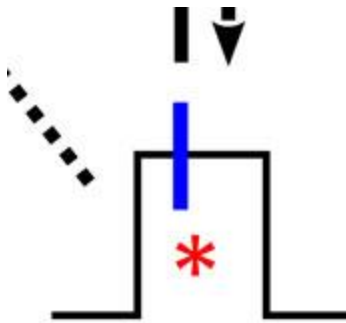# Figure types

Line Art

Line art has sharp, clean lines and geometrical shapes against a white background. Line art is typically used for tables, charts, graphs, and gene sequences. You can use a program like Illustrator to create high-quality line art. A minimum resolution of 300 ppi will maintain the crisp edges of the lines and shapes.

- Format: TIFF or EPS
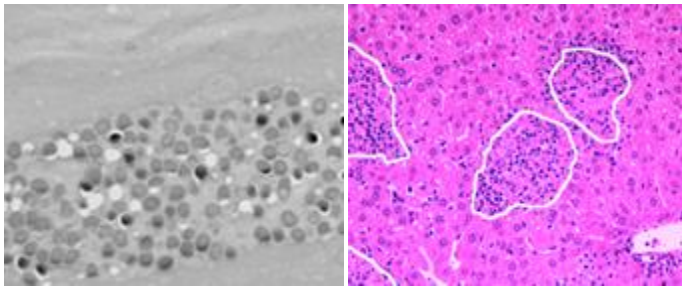
- Minimum Resolution: 300 ppi

Grayscale

Grayscale figures contain varying tones of black and white. They contain no color, so grayscale is synonymous with "black and white." The gray scale is divided into 256 sections with black at 0 and white at 255. Software for preparation of grayscale art includes Photoshop.

- Format: TIFF or EPS

- Minimum Resolution: 300 ppi

Halftones

The best example of a halftone is a photograph, but halftones include any image that uses continuous shading or blending of colors or grays, such as gels, stains, microarrays, brain scans, and molecular structures. To prepare and manipulate halftone images, use Photoshop or a comparable photo-editing program.
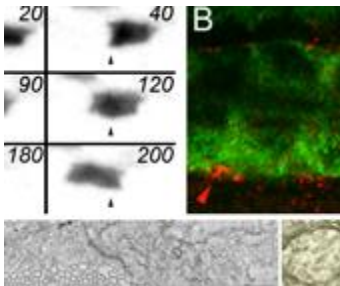
- Format: TIFF

- Minimum Resolution: 300 ppi

Combination Figures

Combination figures contain two or more types of images, for example, a halftone figure containing text. You should embed the images, group the objects, or flatten the layers, and flatten transparencies before saving as TIFF at a minimum of 300 ppi.

- Format: TIFF

- Minimum Resolution: 300 ppi

Convert PowerPoint Files to High-Resolution TIFFs

Caution: Do not add artwork to your PowerPoint slides by copying from another application and then pasting into PowerPoint. Your figures will be downsampled to screen resolution. Instead use Insert > Picture > From File.

Caution: Do not use File > Save as > TIFF. This will result in a low-resolution, poor-quality figure.

Convert Excel or Word Files to High-Resolution TIFFs

Windows 98, XP, Vista and Excel/Word 2003 or 2007:

Step I: Convert Excel/Word File to PDF

There are two possible ways to create PDFs from Excel/Word files: use the Adobe PDF menu in some versions of Excel/Word, or create a PDF via the Print command.

1. Open your file in Excel/Word. From the Adobe PDF menu, select Change Conversion Settings. The PDFMaker Settings dialog displays.

2. From the Conversion settings dropdown menu, select Press Quality. Uncheck View Adobe PDF result. Click OK.

3. From the Adobe PDF menu, select Convert to Adobe PDF. You will be asked to save the PDF file to a location of your choosing.

4. Click OK.

– OR -

1. Open your file in Excel/Word.

2. Select Print from the File dropdown menu.

3. Select the Adobe PDF (or similar driver) in the Printer Name window.

4. Click Properties. Change the Default Settings pull-down to Press Quality. Uncheck the "View Adobe PDF results" box if you don't want Acrobat to launch.

5. Click OK, then click OK. Pick where the PDF will be created, and click Save.

Step II: Convert Individual PDF Files to TIFFs

In Photoshop:

1. File→Open the PDF. You will need to do this one page at a time. Make sure you're importing it at 300ppi, RGB.

2. Use the Crop Tool (fifth from the top of the toolbar) to select an area close to the borders of your image. Hit Enter to apply the crop.

3. Layer→Flatten Image

4. Image→Image Size. Uncheck the Resample Image checkbox. If the Width is over 17.35cm, type 17.35 in the Width box (17.35cm is our maximum allowable width for figures). The Resolution will go up automatically as the Width decreases. If the resolution does not hit 300 when you make the Width 17.35, type 300 in Resolution and as long as Width doesn't go below 8.3cm, everything is fine. Also, the height cannot be more than 23.35. If the Height and Width are within these prescribed limits, no adjustment to your figure size needs to be made.

5. File→Save As. Save as TIFF, Image Compression set to LZW, Pixel Order set to Interleaved, Byte Order set to IBM PC.