



**G:BOX**

Gel Documentation and Analysis  
the way you want it

# G:BOX

## Gel Documentation and Analysis

Syngene has long been associated with innovations in gel documentation.

The 'Genius' range of systems has become industry standard offering levels of control, automation and quality not found on any other equipment of its type. Building on that success Syngene introduces the Genius:BOX, a unique concept in gel capture and analysis.

G:BOX, as it is more commonly called, can be used for all fluorescence and chemiluminescence applications. The G:BOX is available in a range of standard configurations but because it is of a modular design you can also specify your own system by selecting from our range of cameras, lenses, filters and lighting options so that you can tailor your system to exactly what you want.

Once again Syngene has pioneered the way forward with its novel gel documentation systems. The futuristic G:BOX incorporates a host of features and benefits giving you a head start with your gel analysis.

**What could be easier?**



With G:BOX you are in control



The G:BOX system is available in a range of standard configurations for all fluorescence and chemiluminescence applications. You can therefore choose from models featuring the very latest high resolution CCD cameras for use in general gel documentation or the more advanced specification units for chemiluminescence work. You also get the choice of selecting either motor driven or manual lenses, manual or computer driven filter selectors and a range of lighting options for both reflected and transmitted light applications. Syngene pioneered advances in automation and G:BOX is no exception, having the ability to use a computer to control the camera/lenses, lighting and darkroom functions.



# With G:BOX flexibility is the key

flexibility

The simple design of G:BOX allows for a wide range of configurations. Select from our range of cameras, lenses, filters and lighting options.

## Hood

A hood is used to enclose the camera and lens on all chemiluminescence systems

## Filters

A range of filters and holders for a vast array of applications

- Single screw-on filters
- 3 position filter slider
- 7 position motor driven computer controlled filter wheel  
(9 position filter wheel on XT16 and XL models)

## EPI illumination

Available for overhead lighting

- White light as standard
- EPI lighting module for UV and blue light
- RGB LED lighting module for advanced fluorescence applications

## Adjustable stage

A motor driven stage is included with the XT16 and XL models. This enables samples to be moved closer to the camera especially useful when working with smaller sample sizes. The stage also has computer feedback allowing it to be 'driven' to pre-set positions



## Visible light

For applications such as Coomassie and plates

- Conversion screen
- Optional visible light table which folds up when not in use

## The Genius inside the box



### Camera

Syngene uses a range of high speed USB cameras which are selected for budget and type of application

- High resolution cameras ranging from 1.2m to 5.5m pixel
- Single or dual stage cooling for chemiluminescence applications
- All cameras with latest USB technology
- All cameras operate in 16 bit mode

### Lens

A selection of lenses are available

- Motor driven zoom lens with an optional feedback facility
- Manual zoom lens
- Fixed lens with wide apertures (f0.95 on XT16; f0.85 on XL models)

### Darkroom

- Fully light tight darkroom suitable for advanced chemiluminescence applications
- Robust, very wide opening hinged door for easy access to chamber
- Electronic, auto-door lock with security function to prevent interruption to long exposures
- Easy access service panel to all electronics

### Transilluminator

A 302nm transilluminator

- Choice of filter sizes
- Variable intensity setting
- Safety cut off
- Slides out of darkroom for easy access to surface
- Other wavelengths/multi wavelengths available

# G:BOX options and accessories

G:BOX is built in a modular format so that a wide choice of accessories can be added to extend the range of applications.



## Safety screen

- Protects from UV exposure whilst working with the transilluminator or viewing gels outside the darkroom



## Conversion screens

- NovaGlo visible converter screen for all visible light applications
- Blue converter screen for blue excitation dyes



## Filters

There is a range of filters covering an extensive list of applications

- UV filter • Short pass filter • Long pass filter
- Blue filter • Filters for Cy2, Cy3, Cy5
- Neutral density filter • Filters for QDots

The full range and filter selection chart can be seen on the Syngene website



The way you want it



#### White light table (fold down)

- Provides bright illumination for white light applications such as Coomassie, Silver Stain gels, colony plates



#### Printer

- Compact digital USB thermal printer for instant hard copies



#### EPI lighting

- Overhead lighting provided using an EPI module which has 254nm, 365nm or white light sources

