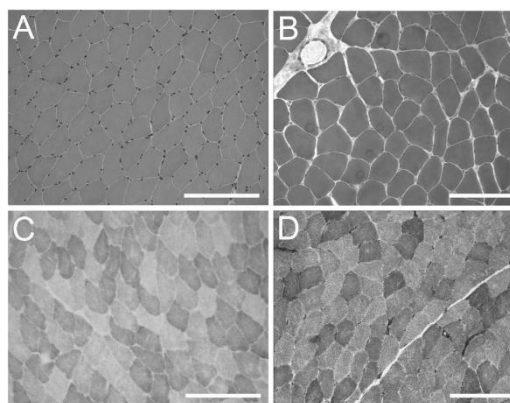# JAAHA Figure Guidelines

To ensure the highest quality of reproduction online and in print, authors must follow these guidelines when preparing figures. Doing so will help expedite publication and ensure that minimum requirements for file format, image size, color mode, resolution, and labeling have been met.

Statistical graphs, charts, diagrams, illustrations, and photographs are figure types that may submitted as part of a manuscript. All figures should be carefully designed or selected to show a relationship of ideas, data, or objects that would be difficult to describe precisely or completely using words alone.

Each figure should be submitted as a separate file and named clearly (e.g., Figure 1, Figure 2, Figure 3, and Figure S1, Figure S2 for supplementary figures). Do not include the author's name or any institutional identifier in the file name. If figures are multi-part figures, please condense your multi-part figures into a single file for each figure (for example, figure 1A through 1F should all be in one file, figures 2A through 2F should be in a second file, etc.) and label each individual panel with a capital letter. See example below:

To obtain permission for any artwork being reprinted or derived from another source, authors may go through the Copyright Clearance Center *(copyright.com)* or the original publisher. Any fees required to obtain permission are the responsibility of the author.

If you have questions, please contact *jaaha@aaha.org.*

File Format

Preferred file formats are TIFF and EPS (see Quick Guide to Preparing Figures).

Unacceptable file formats (i.e., those that are not of a reproducible quality) are: BMP, GIF, PIC or PICT, and PNG. While we do accept JPEG files, we strongly recommend that you submit TIFF or EPS files instead.

EPS files are the preferred format when preparing line art (e.g., line graphs, simple charts, or diagrams) that was created using an illustration program such as Adobe Illustrator. When saving line art as an EPS file, embed the fonts used and set the graph lines to at least 0.25 points wide. In Illustrator, simply check the box that reads "Embed Fonts" when saving an EPS file.

For artwork that combines line art with imagery, the preferred approach is to (1) create the line art in Illustrator, (2) create the imagery in Photoshop, (3) combine the two into one program such as Illustrator, and (4) save as an EPS file with all fonts converted to outlines and graph lines at least 0.25 point wide. If fonts have not been converted to outlines, always choose to embed fonts when saving EPS files from an application program.

Do not cut and paste figure files from one application to another to achieve an acceptable file format. For example, images imported or copied and pasted into word processing programs such as Microsoft Word or into presentation software such as PowerPoint are not acceptable except when accompanied by a master file in a preferred file format (TIFF, EPS). Native artwork files created by a software application, such as Photoshop or Illustrator, can be exported or saved as one of the preferred file formats. Following are tips specific to digital artwork derived from PowerPoint slides, Excel graphs, or images embedded into Microsoft Word:

- Do not use pattern fills or texture fills in graphics. Instead, use solid fills or percentage screens, so as to successfully save to an EPS format. A 20% difference in percentage screens is most effective to achieve differentiation.
- When inserting pictures/images, you must select "insert" rather than "insert link" to properly embed high-resolution imagery. All inserted artwork should meet resolution requirements prior to insertion (see section "Resolution" below).
- Always embed fonts. To do this, select "Save As" from the drop-down file menu. In the Save As window, click on the drop-down menu "Tools," and then select the "Save Options." A new box will appear that will allow you to check "Embed TrueType Fonts" check box, which will result in the "Embed All Characters" being selected.

Image Size

Preferred image size is one that conforms to final publication size. Size artwork to be either one column wide (20p4.5/3.4"/8.6 cm) or two columns wide (42p3/7"/17.9 cm). This may entail cropping to eliminate unnecessary white space. Depth is typically a nonissue but should be less than that of a printed page (54.5p/9"/23 cm).

Color Mode
Set the color of your artwork to RGB, black-and-white, or grayscale. All color image files must be submitted in their original RGB color. Whenever possible, please tag the submitted RGB image with its originating ICC profile.

Resolution
The optimum resolutions for figure graphics are: 1,000 dpi for line art, 600 dpi for grayscale and color images with type (combination halftones), and 300 dpi for grayscale or color images without type or lettering (halftones). The minimum resolution for TIFF and EPS files is 300 dpi. See Quick Guide to Preparing Figures. Always check that artwork meets the requirements for both minimum resolution and image size. As a point of reference, most web images have a resolution of 72 dpi.

Fonts and Labels
Please observe the following guidelines for font usage and for placement of labels on figures.
- Preferred font to use is Helvetica. Other acceptable sans serif fonts to use are: Arial, Times, Symbol, Mathematical Pi, and European Pi.
- Please use the same font for all figures in your manuscript.
- Keep font sizes between 6 and 10 points.
- Avoid using color type.
- Use leading zeros on all decimals (e.g., 0.3, 0.5), and report only significant digits.
- Use capital letters for part labels in multipart figures (A, B, C, etc.). These should be 9 point and bold. Preferred placement of part labels (A, B, C, etc.) is the upper left-hand corner of each figure part.
- Avoid using subpart labels within a figure.
- In the event image reproduction results in illegible computer-generated type (e.g., units for scale bars), please omit such labels; instead, include the information in the figure legend.
- Do not include the figure number on the actual figure or graph. The figure number should only appear in the figure legend, which is included in your manuscript and submitted separately.
- Do not draw boxes around your artwork
- Lines in graphs can be differentiated by using solid, dashed, or dotted lines or by varying the weight of the line.
- Lines should be at least 0.5 point.

JAAHA | Quick Guide to Preparing Figures

	Line Art (monochrome; no areas in gray or color)	**Grayscale or Color Images with Type** (combination halftones; includes areas with gray shading or full color)	**Grayscale or Color Images without Type or Lettering** (halftones; includes areas with grayscale or full color)
Example			
Preferred vector format	EPS	EPS	EPS
Preferred raster format	TIFF	TIFF	TIFF
Optimum resolution for raster	1200 dpi	600 dpi	300 dpi
Minimum resolution for raster	600 dpi	500 dpi	300 dpi
Image width, one column	20p4.5 3.4" 8.6 cm	20p4.5 3.4" 8.6 cm	20p4.5 3.4" 8.6 cm
Image width, two column	42p3 7" 17.9 cm	42p3 7" 17.9 cm	42p3 7" 17.9 cm