BioSpectrum® Imaging System

Imaging Made Easy for
Chemiluminescence | Bioluminescence | Colorimetric | Fluorescence

MegaCam 810 Camera	OptiChemi 610 Camera	BioChemi 510 Camera	GelCam 310 Camera
8.1 megapixel resolution scientific grade CCD with regulated cooling technology to capture the finest details in gels and blots to achieve accurate quantitative analysis	**3.2 mepixels resolution** scientific grade CCD, extendable to 9.6MP, deeply cooled for extended exposure times in IR/NIR multiplex and chemiluminescent imaging	**2.1 megapixel resolution** scientific grade CCD, extendable to 7.4MP, with regulated cooling and low noise for imaging a variety of chemiluminescent and fluorescent samples	**2.0 megapixel resolution** scientific grade CCD, extendable to 6.0MP, provides the highest resolution camera for general purpose fluorescent and colorimetric samples

Scientific Grade CCD Camera mounted in the darkroom and protected by the camera cover

BioSpectrum Darkroom is light tight and automated with all functions controlled via VisionWorksLS software

Access port for connecting to the external **BioLite** high intensity multispectral light source (optional)

Unique gel viewer window blocks UV while allowing visualization of samples without opening the darkroom door

Motorized **five-position emission filter wheel** with EtBr, SYBR Green and SYBR Gold filters; interchangeable standard and custom filters available

Built-in **epi illumination** sources: 365nm UV, 460-470nm blue and broadband white light

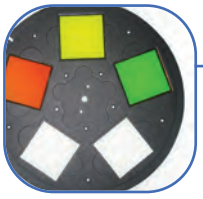
LED white light illuminator provides uniform background light for colonies, Coomassie Blue and Silver stained gels; place the tray in the side pocket when the illuminator is not in use

VisionWorks®LS software allows image acquisition, enhancement, documentation, printing, publishing and analysis

Quickly adjust the **motorized platform** tray height to any position (a manual lift platform is also available)

Select from single or multiple UV wavelength **Benchtop Transilluminators**

Systems can be configured with a high specification 20" touch screen **computer/monitor** (order separately)



Emission and Excitation Filters

Expand the BioSpectrum's imaging capabilities by adding filters for specific applications. Refer to UVP's filter chart for details.

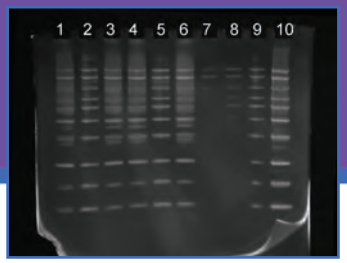
Motorized Platform

Height adjusts to any location in a ten inch travel range.

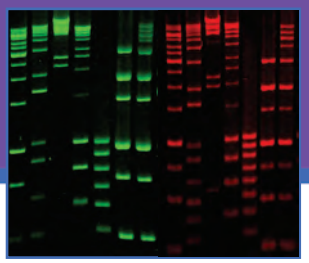
Chemi Tray

Use with Western blots or other bioluminescent or chemiluminescent samples.