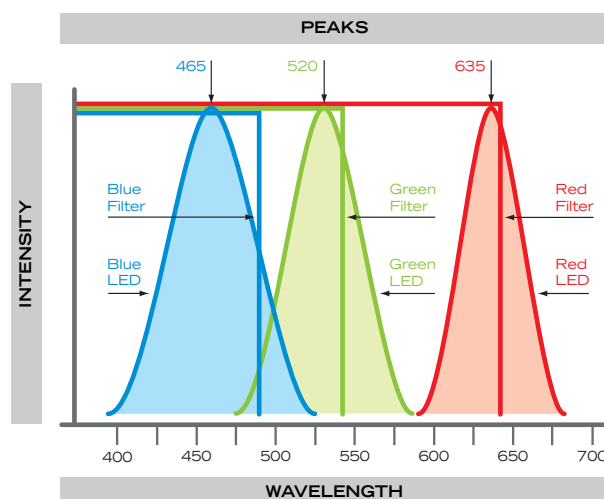


#### RGB and UV module

As the ever expanding list of fluorescent labels require an array of EPI and transillumination light sources Syngene has responded with the perfect solution. In addition to the standard EPI-lighting module and filter options, the Syngene solution is the RGB and UV lighting module. Now you can have advanced lighting for all applications.

The RGB/UV module is a unique lighting system. It is built around a bank of 84 LED's with corresponding narrow band filters.

- 84 high intensity LED's
- Red, blue, green
- Excitation filters
- 254nm and 365nm light sources
- Minimal heating effects - more controllable than conventional halogen/tungsten bulb system
- Life span in excess of 75,000 hours



# GeneSnap - automatic image acquisition software

An advanced image capture software specifically developed to simplify the process of capturing gel images. Every G:BOX system includes GeneSnap. It is a fully automatic package that controls camera integration, exposure, lens and capture options, with auto focus configurations and focus indicator.

## Tools

- A comprehensive tool box to add text, lines, circles, shapes, arrow to images

## One button technology

A single button is all that is required to capture a perfect image every time

## Lens control

Controls for operating the aperture, focus and zoom position for motor driven lens. Feedback data is also displayed here

## Exposure controls (integration control)

- Set exposure time manually
- An auto-exposure setting leaves the computer to decide on the optimum exposure time
- Use series capture to create a series of images over different time periods. This is perfect when determining the best exposure setting for chemiluminescent samples

