



ChemiDoc™ MP Imaging System

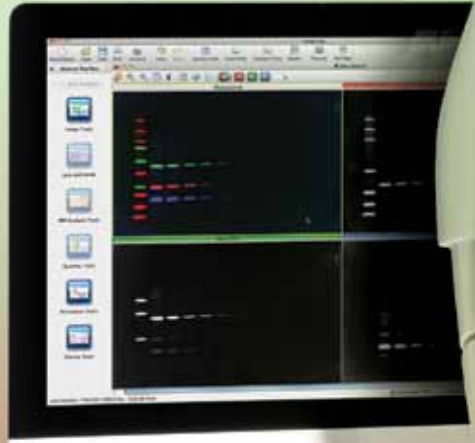
Confidence in every step of
your imaging workflow.



ChemiDoc™ MP Imaging System

Because results always matter.

Bring a new level of capability and efficiency to your experiments with an imaging system designed for multitasking. The ChemiDoc MP imager is a unique imaging system that enables stain-free operation and lets you visualize proteins at every stage of your blotting experiment. Its flexibility and sensitivity are complemented by simple, intuitive operation that integrates seamlessly into your workflow.



Superior Sensitivity

Get quantitative, reproducible data without relying on outmoded film processes. The ChemiDoc MP imaging system offers advanced detection technology that creates optimal exposure for even the faintest bands. Rely on it for fast, super-sensitive chemiluminescence and fluorescence detection and for colorimetric gel and blot documentation.

Fig. 1. Sensitivity comparison of the ChemiDoc MP system versus X-ray film using blots of serial dilution of transferrin. **A**, the ChemiDoc imager delivers superior dynamic range and comparable limit of detection to film. **B**, a 10-second exposure on film reveals a more limited dynamic range than the ChemiDoc MP system. Saturated pixels are highlighted in red.

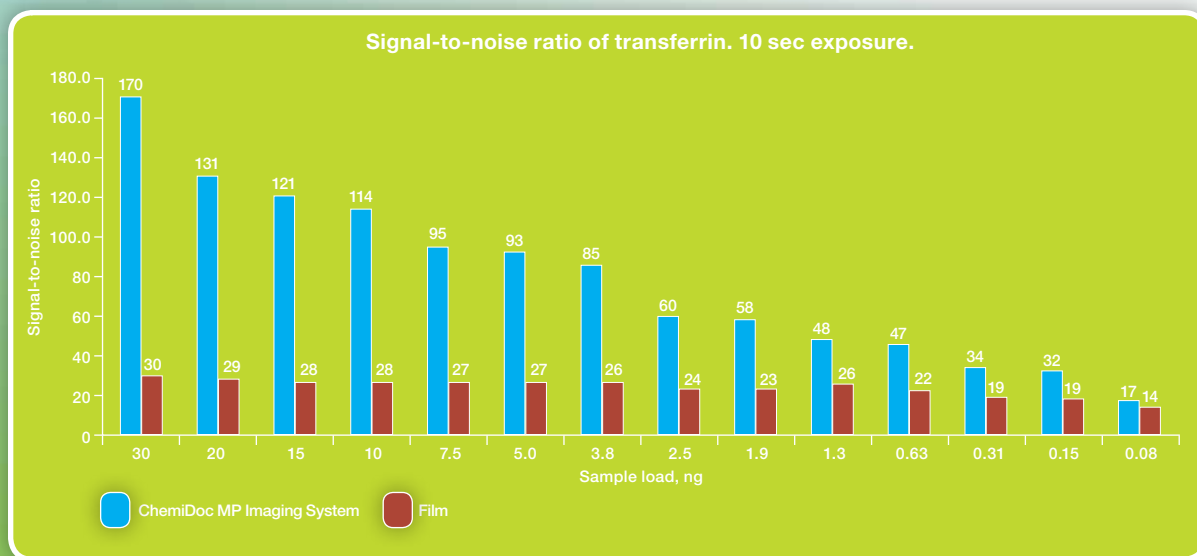


Fig. 1A

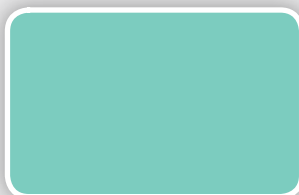
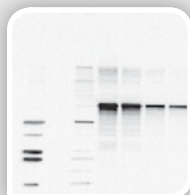
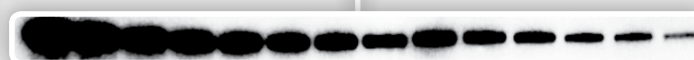


