



Handy Helper

Application Note 12

Pixel Binning - Improved Sensitivity?

Pixel Binning is a process that further enhances sensitivity of a CCD sensor in terms of the speed of image acquisition. This process involves taking square groups of pixels and combining them into one 'super' pixel, capable of holding much more light. This has the effect of reducing required exposure times. It is however important to realise that the drawback of pixel binning is a reduction in image resolution.

Different pixel binning options are available on Syngene image capture systems and these involve combining pixel groups of e.g. 2x2, 4x4, and 8x8. These settings are found on the capture box.



The 'No binning' setting does not utilise any binning and uses the full 1.4 million pixels (eg for G:BOX Chemi HR16) on the CCD sensor. This setting is recommended for fluorescent and colorimetric samples or any bright-field application.

The '2x2 pixel binning' setting is used to create an image that is recorded four times faster than using 'No binning'. The resulting image will have half the resolution of a normal image. This setting is recommended for chemiluminescence and will generally rival film in terms of acquisition time.

The '4x4 pixel binning' setting is used to create an image that records a 4-fold increase in sensitivity making this 16 times faster than 'No binning' acquisition. The resulting image will have a much lower resolution. This setting is recommended for chemiluminescence and will generally create an image faster than film.

The '8x8 pixel binning' setting is used to create an image 64 times faster than 'No binning' acquisition. The resulting image has extremely low resolution. This setting is ideal for high throughput screening applications where presence or absence of nucleic acid or protein needs to be confirmed. Due to the low image resolution, using this setting can compromise quantitative results.

The GeneSnap software allows ultimate flexibility for the researcher to select their specific requirements for image acquisition sensitivity.



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