## Lighting and filter selection

Select lighting option and application filter from the drop down lists

## Extended dynamic range

All Syngene systems operate in 16 bit mode

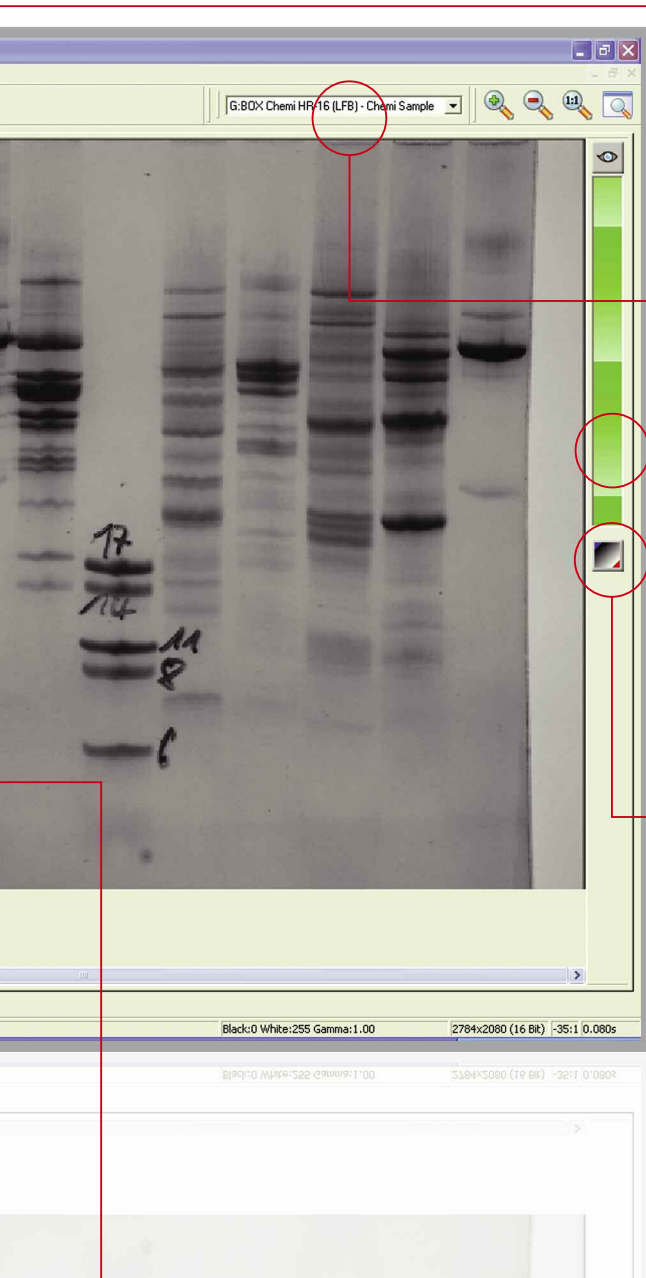
## Effective pixels

Unique to Syngene, this technology allows images to be captured at higher resolution than other gel documentation systems. Images up to 5.5m pixels are possible from most configurations





“One button” analysis with G:BOX



### 3D viewing mode

View any image in 3D

### Configuration settings

- Set configuration files to pre-set exposure setting, lighting option, filter selection, focus for repeat use. Essential in any busy laboratory
- Auto-focus setting retains focus point when working with the motor driven lenses with feedback facility

### Focus indicator

Unique to Syngene, this technology assists in finding the optimum focus point with any lens. This ensures pin-point sharp images every time

### Saturation control

Monitor real time saturation levels of images when in live mode to ensure accurate linear quantitative data

### Neutral fielding

The neutral fielding function neutralises the variance in background owing to any small variation in the excitation source. This ensures perfect backgrounds on images

### Data

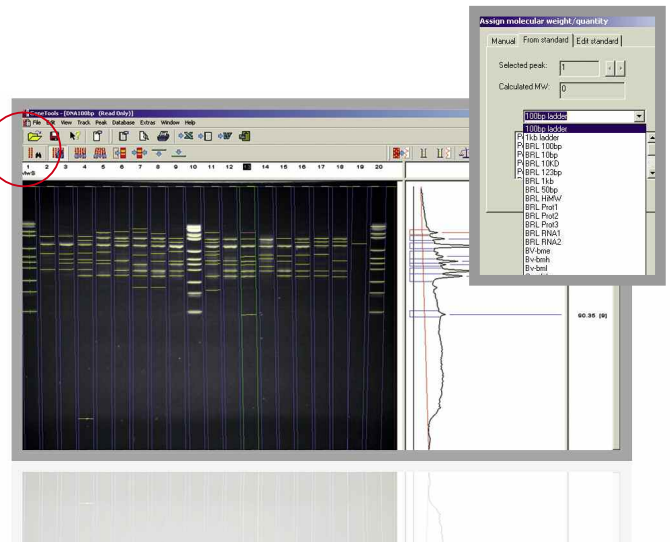
Images can be saved and exported in 10 different file types including SGD, TIF and BMP formats. There is also a direct link to GeneTools analysis software

# GeneTools advanced gel analysis software

GeneTools is an advanced analysis software for use with any G:BOX system. This highly automated software can rapidly analyse a gel from loading to output of results in a matter of seconds. Simplicity is the key feature of GeneTools allowing even the most inexperienced user to obtain fast, accurate results at the click of a button and with minimal training.

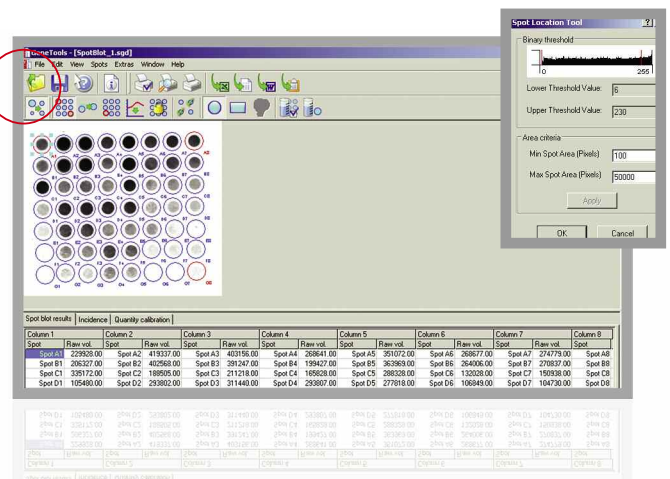
## 1d analysis

- MW/BP analysis
- Automatic lane and peak detection
- Single or multiple gel analysis
- Automatic compensation for smiling or distorted bands - no skewing required
- MW/BP/Quantity calibrations
- Extensive reporting
- Band matching