Fig. 1B



Film

Sample load, ng



ChemiDoc MP imaging system



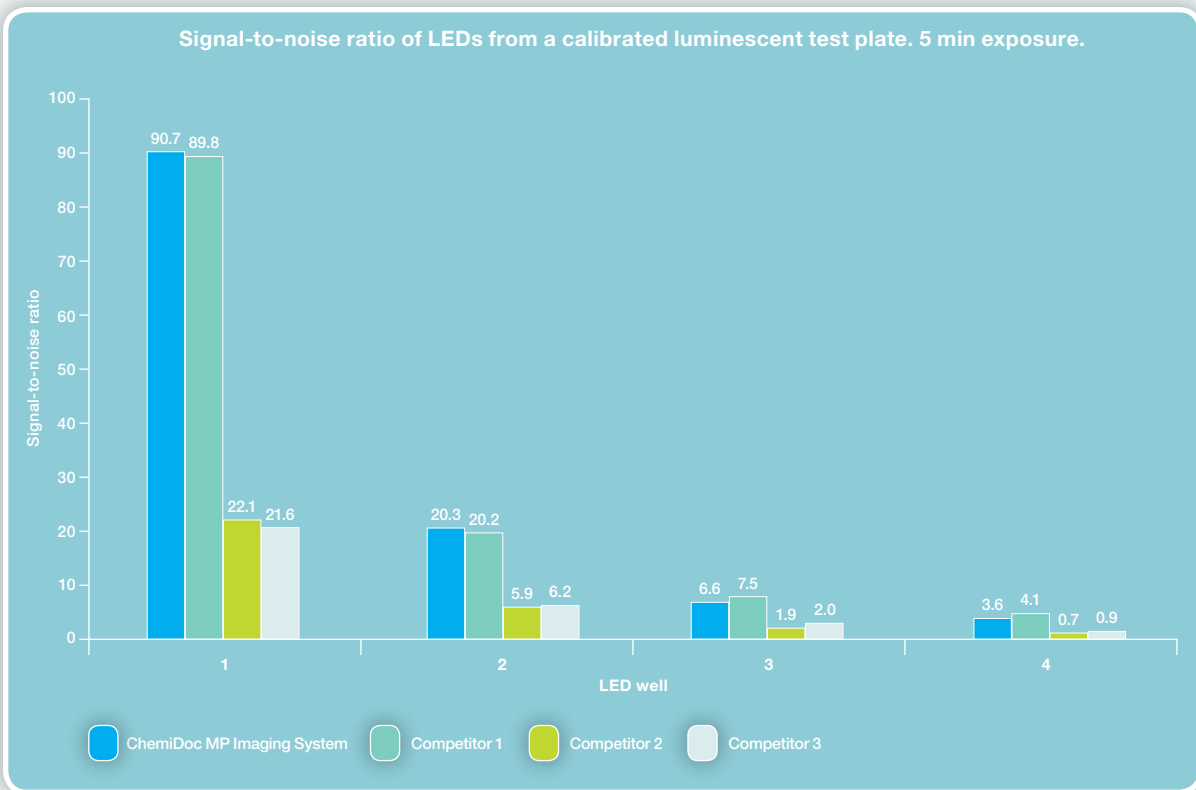
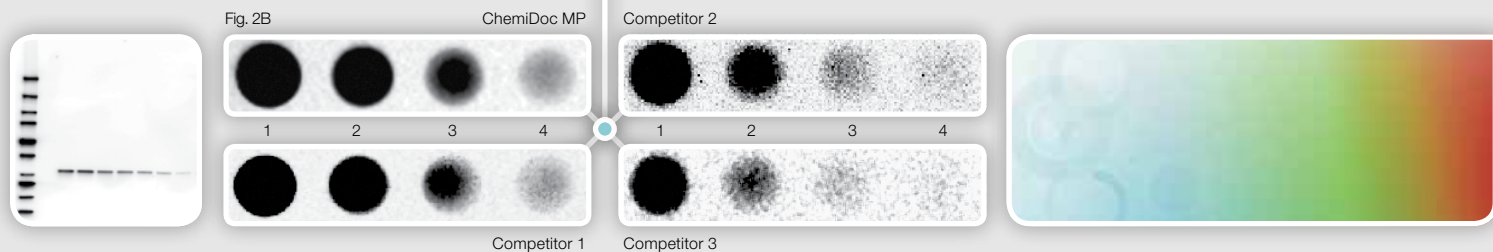


Fig. 2. A calibrated luminescent target was used to test light collection efficiency and determine overall system sensitivity. A, data from lower limits of detection are graphed to show overall signal-to-noise ratio. The ChemiDoc MP system delivers top-of-the-class chemiluminescence sensitivity against leading multiplexing imagers on the market. **B**, images of lower limits of detection from a calibrated luminescent target. The ChemiDoc MP system delivers excellent image quality and limit of detection.

Fig. 2A



Exceptional Image Quality

With patented focus calibration technology, images are always in focus at any zoom level. Exceptional dynamic range enables visualization of faint and intense bands on same blot or gel. With Image Lab™ software you can edit and analyze images on the spot without exporting to other programs.

