What is GIMP

• GNU Image Manipulation Program
• Bitmap Graphics Editor
• Open Source
• Cross Platform

• Not for Vector editing

www.gimp.org
Vector vs Bitmap
Getting GIMP

www.gimp.org

- Open Source
- Cross Platform
• View **Toolbox** – Windows > *New toolbox* or (Ctrl + B)

• View **Layers Dialogue box** – Windows > *Dockable Dialogs > Layers* or (Ctrl + L)

• GIMP can do a lot of things – will show you small selection of tools that are ethically acceptable to use for figure production
Opening Images

• To open an image for editing:
  – **Drag file** onto a new GIMP window or
  – **File > Open** or **(Ctrl + O)**

• After opening, **save a working copy** of the file

• GIMP saves files as XCF files by default, but you can export files in other formats (e.g. PNG)
Straightening Images

• Drag a **horizontal guide line** onto your image (from top ruler) to intersect an area that should be perfectly horizontal
• Using the ‘**Rotate’ tool** (Shift + R) rotate the image so that it lines up with the guideline
• When you start to rotate the image, a dialogue box will appear
Straightening Images

• When finished click the rotate button to apply

• To remove guideline: Image > Guides > Remove all Guides
Cropping Images

• Useful to crop unnecessary edges away

• Can reduce file size when bringing images into a vector file

• Use the ‘Rectangle Select’ tool \( R \) to draw a box around the area of the image you want to keep
Cropping Images

- Click and drag the corners of the box after drawing to fine tune
- Crop: **Image > Crop to Selection**

Don’t forget about Ethics!
Brightness and Contrast

Increasing Brightness

Increasing Contrast
Brightness and Contrast

• Adjusting brightness and contrast can help the clarity of your image

• In GIMP,
  – **Colours > Brightness-Contrast**

• If a selection box is marked, brightness and contrast will be adjusted in selected area only
Colour Levels

• Brightness and contrast should be edited by adjusting colour levels
  – Colors > Levels

Or:

• Dialogue box shows histogram of colour value usage
  – Useful to display a **Logarithmic histogram** so that values aren’t hidden at the bottom of the graph
Colour Levels

Display Logarithmic Histogram

The middle handle will adjust the midpoint of the levels and represents non-linear editing of colours.

This is not ethically acceptable for publication!
Alpha channel

• Alpha channels are masks through which you can display images

• Within an alpha channel:
  – White acts as the visible area
  – Black acts as the transparent area
  – Level of gray in between determines the level of visibility.
Why use an alpha channel?
In GIMP

– Layer > Transparency > Add Alpha Channel
Colour to Alpha Channel

• You can assign a colour to the alpha channel, which will make all pixels in your image with the assigned colour transparent

• In GIMP
  – Colors > Color to Alpha

![Color to Alpha dialog box](image)

- Preview, indicating which areas are to be transparent
- Use this tool to pan around the preview
- Colour swatch – for selecting colour to become transparent
Pseudo-colour Overlays

Some experiments such as FISH microscopy may generate multiple greyscale images which can be overlaid to form a pseudo-colour image.
Pseudo-colour Overlays

• Ensure image is in RGB mode
  – Image > Mode > RGB

• Assign a single colour to each image (v2.8)
  – Color > Colorify
Pseudo-colour Overlays

• Ensure image is in RGB mode
  – Image > Mode > RGB

• Assign a single colour to each image (v2.10)
  – Help > Search and Run a command
  – “Colorify”

  Colorify
  Replace all colors with shades of a specified color
Or ... Colors > Levels

• Dial down the colours you don’t want
Pseudo-colour Overlays

Once images are correct colours, we need to overlay them.

Open Layers dialogue box (if not already open)
  - Windows > Dockable Dialogues > Layers
  - (Ctrl+L)
• Click and drag image layer in to the working window of another image
• Repeat this until one image has all of the desired layers
Finally, make each layer (except the bottom layer) show only its colour, making the underlying layers visible

- Layer Dialogue Box -> **Mode > ‘Lighten Only’**
Creating Scientific Figures
Scaling Images

- GIMP can be used to scale the size of your image
  - Image > Scale Image

Avoid making your images bigger than original size, bitmaps do not scale up well!
Exporting Images

• Once editing is done, and the working XCF file is saved, you need to export the image

• **File > Export As…**

• Specify file format e.g. PNG

• **Always save your image as a PNG file**, maintains transparency (alpha channel) and is lossless