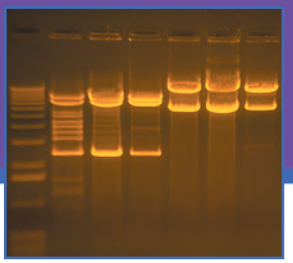
Alexa PAGE



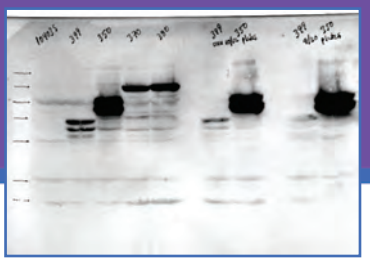
GelGreen/GelRed



Ethidium Bromide



Autoradiograph

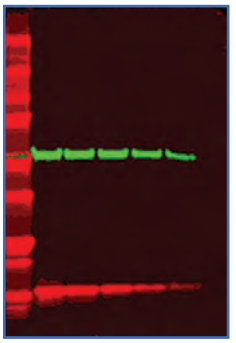


Benefits of the BioSpectrum

Feature	Benefit
Scientific Grade Cameras	Choice of CCD cameras for high resolution, high quality images. Select a camera based on the imaging applications (refer to the camera list on page 2).
Motorized Lenses	Automated control of lens for quick image acquisition and rapid processing.
Motorized Platform	Height adjustable platform moves to any position in a 10 inch range for optimized image capture. Platform is easily controlled via the software interface.
LED White Light Illuminator	Extremely high uniformity for minimal image enhancement.
Viewing Window	View the sample through the UV safe window without opening the darkroom door.
Light Tight Darkroom	Creates optimum conditions for imaging gels and blots.
Chemi Tray	Place and capture bioluminescent or chemiluminescent samples.
Epi Illumination Sources	Built in illumination sources for positioning and exciting samples from above.
Access Ports	Connect numerous external sources to enhance imaging techniques and acquisition.
Motorized Filter Wheel	Simplify imaging by controlling the filter wheel through a software button. Programmable filter wheel enables automatic selection of the appropriate filter for a specific application.

Featured Applications

The BioSpectrum Imaging System enables multiple applications including imaging of chemiluminescent (Westerns, Northerns and Southerns), fluorescent, bioluminescent and colorimetric samples. Application Notes and referenced articles can be accessed from UVP's web site. Two salinet imaging applications are noted:

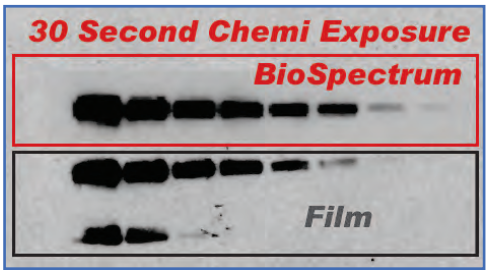


Multiplex Imaging

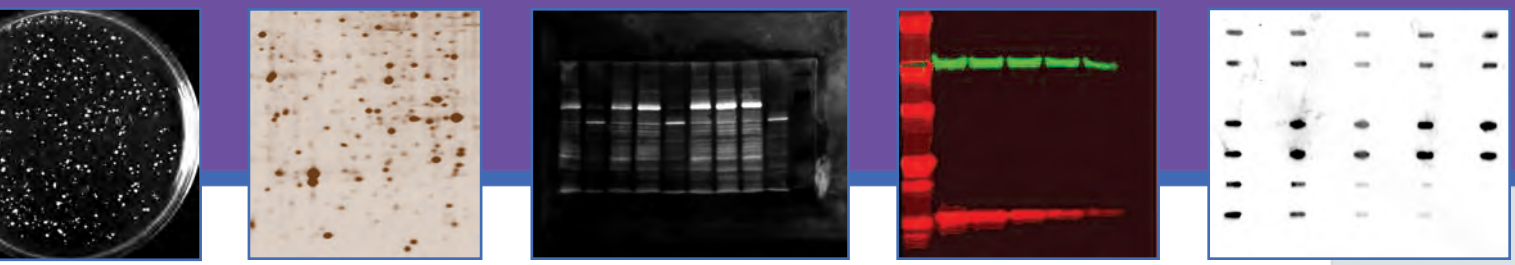
VisionWorksLS permits multiplexing so that several proteins in a sample can be detected and analyzed at the same time on a single protein blot. NIR labels, in particular, offer very low background and high signal-to-noise ratio for quantitative imaging. The combination of the BioLite MultiSpectral Light Source and BioSpectrum Imaging System provides a full range of wavelengths for excitation light and offers rapid, high resolution image capture through the use of cooled CCD cameras and low light lenses. Typically, exposures are complete in 30 seconds to 2 minutes. Images are captured and processed with VisionWorks LS image acquisition and analysis software to composite the pseudocolored images.

Chemiluminescent Imaging

Chemiluminescent imaging of protein blots using the BioSpectrum greatly speeds up and simplifies analysis. Once positioned on the imaging platform, the membrane is focused, door closed and the image captured with a ***one button preset*** in the VisionWorksLS software. Multiple captures are easily taken to acquire a full range of exposures using the Sequential Integration feature. Chemiluminescent imaging of protein blotting and the sensitivity of this procedure compares to film showing the BioSpectrum with cooled CCD camera to be superior to film in sensitivity, accuracy, dynamic range, speed, and simplicity. Due to the high sensitivity and resolution of the BioSpectrum system, the resultant image is both quantitative and publication quality.