**Fig. 3. 1-D
Coomassie-stained gel.**

**Fig. 4. Chemiluminescent
ELISA arrays.** Quansys
Biosciences Q-Plex array
has 16 distinct capture
antibodies bound to each
well of a 96-well plate.

**Fig. 5. Fluorescent
multiplex blot with
DyLight 488, DyLight
549, and DyLight 649
conjugates.**

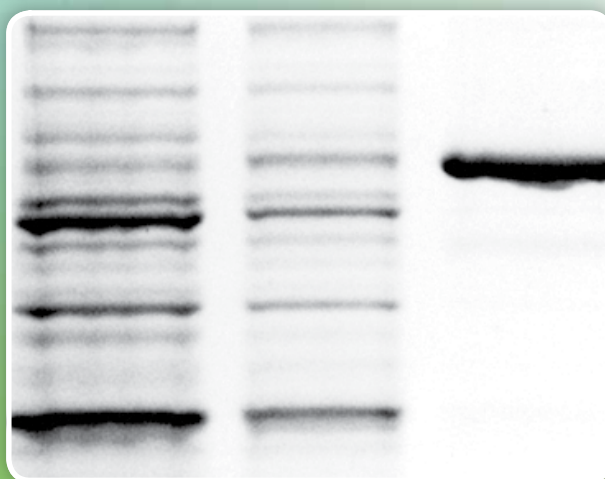


Fig. 3

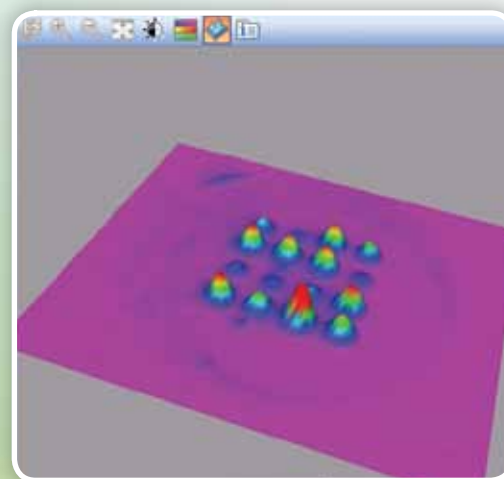


Fig. 4

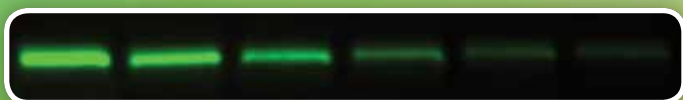
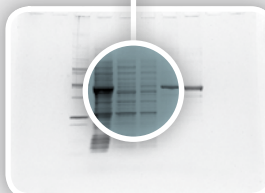
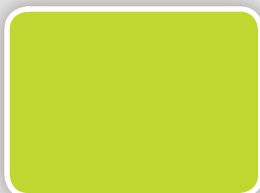


Fig. 5



Minimal cross-talk between blue and green channels.



Fig. 6A

Fig. 6A. Determination of cross-talk using same multiplex gel. Blue fluors (FAM and Alexa Fluor 488) are detected in the green channel and green fluors (Cy3 and Alexa Fluor 546) in the blue channel using the ChemiDoc MP system and a competitor's system. For competitor 1, the bold percentage values indicate high cross-talk.

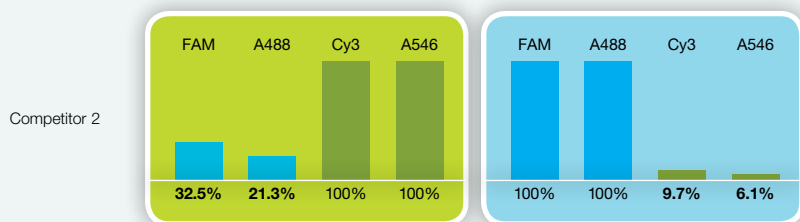
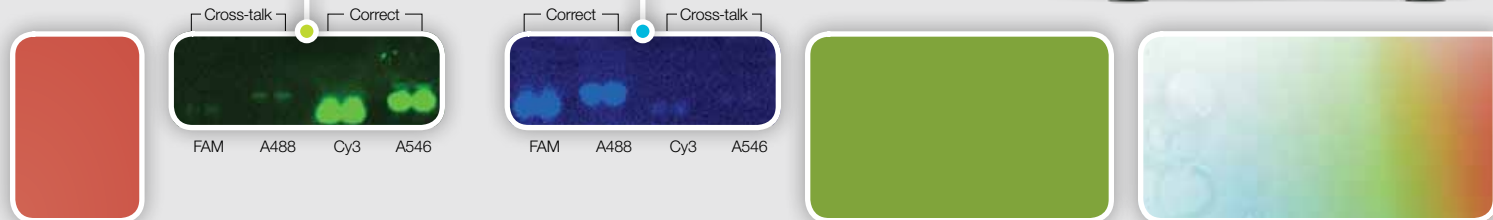