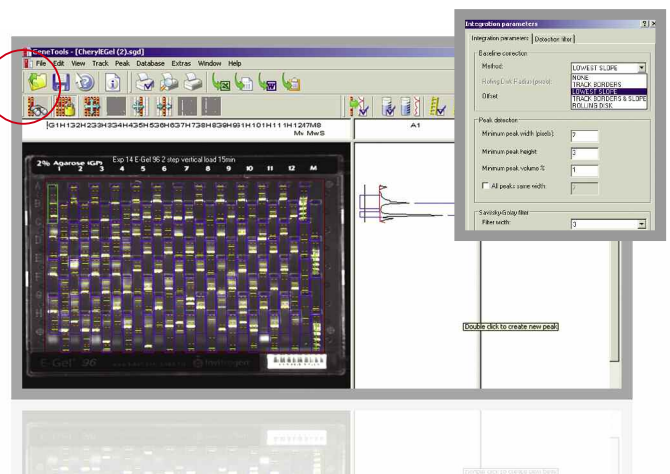
## Spot analysis

- Spot grid - automatic
- Spot thresholding
- Quantitative and incidence analysis
- Multiple background subtraction methods

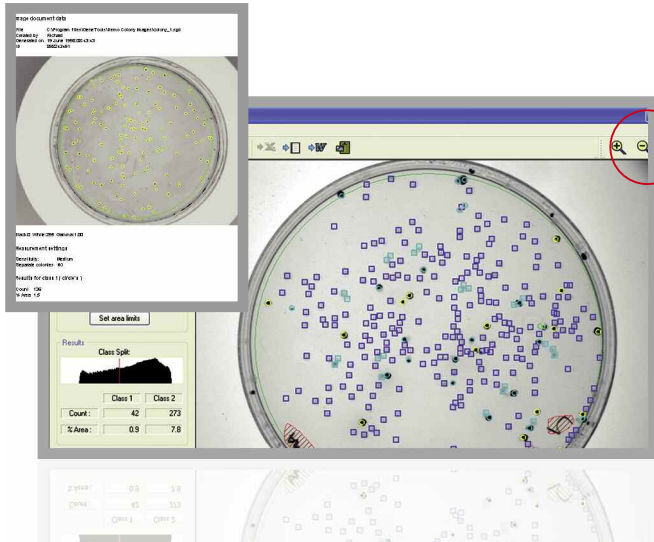


## Egels®

- High throughput analysis
  - Multi-well line functions with automatic track alignment
- Egel is a trademark of Invitrogen

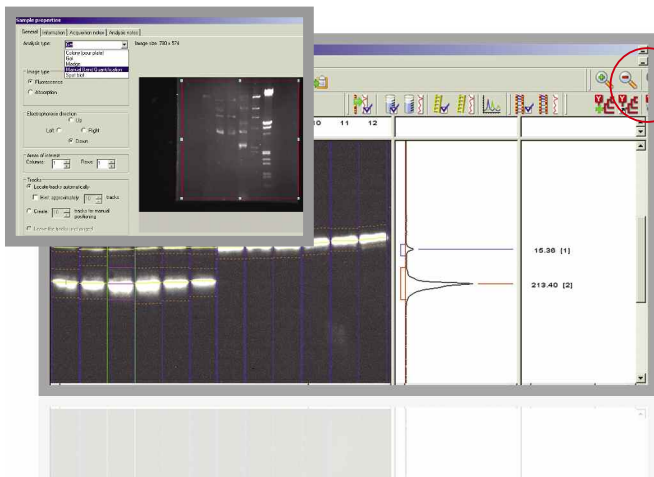


## “One button” analysis with G:BOX



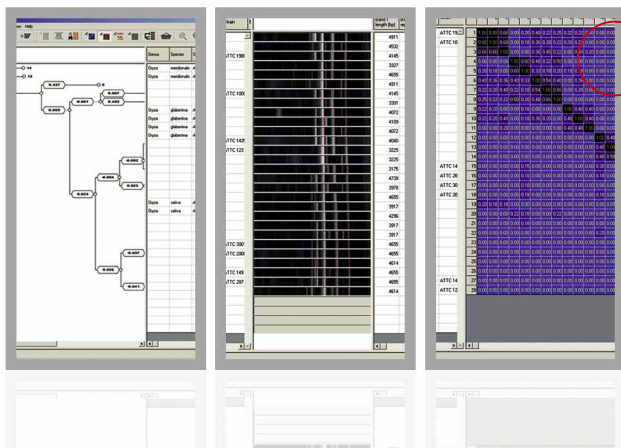
### Colony counting

- Advanced colony counting algorithm
- Automatic counting/manual detection
- Two colour counting
- Automatic separator
- Light/dark colony selection
- Exclude regions function
- Sensitivity selector



