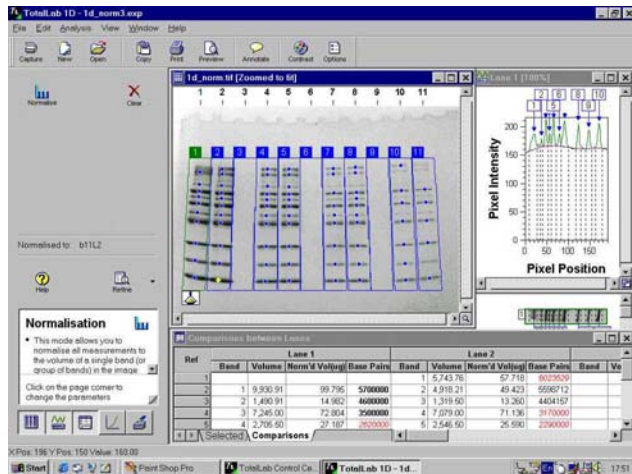


TotalLab (nonlinear dynamics)

A comprehensive densitometry package with an excellent price/performance ratio

Analyzing 1D Gels

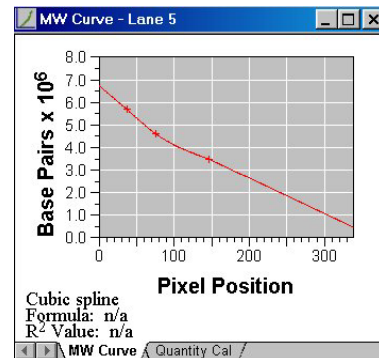
TotalLab can analyze gray scale 8–16 bit TIFF format images from cameras, scanners and other instruments.



- **Noise Reduction:** sets the level to determine the difference between noise and band presence;
- **Percentage Maximum Peak:** measures the relationship between each band in comparison to the tallest band, thus allowing the user to determine at what level a faint band will be included.

Bands and edges can be edited, either on the Analysis window or on the image itself, without modifying the raw data. **Contrast and Color** option can be used to highlight and enhance visibility of bands. **Measurements Table** window contains results generated. Fields displayed can be altered.

Molecular size reference lane can be set up according to required standard and desired curve type; then **Compute** option shows calibrated figures in the Measurements Table.



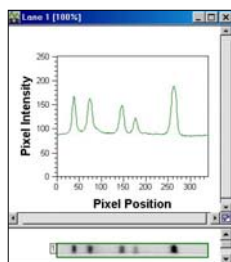
An automatic analysis can be done using modes checked and by selecting **Analyse** icon. Select or deselect modes by clicking on the Help pane. Once an automatic analysis is completed, icons for the analysis modes available are displayed in the Navigator for refinement of the analysis. Multiple lanes can also be selected and viewed in the analysis window.

For greater control over analysis, **Manual** mode guides you through the analysis using the **Next** button or by using the **Refine** button to access any other mode of the analysis procedure.

Select **Create** to detect lanes automatically or semi-automatically. Corrections can be made to the whole lane set or individual lanes. More tie points can be added for fine control of distorted gels.

The selected **Background Subtraction** method is displayed in the Navigator. The methods available are:

- **Rubber Band**
- **Minimum Profile**
- **Rolling Ball**
- **Image Rectangle**
- **None**



The first two methods require no user input. **Rolling Ball** has a parameter for the radius of the ball and **Image Rectangle** requires drawing a rectangle on part of the image containing only background material. A visual confirmation of background subtraction is shown in the Analysis window.

Detect option will automatically detect bands and band edges. Band edges can be determined automatically or all edges can be set to a fixed width. Three parameters are involved:

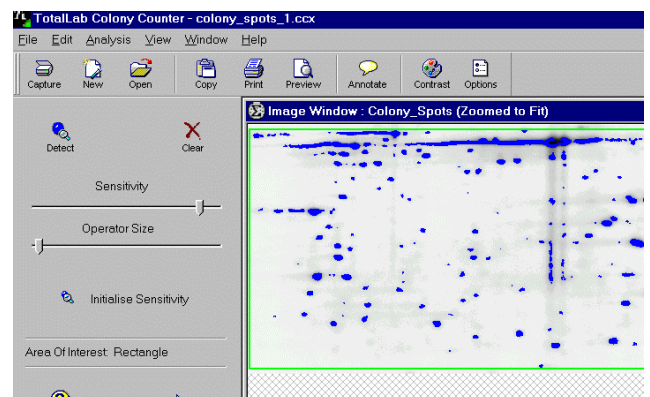
- **Minimum Slope:** a value that represents how pronounced a band must be from its surrounding area to be recognized;

The **Quantity Calibration** module allows you to calibrate bands on your gel to known volumes, also accounting for non-linear staining effects. A standard curve is produced and the software automatically calculates values for the unknowns.