Fig. 6B

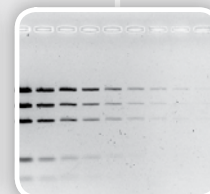
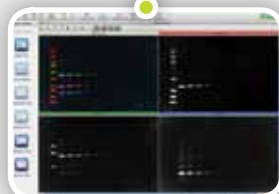
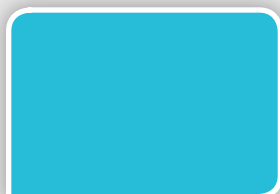
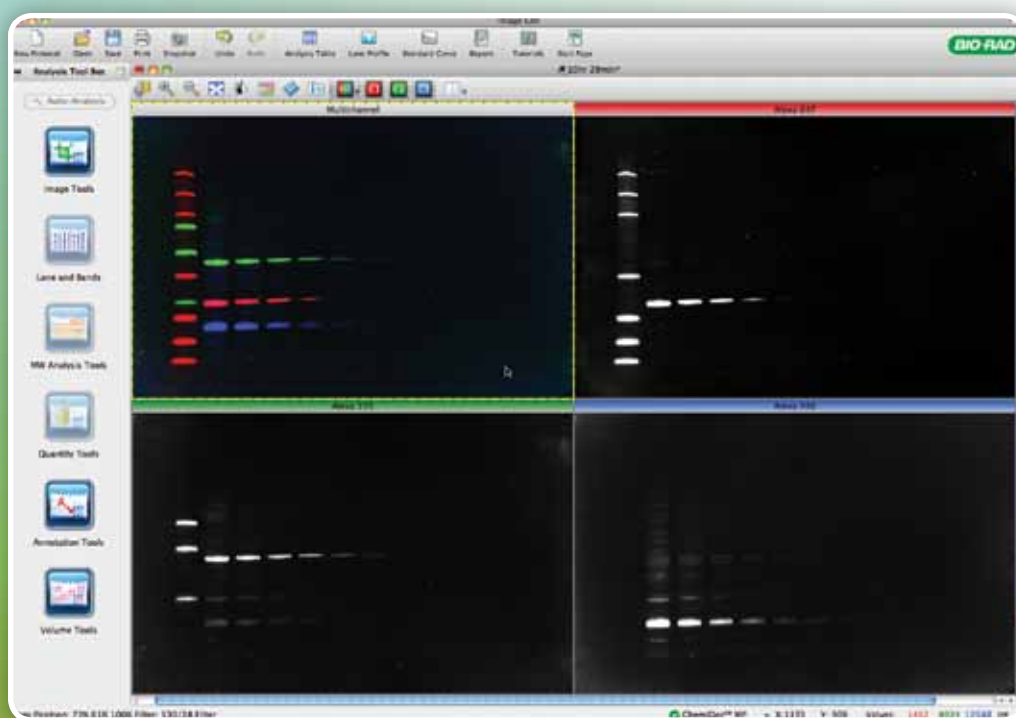
Fig. 6B. Visualization of cross-talk signals recorded with a second competitor's instrument. The green and blue channel images show high cross-talk values and are indicated in bold. The blue fluors (FAM and Alexa Fluor 488) are detected in the green channel and the green fluors (Cy3 and Alexa Fluor 546) are detected in the blue channel.



Unmatched Application Versatility

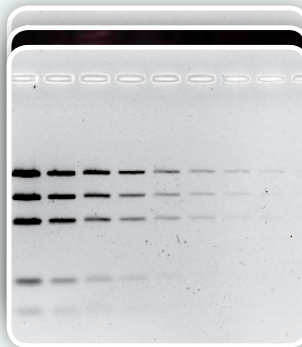
The ChemiDoc MP imager is the only system you need when your experiments include a variety of sample types or require different detection methods. It is the perfect imager to accompany your protein and DNA electrophoresis runs as well as your western blotting experiments. And it delivers quantitative, reproducible results every time.

Fig. 7. Multiplex image file allows multichannel and individual channel view. Image of multiplexed fluorescent blot with Alexa Fluor 488, Alexa Fluor 555, and Alexa Fluor 647.