### Extensive applications

- Quantitative dots (Qdots)
- Sybr dyes
- Alexa fluors
- Cy dyes
- Sypro dyes
- Pro-Q dyes
- And many more



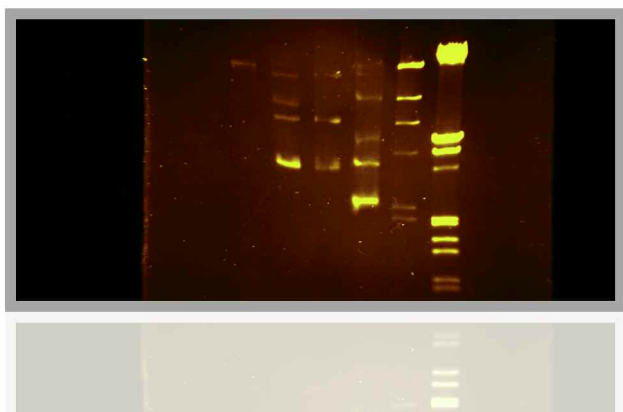
### GeneDirectory (option)

- Band matching extension module
- Track and band data storage
- Suitable for large genomic fingerprinting studies
- Cluster analysis
- VNTR analysis
- Genotyping and RFLP studies
- Dendrogram generation
- Bootstrapping

# G:BOX

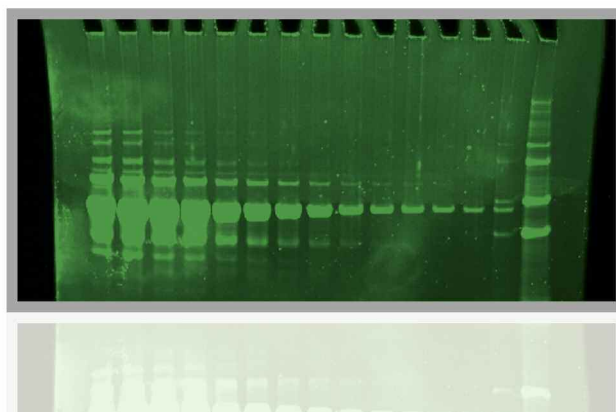
## applications

G:BOX and G:BOX Chemi are available in a number of standard configurations suitable for a wide range of typical applications.



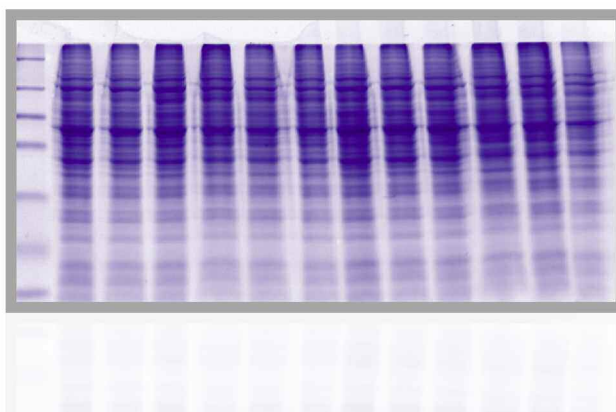
### DNA

With a G:BOX system you can use the UV transilluminator to capture images of DNA gels stained with Ethidium Bromide



### Blue light applications

The blue light converter allows you to view some fluorescent stains with better clarity and with less gel damage



