



# Handy Helper

Application Note 23

## How to Enhance your Image in GeneSnap

### Enhancement and Annotation

Note that all the tools are present on one screen – there is no hopping between different menus or having to hunt for what you need. Note also the on-line help which is always available. Contents are alphabetically listed and instructions are easy to follow.

The **Zoom** toolbar



enlarges or decreases the image. This is an electronic manipulation and if the image is enlarged it will become pixelated. If close-up views are required, then maximum resolution is achieved by utilising the zoom lens during capture. The zoom function may be used whilst live.

### Enhancement

The **Histogram** tool is very useful for optimising the contrast within the image. By clicking on the histogram icon, a graph is revealed which illustrates the distribution of grey shades within the image. For convenience, the histogram will be docked at the bottom of the acquisition window.



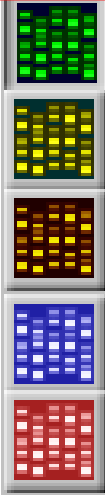
For an 8 bit image the scale is 0-255, for a 12 bit, 0-4095 and for a 16 bit or EDR image it is 0-65535. By grabbing and moving the red lines at either side of the plot you alter the grey shades displayed in the image. In the case of visible light images, like protein gels, this can drastically improve contrast. In the case of DNA gels or chemiluminescent images, the user can brighten up the bands dramatically. Adjusting the histogram therefore can vastly improve the appearance of an image but without sacrificing linearity, GLP or the ability to quantify.

Some enhancement tools are present to the right of the image. These include **false colour**, **brightness**, **contrast** and **gamma**.

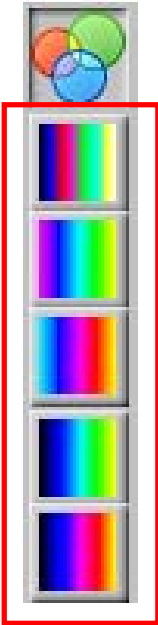


More/....

Adjust brightness, contrast and gamma (the curve between black and white) by grabbing the slider bars or clicking on the arrows at the top and bottom. Return to the default settings by clicking on the icons. Select false colour by clicking on the icon.



- The top button will emulate a SYBR Green DNA gel
- The next is SYBR Gold DNA gel
- This makes a protein gel appear silver stained
- This makes a protein gel appear Coomassie blue stained
- This makes a protein gel appear SYPRO Red stained

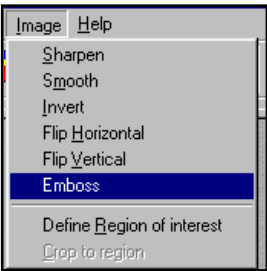


Click the false colour **icon** once again to reveal more options (above and right)

These may be used to better illustrate faint bands or simply to produce more interesting images for slide production etc.

By attaching a Syngene colour dye-sublimation printer the user can produce professional coloured photos which are accurate reproductions of the genuine sample.

**Emboss** – Simply select ‘Emboss’ from the Image menu to produce an embossed view of the image. This may assist the user in the visualisation of faint bands.



Image

To view the image toolbar, click on the appropriate icon



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**Sharp knife icon** - click on this to apply a **sharpening filter** to your image. Band edges should become more pronounced but you might also see an increase in graininess of the image.

**Blunt knife icon** – click on this to apply a **smoothing filter**. This is useful if an image has specks of dust or bubbles, but will make bands appear less sharp.

Filters may be stacked on an image but effects are variable.

NB: if at any time you are not happy with the appearance of your image, select 'View original image' in the View menu.

**Speckle correction** is used for the removal of white speckles or 'hot pixels' from the image.

**Black and White icon** – this will **reverse** the image to give black bands on a white background or vice versa. Sometimes useful when trying to visualise faint bands.

**Flip vertical/horizontal** will **rotate** or **mirror** the image. Useful if sample has been placed in the cabinet the wrong way around.

**The dotted red square and scissors icons** are used respectively to **select** and **crop** an area of interest within the captured image. This reduces the image size when saving to disc etc.

For example, the following image has been cropped, inverted and sharpened:

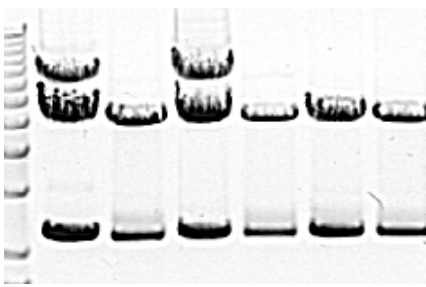


Fig 1

Annotation

To view the annotation toolbars, click on the appropriate icon



The **Annotation toolbar** is comprised of a number of self-explanatory icons.



Click on the appropriate icon to draw **lines, rectangles, circles, freehand** or **arrows** shapes. These may be drawn as hollow or filled by toggling the **infill** key. Select any drawn shape by clicking on it.

Change the **colour** using the **Colours toolbar**. Please note that when using the black and white thermal printer it is best to use white annotation for clarity.



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To produce **text**, click on the 'A' icon, and then click on the image where you wish to write. Now you can type your text directly onto the image. To edit the text, double click on it. A window will appear enabling selection of **font, size, style** and **orientation**. The text box can be dragged around the screen as can all the annotations. Click and drag around various items to **link** them together. To ungroup the items, simply double click on the individual components.

The style of annotated objects i.e. line thickness and type can be altered using the **Style toolbar**.



This will help to differentiate between drawings even when using the black and white thermal printer.

Use the **Edit** menu or key controls to **Copy** (Control C), **Paste** (Control V) or **Delete** (Control X).

Annotating can be very time consuming. Once an annotation pattern has been designed it can be saved using the command 'Export Image' from the File menu. The annotation pattern can then be overlaid over future images as required by choosing the 'Merge Annotation' command from the File menu.

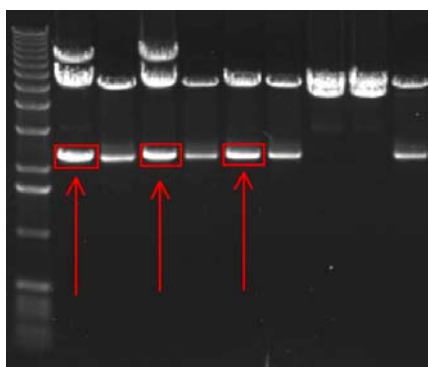


Fig 2

### 'UNDO' Function

To assist ease of use, there is now an 'undo' function in GeneSnap. Selecting this function will undo the last action performed i.e. undo the application of a filter or annotation.