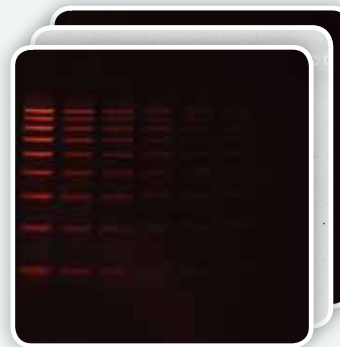




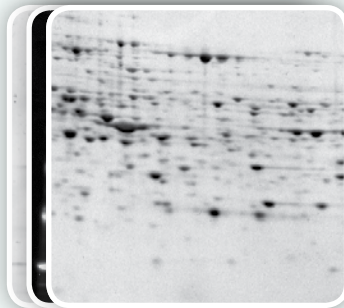
DIGE Criterion™ gel



EtBr-stained wide mini ReadyAgarose™ gel



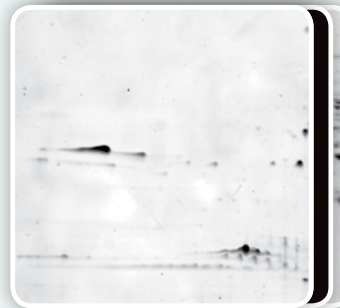
GelRed-stained mini ReadyAgarose gel



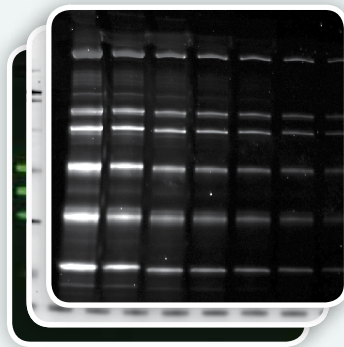
Silver-stained 2-D Criterion gel



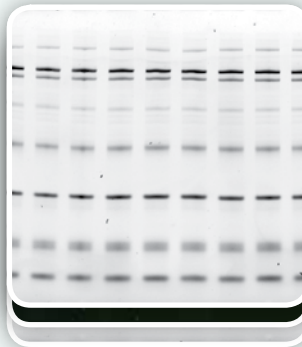
Coomassie-stained Mini-PROTEAN® TGX™ gel



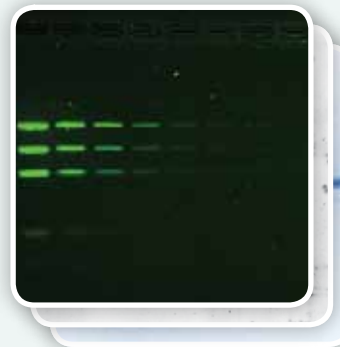
SYPRO Ruby-stained large-format 2-D gel



Flamingo™-stained Mini-PROTEAN TGX gel

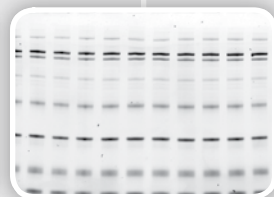
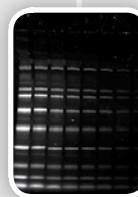
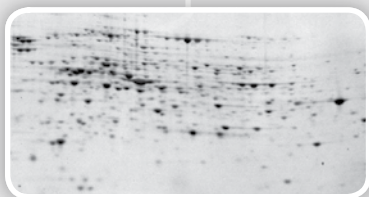


Criterion Stain Free™ TGX gel



SYBR® Green-stained wide mini ReadyAgarose gel

Fig. 8. Multiple applications of the ChemiDoc MP Imager.



Ease of Use

The ChemiDoc MP system is designed for productivity. With little or no training, users can acquire publication-quality images in seconds. The system is precalibrated to provide the precise focus for any zoom setting or sample height; automated hands-free operation ensures consistent, reproducible, and high-throughput performance.



Fig. 9A. The application selected automatically determines the excitation sources and emission filters.

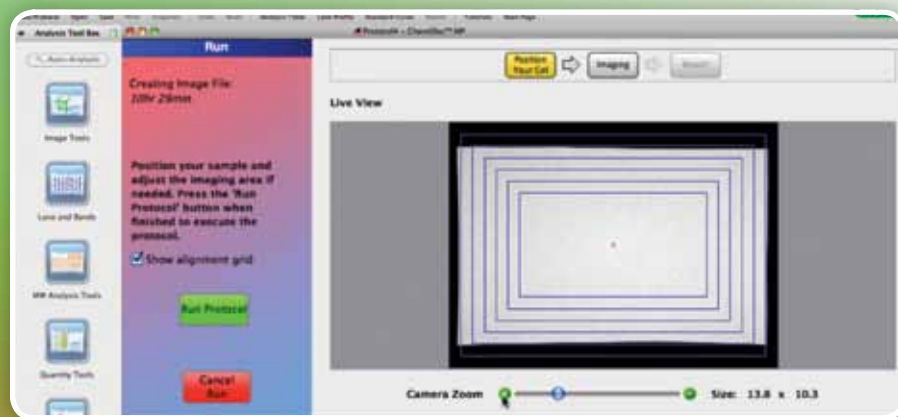


Fig. 9B. The ChemiDoc MP system is always in focus at any zoom level — no more out-of-focus gel or blot images.



