



Which Excitation Wavelength and which Emission Filter should I use?

Excitation Sources

Syngene provides full flexibility throughout the range of imaging systems, with excitation energy sources available for all fluorescent, colorimetric and chemifluorescent applications. A single Syngene image capture system can be equipped with all the following software controlled excitation sources in transmitting or epi-illumination configurations:-

- Short wave (254) – 254nm line
- Medium wave (302) – 275-375nm
- Long wave (365) – 315-395nm
- Visible Light Source– 400 – 700nm
- Blue Transmitting Light – 410 - 510nm
- Cy dye edge lighting unit
- EPI RGB module

As more and more fluorescent applications and stains become available it becomes increasingly important to ensure that the imaging system you choose is as flexible as possible.

Emission Filters

All gel documentation systems use some type of electronic camera to capture the image. The internal set up of these cameras, whether they are standard CCD or cooled CCD, is extremely important. The images produced must be clear, sharp, bright and as noise free as possible. However to get the absolute best from any system the correct emission filter should be selected for the application.

There are three main filters covering different spectral bandwidths. The short-pass (SP) is specifically for the lower wavelength emissions, those in the green end of the spectrum, for example Fluorescein and fluorescent blotting. The mid-pass (UV/EtBr) is the most commonly used general filter for Ethidium bromide. It covers the middle area of the spectrum yellow to orange. The long-pass (LP) is for the longer wavelength emissions and ideal for the red stains like Texas & Radiant Red. Other standard stains like Silver and Coomassie blue can be viewed either with no filter selected or the UV/EtBr mid-pass or the Neutral Density filter depending on the system you have purchased. By selecting the optimum filter for the stain in use, there is a much higher contrast on the image thus giving the clearest, sharpest image possible. All Syngene image capture systems are automatically supplied with the mid-pass (UV/EtBr) filter as standard.

For the fluorescent examples mentioned above UV illumination has been used as an excitation source. However blue transmitting light as an excitation source may also be used from a safety point of view. When the Syngene blue light converter is used to image SYBR Gold, SYBR Green and GFP mutants the SG emission filter is needed. This filter has been designed to maximise the signal to noise ratio.

For further information, please click on to the www.syngene.com/html/excitation_long.php link to see the excitation wavelength and emission filter database.

The other consideration is that when multiple filters are being used on an imaging system, for ease of daily use between users it is advantageous that a system has a motorised filter wheel or filter slider to allow maximum flexibility. Contact Syngene for details of systems with motorised filter wheels or filter sliders.