The **Normalization** protocol allows you to use known values, or express bands as a percentage or a proportion of one or more selected bands.

Analyzing 2D Gels & Colony counter

TotalLab can detect and measure spot features on 2-D gel images but it is not a full scale 2-D gel analysis & comparison package.





Feature Detection: the area of interest can be selected by placing the cursor over the image and drawing a circle or rectangle. When the area has been defined, a Measurements Table will automatically appear displaying information about the detected spots

Controllable parameters available:

- Detection parameters are modified using sliders for sensitivity and operator size; selecting *Initialize Sensitivity* will automatically determine the sensitivity for a given operator size.
- Background, noise factor and spot splitting appearance can be modified.



Feature Editing: in the Edit mode, the zoom tool can be used to determine if editing is necessary. The Navigator offers the following controls:

- *Draw or Erase Features*
- *Delete Features*
- *Split Features*

After editing, the Measurements Table can be updated by selecting *Renumber Spots*.

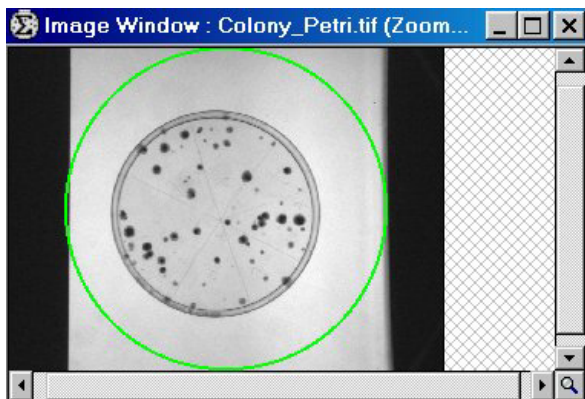


There are two methods of Background Subtraction. Results are displayed in the Measurements Table.

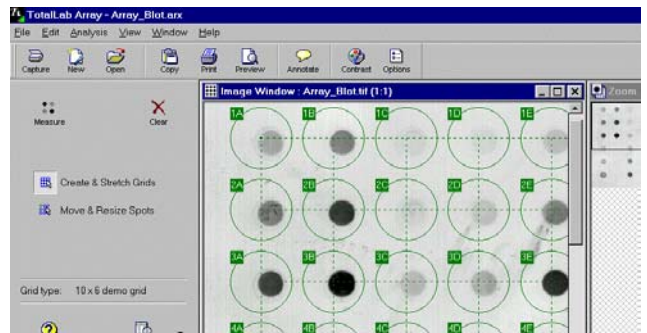
- *Mode of Non Spot:* calculates the background based on the most common pixel value in the region around the feature.

Image Rectangle: by dragging out an area which represents the background, TotalLab calculates the average intensity in this area.

The 2-D tools can also be used for colony counting.



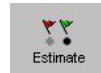
Analysis of Arrays



Detect option will automatically define spots. Different grid types and spot shapes can be selected.

There are five methods of background subtraction:

- *Spot Surface Minimum*
- *Spot Edge Average*
- *Negative Controls*
- *Image Rectangle*
- *None*



Presence Flagging mode sets limits above which a spot is deemed to be present on the image. This is indicated in a table as a spot presence (1) or absence (0). Detection is automatic if *Estimate* is selected, or a slider can be used to manually adjust.

| Measurements Window [Presence / Absence] | | | | | | |
|--|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| A | 1 | 1 | 1 | 1 | 1 | 1 |
| B | 1 | 1 | 1 | 1 | 1 | 1 |
| C | 1 | 1 | 1 | 1 | 1 | 1 |
| D | 1 | 1 | 1 | 1 | 1 | 1 |
| E | 1 | 1 | 1 | 1 | 1 | 1 |
| F | 1 | 1 | 0 | 1 | 1 | 1 |

Image Capture

As well as analysis of TIFF format files from any source this module allows for image capture using any TWAIN compliant device, such as a scanner.

Intensity Calibration feature allows the user to account for any inaccuracies of image capture devices. A 'wizard' interface simplifies the process.

Other features include:

- Cropping, rotating, flipping and mirroring;
- Filtering 'noise' from an image;
- Viewing a 'saturation map' to help evaluate whether quantitative analysis will be effective;
- Viewing grid lines to enable consistent image positioning;
- Sending an image directly into one of the analysis modules of TotalLab for analysis.

For the latest information and prices, please see www.biosystematica.com or contact:

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