Auto**setup**



Auto**focus**



Auto**exposure**



Auto**overlay**



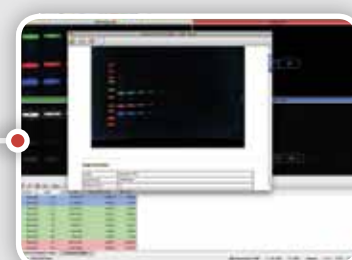
Auto**analysis**



Auto**reports**



Auto**print**

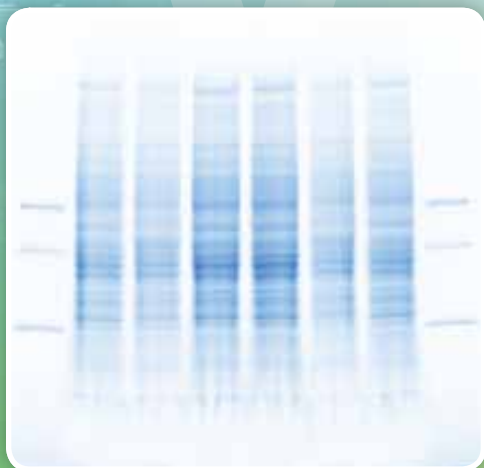


Stain-Free Enabled

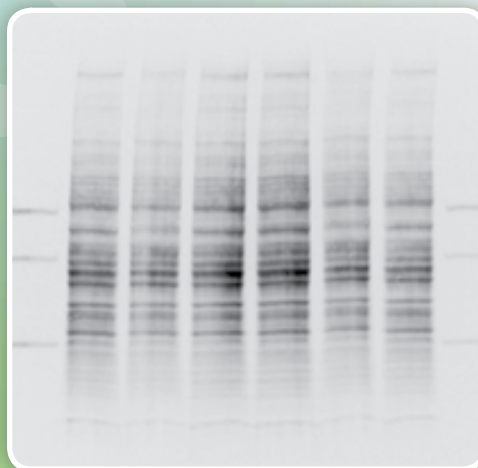
Stain-free technology, offered only by Bio-Rad, eliminates extra steps and unproductive delays in your western blotting experiments.

Stain-free technology is the keystone of the **Bio-Rad V3 Western Workflow™**, a portfolio of products that enables researchers to visualize, verify, and validate results at each step of their western blotting experiment.

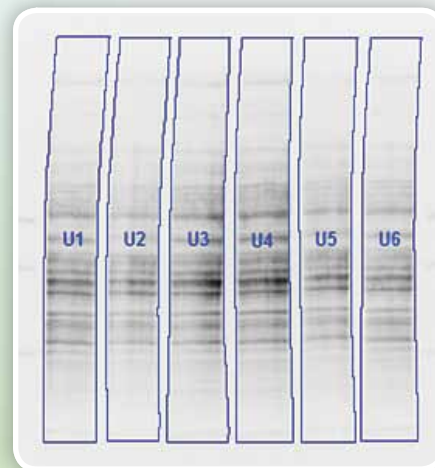
Stain-free gel



Stain-free blot



Total protein quantification



Protein of interest probed with Alexa Fluor 649



Visualize

Verify

Validate

The ChemiDoc MP system will activate and provide immediate visualization of protein separation in all lanes with stain-free gels before blot transfer.

The ChemiDoc MP paired with stain-free technology enables instant verification of protein transfer before blot detection.

Flexible Image Lab software tools normalize for protein of interest using total protein stain from stain-free blot and provide quantitative blot results.

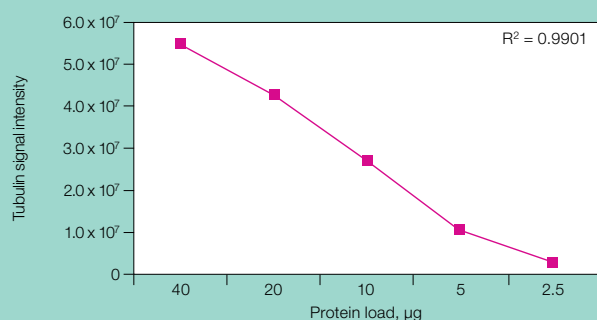
Stain-Free Normalization: An Alternative to Housekeeping Proteins

Traditionally, normalization of western blot signals is performed by probing the membrane with antibodies against a housekeeping protein (HKP) such as β -tubulin. This process usually requires stripping the first antibodies from the membrane prior to reprobing with the HKP antibodies, or performing tedious multiplex immunodetections. Stain-free technology allows you to normalize your western blot data by directly quantifying the total amount of protein bound to the membrane.