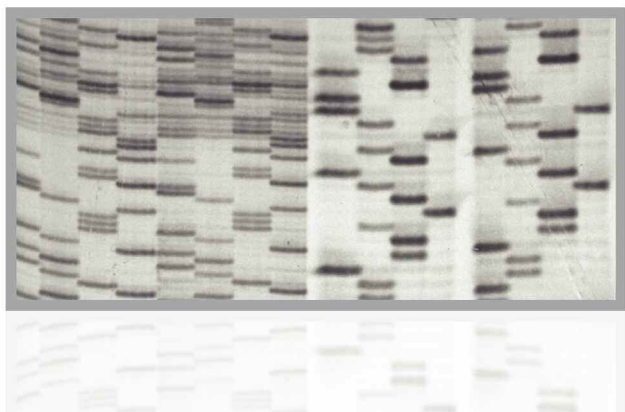
### Visible light applications

With the transmitted visible light or using the epi white light facility a G:BOX can be used to view gels which have been stained with silver stain and Coomassie blue. You can also view tissues, slides and films



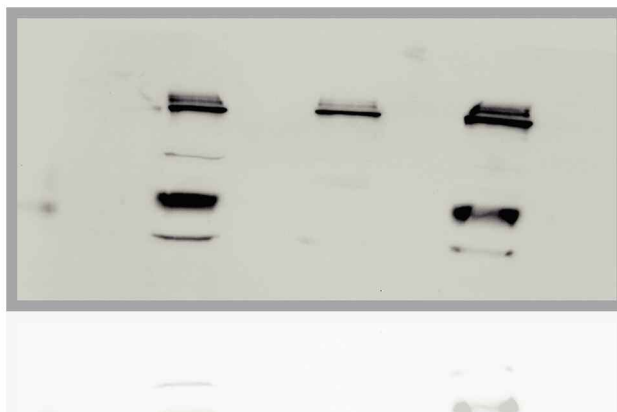


A perfect solution for every application



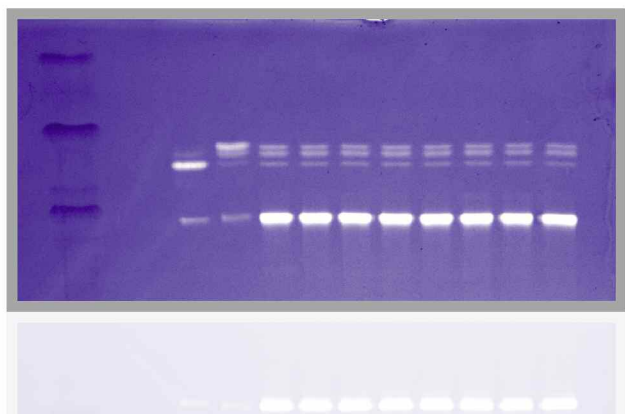
#### AutoRads

G:BOX systems feature mega resolution cameras which are ideal for capturing images requiring high detail. This is especially true when looking for 'separation' between bands and spots. Capturing high quality images of Autorads is one of the strengths of the G:BOX range



#### Chemiluminescence

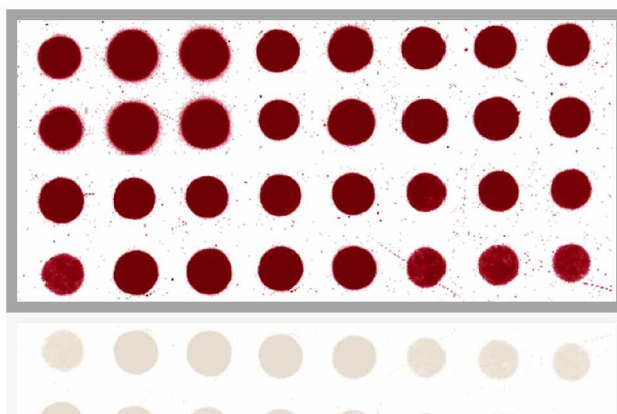
Every G:BOX Chemi in the range is suitable for chemiluminescence applications. Darkrooms are completely light tight and can be used for extended exposures which are typically found when working with chemiluminescent substrates



#### Other fluorescence applications

Other options include the use of transmitted visible or blue light and even overhead epi UV, white or blue light. These flexible lighting options make systems suitable for generating images of a wide range of fluorescent samples.

