Digital Art Guidelines

In order to meet quality standards for publication it is important that authors submit digital art that conforms to the appropriate resolution, color mode, and file format. Doing so will help to avoid delays in publication and maximize the quality of images in both the online and print journals.

Color Mode: All color image files are required to be submitted in their original RGB color. Whenever possible, ensure that the submitted RGB image is tagged with the originating ICC profile to ensure the best color match and the possible conversion to CMYK for the printed journal.

Labelling and Font Usage: Please use the same font for all figures in your manuscript; use standard fonts such as Arial, Helvetica, Symbol, Mathematical Pi, and European Pi. For vector application files, it is recommended to convert fonts to outlines. See the "Vector Artwork" section below for instructions on converting fonts to outlines with Adobe Illustrator.

Sizing: Prepare figures at the final publication size; less than the length of the page (58.5 picas / 9.75" / 24.8cm), and one of the following widths:

> 1column wide (20 picas / 3.3" / 8.5cm)
> 1.5 columns wide (30 picas / 5" / 12.7cm)
> 2 columns wide (41.5 picas / 6.9" / 17.5cm)

IMPORTANT: Submit Vector Artwork whenever possible. There are two categories of Digital Artwork:

1. **Raster Images** (i.e. pixel-based; also called bitmapped images; TIF and JPG files support raster data only.)

2. **Vector Images** (i.e. object-based; PDF and EPS files support both vector and raster data.)

Vector images are preferred because they are resolution-independent - they have the highest quality and produce the best results in publication. Text and line-work should always be submitted in vector format. See below for more information on Vector artwork, and see the next page for more information on Raster images.

Vector Artwork:
Vector images are typically generated using drawing or illustration programs (e.g., Adobe Illustrator) and are composed of mathematically defined geometric shapes—lines, objects, and

fills. Vector images are resolution independent and can be sized up or down without quality loss. Text and line-work should always be submitted in vector format.
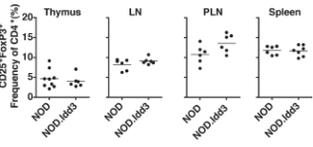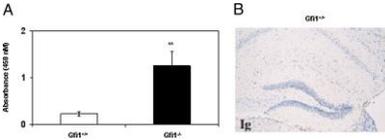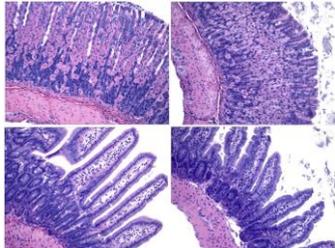
- **Vector line art:** Common examples are graphs and charts created in illustration programs. Preferred when saved as an EPS file, with all fonts converted to outlines, and graph lines at least .25 point wide.

- **Combination line/halftone:** Common examples are color or grayscale figures containing halftone and line art elements. The halftone elements (which must comply with the requirements listed under "Resolution and Raster Images") should be processed in Photoshop and the line elements in Illustrator, and the two elements from the two applications should be combined in Illustrator. Preferred when saved as an EPS file, with all fonts converted to outlines (see next bullet point), and graph lines at least .25 point wide.

- To prevent font problems, we recommend that you click "Select>Object>Text Object" on the Illustrator menu (this will select all the text), and then go to "Type>Create Outlines". This will convert the text to an image and avoid potential font substitutions.

- If fonts have not been converted to outlines always choose to embed fonts when saving files from your application.

Resolution and Raster Images:
Low-resolution images are one of the leading causes of art resubmission and schedule delays. It is important that submitted raster images meet the minimum resolution requirements. Raster images can be classified as monochrome, halftone, or combination halftone.

- **Monochrome (1-bit) images*:** Common examples are graphs and charts made of solid black and white, with no gray values. The preferred resolution for this type of image is between 1000 and 1200 ppi at publication size. The preferred file format is TIFF. PDF and EPS are also accepted.

- **Halftones*:** Common examples are color or grayscale figures containing pictures only, with no text or thin lines. The suggested minimum resolution for this type of image is 300 ppi at publication size. The preferred file format is TIFF. PDF and EPS are also accepted.

- **Combination Halftones*:** Common examples are color or grayscale figures containing halftone and line art elements. The preferred resolution for this type of image is 600 ppi at publication size. The preferred file format is TIFF. PDF and EPS are also accepted. Even better is to use vector data for the text and line art elements.

* When saving these files, use LZW compression. Do not use JPG compression. If your files are over 2MB, then you may not be using the correct compression.

Monochrome	Combination Halftones (grayscale or color images with type)	Halftones (grayscale or color images with no type or lettering)
1000 - 1200 ppi	**600 ppi**	**300 ppi**

Authors who do not comply with these guidelines will be asked to resubmit their figures in a print-quality format, which may delay publication.