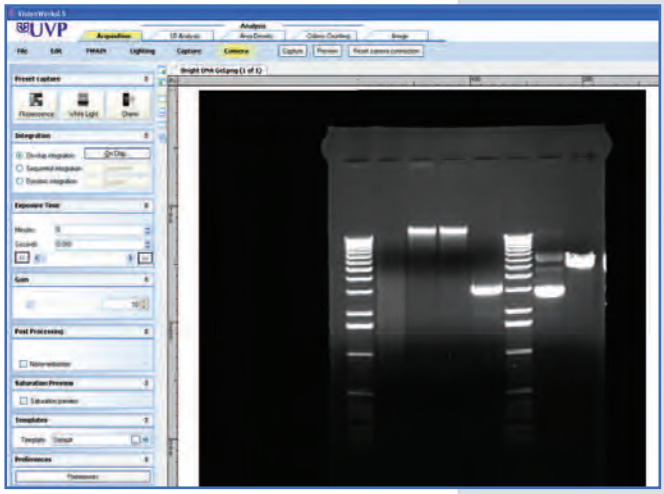
Chemiluminescent blots *comparing film to CCD capture shows the BioSpectrum 500 is more sensitive than film.*



VisionWorks®LS Software

VisionWorksLS is a sophisticated image capture and analysis software package with comprehensive tools to facilitate the capture of chemiluminescent, fluorescent or colorimetric stained gels, blots, colonies and membranes. Capabilities include:

- Extensive image acquisition functions
- Image enhancement capabilities
- 1D and area density analysis plus colony counting
- One-touch automated macros
- User-defined templates and preference settings
- Support for 21 CFR Part 11 compliance
- Report generation and export of data to Excel



***Software Control**. User-friendly, one-touch simplicity for automating image capture and analysis!*

***Camera Control and Image Capture**. Camera menu guides the user through the easy-to-use image acquisition steps.*

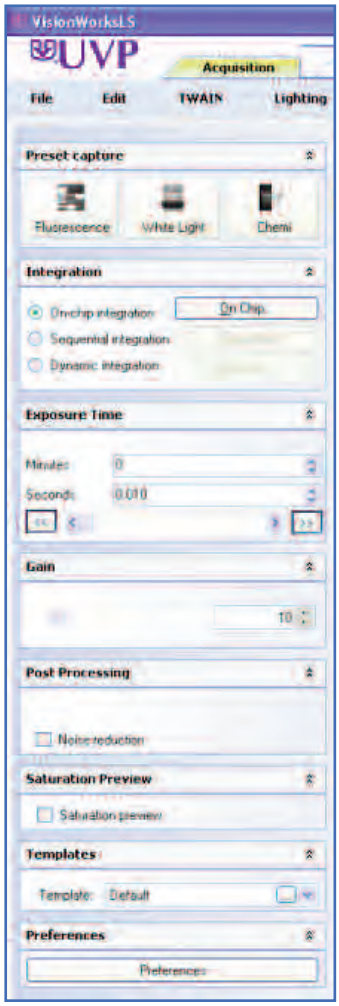


Image Capture Capabilities

UVP's cameras are selected for their high resolution and sensitivity for image capture as well as for the ability to control the capture settings. The integrated software menu allows selection of functions to achieve superior captured images.

- **Integration** functions include on-chip integration for the simplest image capture. Sequential integration captures multiple pictures taken at a uniformly increasing exposure time. Dynamic integration captures images at set intervals.
- **Binning** allows a quick preview of the image before continuing with a longer full resolution exposure.
- **Saturation preview** assures imaging results are quantifiable by detecting over-exposure of bands in live preview.
- **Imaging templates** allow for creation of custom settings to enable quick image capture with reproducible results.
- **AutoExpose** enables the perfect image exposure to be captured automatically below the saturation level of every pixel in the image for the widest dynamic range possible and the best quantitative analysis of bands.