Examples: TLC plates, GFP plates, SYBR® Green, SYBR Gold, SYBR Safe, Sypro Ruby, Safe View, Flamingo, Pro-Q Diamond, Pro-Q Emerald, Fluorescein, Rhodamine Red™, Texas Red®, Deep Purple™, Q Dots and others



#### Spot blots

Capturing and analysing spot blots is another very simple application for G:BOX and GeneTools software. Blots up to 25 x 30cm can easily be imaged in any G:BOX system

# G:BOX

## specifications

# specifications

Features	Benefits
Modular tailored system	Enables you to select the right system for your work
Automated PC control	Speeds up the image capture and analysis process
Choice of camera	The right camera for your application
Light-tight darkroom with easy access service panel	Suitable for fluorescence and chemiluminescence work
Auto-locking door	Protects against accidental exposure
Large door opening	Easy access for gel positioning and viewing
16 bit performance	Very accurate gel data
USB technology	Very fast image capture and download
Optional motor driven optics	Easy system set up
Auto exposure and series capture	Easy image capture
Integration control	Capture faint bands or features from any gel
Auto focus configurations	Reproducible set up and imaging
Effective pixel selection	Extends camera resolution to mega pixel levels
Focus indicator	For ease of focusing
Neutral fielding	Perfect background correction
Variety of lighting options (EPI RGB LED lighting option available)	Even more flexible imaging applications
Optional filter wheel	Can detect a wide range of stains and dyes
GeneTools software	Comprehensive image analysis package for a range of applications

### 21 CFR11

#### Syngene software is 21 CFR11 compliant

Syngene software meets the requirements for compliance with regulation for electronic records and signatures. Using the unique Syngene formats, images can be analysed and recorded in a secure environment. Data management is controlled using a series of security levels. An audit trail of images and any changes are held in secure files. These can be viewed as can any unauthorised changes.

### IQ/OQ/PQ

#### Validation documentation

Many users in the pharmaceutical and biotechnology fields now insist on IQ (Installation Qualification), OQ (Operational Qualification) and PQ (Performance Qualification) if they are to meet regulatory compliance. Syngene have IQ, OQ, PQ procedures for all customers who have the need to meet these requirements. The procedures follow easy to use checklists which can be integrated into the user's internal quality system. Syngene offers these procedures for its G:BOX range.



A perfect system every time



	G:BOX	G:BOX HR	G:BOX CHEMI	G:BOX CHEMI HR16	G:BOX CHEMI XT16	G:BOX CHEMI XL
<b>Camera</b>						
Effective pixels (million)	1.2	5.5	1.2	5.5	6.3	5.5
A/D	12bit/16bit	12bit/16bit	16bit	16bit	16bit	16bit
Greyscales	4096/65536	4096/65536	65536	65536	65536	65536
Dynamic range	3.6/4.8	3.6/4.8	4.8	4.8	4.8	4.8
Cooling	Ambient	Ambient	Low and deep Peltier cooling	Ultra Peltier cooling for extra long exposures	Ultra 2 stage Peltier cooling for extra long exposures	Ultra Peltier cooling for extra long exposures
<b>Illumination</b>						
UV transilluminator (20 x 20 cm) (Larger size available)	Yes	Yes	Yes	Yes	Yes	Option
Visible light NovaGlo (33 x 31 cm)	Option	Yes	Option	Yes	Yes	Option
Blue light converter (33 x 31 cm)	Option	Option	Option	Option	Option	Option
White Epi - overhead	Yes	Yes	Yes	Yes	Yes	Yes
Dual UV Epi	Option	Option	Option	Option	Option	Option
Blue Epi	Option	Option	Option	Option	Option	Option
EPI RGB	No	No	Option	Option	Option	Option
Fold down visible light table	Option	Option	Option	Option	Option	Option
<b>Software</b>						
GeneTools MPCS x2	Yes	Yes	Yes	Yes	Yes	Yes
GeneSnap	Yes	Yes	Yes	Yes	Yes	Yes
GeneDirectory	Option	Option	Option	Option	Option	Option

Over 50,000 scientists  
world-wide in pharmaceutical and  
biotech companies, as well as  
academic and government  
institutions, have chosen  
Syngene as their expert imaging  
partner. If you'd like to find out  
why, please contact us or one of  
our dealers for more information  
and a demonstration of the  
revolutionary G:BOX

**Syngene Europe and  
International Headquarters:**

Beacon House Nuffield Road  
Cambridge CB4 1TF UK  
Tel: +44 (0)1223 727123  
Fax: +44 (0)1223 727101  
email: sales@syngene.com

**Syngene USA Headquarters:**

5108 Pegasus Court Suite M  
Frederick MD 21704 USA  
Tel: 800-686-4407/301-662-2863  
Fax: 301-631-3977  
email: ussales@syngene.com

**Website: [www.syngene.com](http://www.syngene.com)**