Benefits of Total Protein Normalization

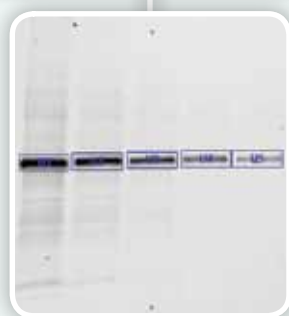
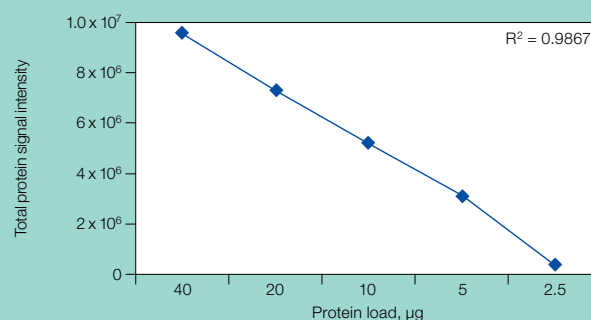
- **Stain-free normalization is consistently reliable** — normalization using housekeeping protein (HKP) expression may give different results based on experimental conditions and sample type
- **Stain-free normalization saves time** — quantitation of total membrane-bound protein using stain-free technology takes only a few minutes
- **Stain-free normalization is a single-step procedure** — prior probing of the membrane does not affect stain-free total protein detection; there is no need to strip the membrane

Tubulin



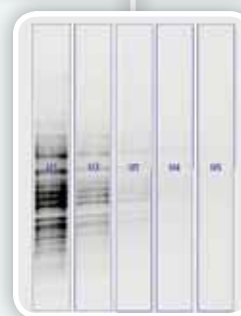
Plot of signal intensity versus protein load. Normalization using total lane signal intensity from stain-free technology exhibits comparable linearity to normalization using the tubulin signal.

Stain-free total protein



40 20 10 5 2.5
Protein load, μg

A blot of serially diluted untreated HEK293 lysate was probed with an anti-tubulin antibody using Alexa Fluor 649 for the detection of tubulin.

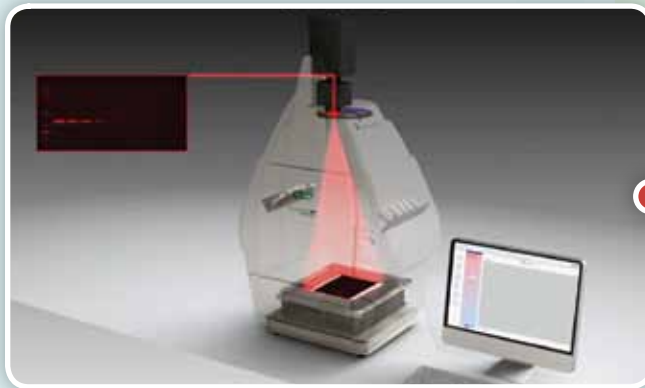


40 20 10 5 2.5
Protein load, μg

The same blot of serially diluted untreated HEK293 lysate was used for total protein detection and quantitation using stain-free technology.

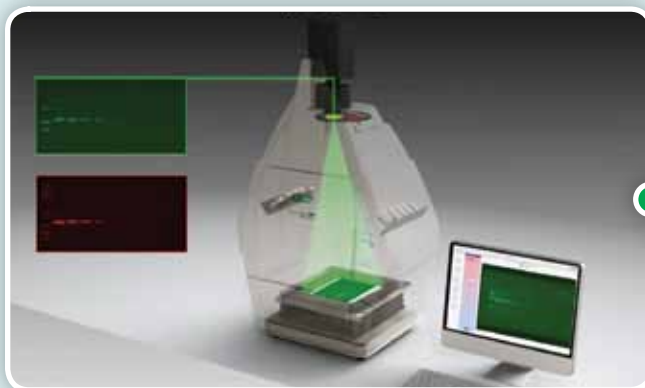
Instrument Tour

Optimized emission and excitation filters for discrete detection of multiplexed visible fluorescence.



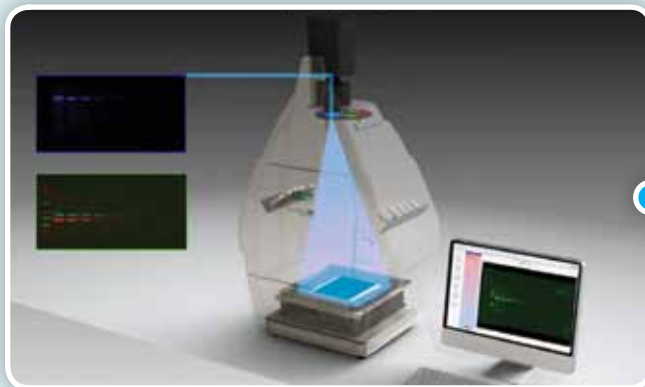
Red

Automatic detection of red fluorescence using dyes such as Cy5, Cy5.5, Alexa Fluor 647, Alexa Fluor 680, DyLight 649, DyLight 680, IRDye 680.



Green

Automatic detection of green fluorescence using dyes such as Cy3, Flamingo, Krypton, Pro-Q Diamond, Alexa Fluor 546, DyLight 549, Rhodamine.