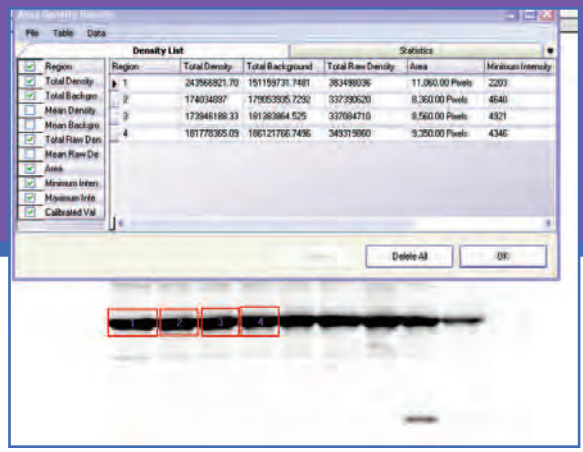
Image Enhancement Tools

VisionWorksLS software offers many image enhancement features, process filters and annotation capabilities as non-destructive tools for visualization and publication.

- **Annotation** can be added in the form of text, lines, highlights and more
- **Filter tools** include align, rotate, emboss, sharpen, resize, starfield subtraction and background correction
- **Spatial calibration** determines image scale and measure lengths, angles and areas

***Annotation.** Overlay non-destructive annotation or "burn" the annotation into an image for permanent documentation.*

VisionWorksLS Capabilities



Area Density for Western Blots. *Quickly determine relative intensities of Western blots and more.*

Image Analysis Capabilities

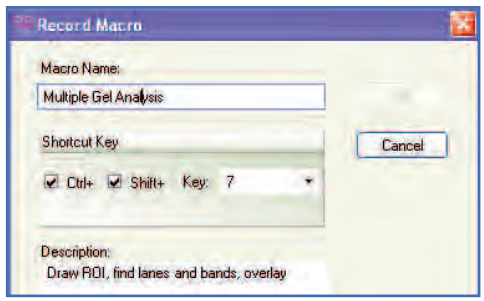
VisionWorksLS analysis includes comprehensive tools for in-depth image analysis. The easy to use, intuitive functions automate your experiments with accurate quantitation, generation of lane profile graphs, plus intensity histograms, concentration curves and much more!

- 1D lane analysis
- Plant imaging
- Protein quantitation
- Western blot densitometry
- GFP expression
- Area density
- Molecular weights
- Quantitative PCR
- Colony counting
- Multiplexing and more

One-Touch Automated Macros

Create personalized, custom macros to automate routine, time consuming procedures involving image capture, enhancement, analysis and data archiving. Record keystrokes that perform a series of complex functions within the software. Assign a function key to the recorded macros for ***one-touch automation***. The macros simplify operations to prevent user errors. Macros can be used to auto-adjust dark chemi blots to perfection.

- Name and describe the custom macro
- Acquire a typical image for analysis
- Record the keystrokes required for analysis
- Save the custom macro in the Macro dropdown menu

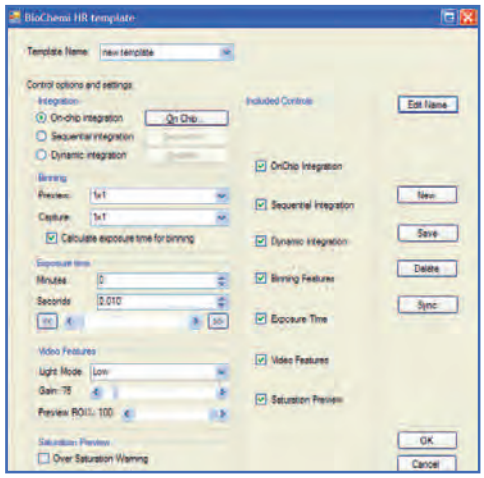


Record Macros. *For repeat procedures.*

User Profiles, Templates and Preferences

Researchers can personalize their workspace preferences and save the profiles by user name. Also set up user accounts with passwords to protect user data.

