Introduction

Submitting your illustrations, pictures and other artwork (such as multimedia and supplementary files) in an electronic format helps us produce your work to the best possible standards, ensuring accuracy, clarity, and a high level of detail.

This guide will show how to prepare your artwork for electronic submission and includes information and suggestions on how to produce the best results and deal with common problems, a brief summary of which follows below:

- All figures should be supplied in our preferred file formats.
- All figures should be supplied as separate files, unless you are using LaTeX.
- The figure files should be named in a logical way (e.g. [first author surname] Fig1.tif).
- Please ensure that the material you submit is of the best possible quality. We cannot improve overall appearance and resolution.
- Resolution: colour and black and white halftone images must be saved at 300 dpi (dots per inch) at approximately the final size. Line drawings should be saved at 1000 dpi, or 1200 dpi if very fine line weights have been used. Combination figures must be saved at a minimum of 600 dpi.
- If in any doubt, submit the source files that were used to create your figures.

Preferred file formats

Cambridge Core recommends that only TIFF, EPS, or PDF formats are used for electronic artwork.

- TIFF (Tagged Image File Format) is the recommended file format for line art, greyscale, and colour halftone images. TIFF files should be compressed once created, ensuring file sizes are kept to a minimum to aid easy file transfer. When saving as TIFF format, please ensure that LZW compression is applied.
  - o **File extension: .tif**
  - o **Recommended for: all images**
  - o *Note: Virtually all common artwork creation software is capable of saving files in TIFF format; this 'option' can normally be found under the 'Save As...' or 'Export...' commands in the 'File' menu.*

- EPS (Encapsulated PostScript) For vector graphics, EPS files are the preferred format. An EPS file is an image that has been created using the language of PostScript, and is generally resolution independent.
  - o **File extension: .eps**
  - o **Recommended for: line and combination artwork**
  - o *Note: Virtually all common artwork creation software is capable of saving files in EPS format; this 'option' can normally be found under the 'Save As...' or 'Export...' commands in the 'File' menu.*

- PDF (Portable Document Format) This format is very similar to EPS. Before saving an image as a PDF it is important to make sure that the fonts are embedded and that the original images are at the correct size and resolution. To check this visually you can zoom in when viewing the PDF on screen.

Non preferred but usable formats

- o JPEGs
- o Microsoft PowerPoint files
- o Images created in Microsoft Word
- o GIF images downloaded from the web

The above files are generally NOT suitable for conversion to print reproduction. While JPEG and GIF are good formats for images online, they are not ideal for print. JPEG is a 'lossy' format, which means that it loses colour information. This is not normally an issue on a computer monitor, but is noticeable in print. While a high-quality JPEG can be used, particularly for photographs, TIFF is the preferred format. GIF has a lack of colour depth and so images may appear 'posterised' in print. While a high-resolution GIF can be used, again TIFF is the preferred format. Excel can be used to prepare graphs and the EPS files can be produced using the 'Print' option outlined above. PowerPoint should be used with caution as this application is intended for producing visual presentations rather than print output, but with care can produce quality artwork.

Types of illustrations

Line illustrations

Line art is any image that consists of distinct straight and curved lines placed against a plain background without gradations in shade or colour. Line art is usually monochromatic but can use lines of different colours.

- Line illustrations (such as graphs, charts, maps) should be provided in TIFF (.tif) or vector EPS (.eps) format. If an electronic file is unavailable, always try to supply the original rather than a copy scanned from the original artwork.
- Please provide the original file in either TIFF format, saved at a minimum of 1000 dpi, or vector EPS format, at the correct size for reproduction in the journal.
- Do not use line weights that will be less than 0.3 pt at final size. Although line weights of less than this will show up on your computer screen and laser print-out, they may not appear when printed. For prominent lines (e.g. plot lines on graphs) the weight should be approximately 1 pt.
- Maths labels should be typed exactly as they appear in the text. For example if a symbol appears in italic in the text or equation, it should also appear in italic in the figure.