Blue

Automatic detection of blue fluorescence using dyes such as Cy2, Coomassie Fluor Orange, Alexa Fluor 488, DyLight 488, Pro-Q Emerald 488, Qdot 523, Qdot 605, Qdot 625, Qdot 705.





Multiplexed fluorescent imaging
Multicolor LEDs optimized for quantitative western blot imaging

Cooled CCD with autofocus for all zoom levels
Unmatched sensitivity and image quality

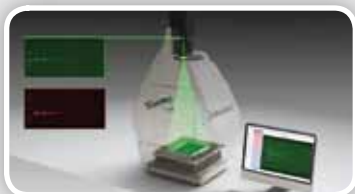
6-position automated filter wheel
Broad application flexibility

Sample tray with UV, white, and blue imaging
Flexible transillumination source for easy and uniform imaging of gels and blots

Touch-pad operation
For positioning and band excision



Go to www.bio-rad.com/chemidocmp to see the complete ChemiDoc MP video.



Specifications

Automation Capabilities

Workflow automated selection	Application driven; user selected or recalled by a protocol
Workflow automated execution	Controlled by a protocol via application-specific setup for image area, illumination source, filter, analysis, and reporting
Workflow reproducibility	100% repeatability via recallable protocols; from image capture to quantitative analysis and reports
Autofocus (patent pending)	Pre-calibrated focus for any zoom setting or sample height
Image flat fielding*	Dynamic; pre-calibrated and optimized for every application
Autoexposure	2 user-defined modes (intense or faint bands)

Hardware specifications

Maximum sample size (L x W)	28 x 36 cm
Maximum image area (L x W)	26 x 35 cm
Maximum image area for standard UV-excited gels (L x W)	25 x 26 cm
Excitation source	Trans-UV (302 nm included; 254 nm and 365 nm available as options) and epi-white; optional trans-white conversion screen, XcitaBlue™ conversion screen, and epi-red, -green, and -blue LED modules
Illumination control	8 modes available. Trans-UV, epi-white, and no illumination for chemiluminescence are standard; epi-red, epi-green, epi-blue, trans-white, and XcitaBlue conversion screens are optional
Detector	Supercooled CCD
Image resolution	4 megapixels
Pixel size (H x V)	6.45 x 6.45 µm
Cooling system	Peltier
Camera cooling temperature	-30°C absolute and regulated
Filter holder	6 positions (5 for filters, 1 without filter for chemiluminescence)
Emission filters	1 included (standard), 4 optional
Dynamic range	>4.0 orders of magnitude
Pixel density (gray levels)	65,535
Instrument size (L x W x H)	36 x 60 x 96 cm
Instrument weight	32 kg
Operating Ranges	
Operating voltage	110/115/230 VAC nominal
Operating temperature	10–28°C (21°C recommended)
Operating humidity	<70% noncondensing

*U.S. patent 5,951,838.

Ordering Information

Catalog #	Description
170-8280	ChemiDoc MP Imaging System with Image Lab Software , PC or Mac, includes darkroom, UV transilluminator, epi-white illumination, camera, power supply, cables, Image Lab software
Accessories	
170-8283	Red LED Molecular Kit , pkg of 2 epi-red LED modules and 1 red emission filter, for use with applications requiring red fluorophore detection
170-8284	Green LED Molecular Kit , pkg of 2 epi-green LED modules and 1 green emission filter, for use with applications requiring green fluorophore detection
170-8285	Blue LED Molecular Kit , pkg of 2 epi-blue LED modules and 1 blue emission filter, for use with applications requiring blue fluorophore detection
170-8001	White Light Conversion Screen
170-8182	XcitaBlue Conversion Screen , includes view goggles; blue conversion screen for viewing SYBR® Green, SYBR® Safe, GFP, Flamingo, and other fluorescent gel stains
170-8183	XcitaBlue Conversion Screen and Filter , includes view goggles and SYBR® Safe filter (170-8075, 560DF50); blue conversion screen for viewing SYBR® Green, SYBR® Safe, and other fluorescent gel stains
170-8083	Filter 520DF30 62 mm , for SYBR® Green/GFP/SYBR® Gold/fluorescein
170-8098	254 nm UV Lamps , pkg of 6
170-6887	365 nm UV Lamps , pkg of 6
170-8097	Standard 302 nm UV Lamps , pkg of 6
170-8089	Mitsubishi Thermal Printer
170-7581	Mitsubishi Thermal Printer Paper , 4 rolls
170-8184	Gel Alignment Templates , pkg of 3
Software	
170-9690*	Image Lab Software , PC or Mac, for automated image capture, optimization, and 1-D data analysis

* Included with the imaging system.



Scan this QR code to learn more about the ChemiDoc MP imaging system, or visit www.biorad.com/chemidocmp.

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BIO-RAD

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Laboratories, Inc.**

Life Science
Group

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