User-defined **templates** are great time savers and allow users to set and save darkroom and camera settings for quick and easy capture of samples. Also select from several pre-set capture templates which include a template for acquiring a series of multiple exposures of chemiluminescent Western blots.



Templates. *Define custom settings.*

Reports, Export Data and History Tracking

- Create detailed and user-configured reports showing extensive analysis results on MW, Rf, precise position of bands, band intensities, area density calculations and more. Export data to Excel.
- VisionWorksLS software enables image history tracking with change logs to support 21 CFR Part 11 compliance.

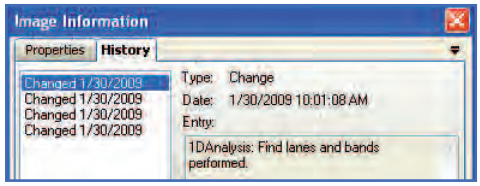


Image History. *Record changes to images.*

BioSpectrum Accessories

BioLite™ Light Source

The BioLite is a directed epi or transillumination fiber optic source with filters for excitation of fluorescent multiplexed western blots, DIGE 2D gels, PAGE gels, microplates and more. Refer to UVP's filter chart for filter details.

Thermal Printer

The thermal printer generates archive quality, 256 gray scale prints. Glossy and matt papers are available. Paper rolls easily install in seconds.

Ordering Information & Specifications

Each system includes: Choice of camera/lens, darkroom with manual or motorized platform, white light illuminator, three filters, choice of UV transilluminator and VisionWorksLS software. Installation Qualification and Operational Qualification (IQ/OQ) documentation is available. ***System configurations may vary by country. Contact UVP for system details.***

Ordering Information

BioSpectrum 310 Imaging System (GelCam 310 Camera)
BioSpectrum 510 Imaging System (BioChemi 510 Camera)
BioSpectrum 610 Imaging System (OptiChemi 610 Camera)
BioSpectrum 810 Imaging System (MegaCam 810 Camera)

VisionWorksLS Software

Capabilities:	Image acquisition/analysis
Controls:	Interface with camera, darkroom
Tools:	Macros and templates, plus image enhancement tools
Documentation:	Create reports and export data
Compatibility:	Windows XP, Windows 7

Ask about **software network versions** for multiple users.

Darkroom Specifications

Epi Lights:	White Light, 365nm UV, 460-470nm Blue
Transillumination:	White Light LED Plate Choice of Transilluminator - M-26XV (302nm, 25x26cm) or LMS-26 (254/302/365nm, 21x26cm); Selection may vary by country
Emission Filters:	Five position motorized wheel with EtBr (580-630nm), SYBR Green (510-560nm), SYBR Gold (520-620nm) Additional filters available; refer to UVP's filter chart for details.
Controls:	Software automated with templates
Platform:	Motorized with 10 in. range or Manual control
Dimensions:	17.5W x 17.5D x 32H in. (44.5 x 44.5 x 81.3cm) plus camera cover

Camera Specifications

Specifications	MegaCam 810	OptiChemi 610	BioChemi 510	GelCam 310
CCD Bit Depth	16 bit	16 bit	16 bit	12 bit
File Bit Depth (A/D)	16 bit	16 bit	16 bit	16 bit
Grayscale Range	65,536	65,536	65,536	65,536
Pixel Resolution	3296 x 2472	2184 x 1472	2336 x 1751	1600 x 1200
Megapixels	8.1	3.2, extendable to 9.6	2.1, extendable to 7.4	2.0, extendable to 6.0
Cooling Type	-35° C From ambient; Peltier cooling	-50° C From ambient; Peltier cooling	-35° C From ambient; Peltier cooling	None
Binning Modes	1x1 thru 8x8	1x1 thru 10x10	1x1 thru 8x8	None
PC Interface Connection	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Quantum Efficiency Peak & Chemi 425nm	50% & 44%	86% & 53%	50% & 32%	---
Lens Options	f/1.2 50mm | f/1.4 30mm | f/2.8 24-70mm	f/1.2 50mm | f/1.4 30mm | f/2.8 24-70mm	f/1.2 12.5-75mm zoom	f/1.2 12.5-75mm

Specifications subject to change without notice. Contact UVP for current system/camera specifications.

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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.