- Common packages such as Adobe Illustrator have options which allow you to output to TIFF or EPS, and we would prefer it if you could supply your files in either of these formats.

Halftone illustrations

A halftone can be colour (CMYK) or black and white, and is an image with continuous tone, such as a photograph or micrograph.

- Halftones should be provided in TIFF (.tif) or vector EPS (.eps) format. If a TIFF format file is not available, please provide a JPEG file.
- Halftones should be saved at a minimum resolution of 300 dpi.
- Prepare all black and white illustrations in black and white, or greyscale colour mode, and colour illustrations in CMYK colour mode.
- Do not submit colour images for conversion to black and white if you can avoid it. When converted there may be a loss of contrast and detail. Details, such as scale bars, that appear quite obvious in a colour image may be difficult to differentiate or merge into the background when printed in black and white.
- When using shading to differentiate areas on the figure, please check your software to see if there are options such as patterns, textures or a range of tones (tints) within black.
- The range of tones (tints) in greyscale illustrations should not be less than 15%, and not more than 85%. When creating a scale or using different densities to highlight areas in the illustration, it is best to use increments of 15 or 20%. Any increments of less than this may be hard to differentiate on the printed page.
- Most digital cameras produce JPEG images as their standard format, but some can be set to TIFF. If your camera can be set to produce TIFF format, please select this option when taking photographs. If your camera does not allow TIFF as a setting, please set it to produce the highest resolution JPEG possible. Save the images immediately to TIFF when they have been downloaded from the camera. To avoid loss of detail from the photograph, do not change the JPEG in any way before saving to TIFF.

Combination illustrations

A combination illustration is one that contains both continuous tone and line/vector elements: in short a combination of line art and halftone together (in greyscale and/or colour). This may be a photograph with labelling, or a micrograph with a scale bar added, for example. Refer to the guidelines for line illustrations and halftones as they are all applicable for combination artwork. Because of the necessity to produce clear and sharp text within the image, the resolution needs to be higher, often resulting in a larger file size, so it's imperative that LZW compression is used when saving files in TIFF format to enable easy file transfer.

- Combination images should be supplied in TIFF (.tif) or vector EPS (.eps) format, saved at a minimum resolution of 600 dpi.

General information

Sizing

It is best to provide your figures at the same size or larger than they will be reproduced in the printed journal, either by cropping or scaling. Images should be sized to fit the width of a column or page in the journal you are publishing in. If the originals you supply are smaller in size than they will appear in the journal, they may lose some clarity and detail when enlarged. In particular, photographs that have already been scanned will tend to look pixelated, and line drawings will lose their sharpness.

Font information

To ensure the best reproduction possible, please ensure that any fonts used to create or label figures are embedded, and we also recommend that you use the following Cambridge approved fonts (in 9 pt):

- Arial
- Courier
- Symbol
- Times
- Times New Roman

Failure to use the approved fonts may result in missing symbols or overlapping type within the illustrations. The font you use should be consistent throughout the artwork.

Figure captions

Please supply captions at the end of the text of your article, and not as part of the figure files.

Please ensure that every figure is cited within the article. We will try to place your figures as close as possible to their citations in the text, but because of the limitations of page layout, it may not always be possible.

Images from the web

Images downloaded from the internet tend to be 'low resolution', that is 72 or 96 dpi, meaning that they will not provide adequate quality when printed. If you wish to use an image which appears on a website, please contact the site's administrator, or the creator of the image, and obtain a copy of the high resolution original. Of course this isn't always possible so while low resolution internet images are not recommended, their use is sometimes unavoidable.

Scanning

- If you are providing scanned copies of the original image, please make sure that you scan at a minimum resolution of 300 dpi, at the final size (or larger than) they will be reproduced.
- If you wish to reuse an illustration or photograph from a printed book, it is better to obtain the original artwork than to scan from the printed copy. Photographs which have already appeared in print may have been scanned once already; if you scan them again there will be an unavoidable loss of detail.
- Please note that a high resolution scan of a low resolution original will not improve the quality in any way.