Imaging Systems

UVP Imaging Systems, old (PSC 637) EtBr allowed

Every time you use the any of the Imaging system, you MUST sign the logbook.
Clean up any mess you make including wiping off the light box with H2O and paper towels.
Do not cut bands on the light box. On top of the box is a plastic tray, place your gel on the tray and then place on top of the transilluminator.
Be sure to turn off power when you are done.
Do not store any images on the hard drive.

Contact: Debby Walthall (404) 413-5363; dwalthall@gsu.edu

UVP directions, old

Agarose gels

1. Open darkroom door with an ungloved hand.
2. Place gel on UV box with a gloved hand. Position the gel appropriately.
3. Confirm that UV box is on (green switch) and set at 302 (button on transilluminator box, right hand side). Use an ungloved hand to change either of these. The other choice is 365, which is used for DNA bands that will be cut out for various experiments. The longer wavelength is supposed to prevent DNA nicking.
4. From now on – no gloves for any reason.
5. Close darkroom door completely.
6. Turn power on light box (button on right).
    a. Knob next to power stitch should be turned to safety switch
    b. Next knob should be turned to EtBr
    c. Next knob should be on off – this is only an overhead light source and isn't used for gels
7. Go to computer. If program not up, open Labworks 4.0.
8. You can capture your image 2 ways:
    a. Select either F8 (DNA/RNA/protein gels) or F7 (chemiluminescence). Follow the wizard instructions. Screen Capture/OK/(follow instructions)/Next/(follow instructions/Next/Select standard/Next/Enter Exp. Time/OK.
    b. Camera icon. Select Preview button. Toggle the Prev exp. To increase or decrease exposure until you have a picture
9. At camera lens –
    a. Bottom ring; do not touch; only need to focus if someone did chemiluminescence
    b. Turn top ring of camera until fuzzy blue disappears and little or no red showing
    c. Turn middle ring by tiny handle bar to zoom in and out. If you need to move your gel, you can put 1 glove on to move it, just don't forget to not touch any parts of the darkroom or light box with the glove.
10. Do not enhance image until after capture; this will change the dynamic range of the camera and any quantitation will be messed up.
11. Stop preview.
12. Capture; turn power off light box
13. Edit/Display range. Move bar on right with mouse to adjust intensity and contrast
14. Print – use either print button or file/print. Do not use the print button on the printer. Select # of copies. Setup button will change usual print parameters (portrait vs. landscape). You can press Feed button on printer to get extra clearance before tearing off.
15. When finished:
    a. Close out all boxes
    b. Close out your image (save changes/no). Do not save ANY images on the hard drive. If you want to save your image, you can save it to disk or there's a CD burner. Use Adaptec to burn a CD on the 522 system and use Nero Burning Room (icon on desktop) to burn a CD on the 460 system.
    c. Remove gel

*Turn power off light box!!!!!!

16. **Do not turn camera off. Do not touch the knob holding the camera to the frame. If it gets loose, the camera drops onto the filter wheel and the wheel can't be changed then.**

SDS-PAGE gels

Most of instructions are the same for protein gels and agarose gels. Following are the differences only:

1. Place the SDS-PAGE gel on the white plate. In 522 it's usually in the drawer under the transilluminator; in 460 it should just be on the desk somewhere. You don't need to turn the light box on.
2. The filter wheel knob that is turned to EtBr for agarose gels, should be turned to Coomassie Blue.
3. You can capture your image 2 ways:
    a. Select F7 (chemiluminescence). Follow the wizard instructions. Screen Capture/OK/(follow instructions)/Next/(follow instructions/Next/Select standard/Next/Enter Exp. Time/OK.
    b. Camera icon. Select Preview button. Toggle the Prev exp. To increase or decrease exposure until you have a picture
4. You can crop your image. Select the rectangular AOI (area of interest tool), the 10th button from the right. Put a rectangle around the image size you want. Duplicate/Crop under Edit. The new image will be displayed in an untitled window. Be sure to save this image if you need the cropped image.

Tools

1. Edit/Annotate. You can add text to your images. These can be stored separately from your image. The text doesn't become part of the image until you click on the Burn button (last button on the right, second row). See reference manual, 2-89 for details on adding text to your image.
2. Edit/Display range. See above.
3. Edit/Contrast Enhancement. You can not only change the brightness and contrast, but also adjust the Red, Blue and Green color channel settings. To adjust brightness, run the slide up or down under the sun icon. To adjust the contrast, run the slide up or down under the circle with white/black icon. The color channels are the buttons under the 3 slides (if the image is not true color or Palette, the Luminance button, first one, is the only button you can select). Select apply when you are done.
4. Acquire/Video/Digital. This sets the parameters you want for your image acquisition. Usually you don't need to change these. See the reference manual, p. 2-159 for more details about options. Acquire also has the setup for creating a Macro.
5. 1D-Gels/Show toolbar. Tool Palette to manipulate your image.
    a. You can rotate the image. Clicking on the rotate image button, opens a dialog box with lots of choices about how to rotate and how much.
    b. Lanes. Automatically finds lanes and bands in the active image. You also get the Lanes dialog box so that you can add, delete and curve lanes. You can also label the lanes and bands. Click on the lane or band you want to label and enter the label text in the Label text box. You can change the Lane width and specify that when you change the width, it will change all the lane widths. To do this, position the mouse over the lanes left or right edge of the lane. An arrow tool appears, click and drag this until the lane is the size you want. You can do only 1 lane or have the change in all the lanes – either select or deselect the Uniform Lane width box.
    c. Bands. Dialog box that lets you add, delete, filter, curve and label bands. The dialog boxes will walk you through how to do each of these. To curve a band, follow the instructions in the dialog box, and then curve the line using one of the contact points, clicking on the point and pull the point where you want it to go.
    d. M.W. standard. This allows you to get an absolute MW of your samples. Select Standard and a Molecular Weight Standard dialog box will appear. Click on a lane in the list box. Select/unselect to add or remove lanes from the list. Select the MW standard you used from the drop-down list. Once you have selected a standard, the size of each of the bands will appear in the box. You can edit these #'s, add or delete a size. You can also create a new standard. See the Reference manual, p. 2-241.
    e. Results. Once you have standard entered, you can select results to get the amounts (Optical density) and MW of each band.
6. Tools
    a. Colony Counting. You can use this to count colonies on a plate. See the Reference manual, p. 2-297.
7. Saving image to use in Adobe Photoshop.
    a. Edit/Convert to/select either Gray Scale 8 or Gray Scale 16.
    b. File/Save as/TIF.

Images to Adobe Photoshop

1. Edit/ Convert to/ Select Gray scale 8 or Gray Scale 16
2. File/ Save as/ Select TIF or JPEG/name file/Save