A New Standard of Confidence From Blot to Results

The ChemiDoc™ Pro Imaging System With Advanced Image Analysis

The ChemiDoc Pro Imaging System mentioned in this brochure is for Research Use Only. Not for use in diagnostic procedures.

Visit **bio-rad.com/ChemiDocPro** for more information.

Bulletin 4052 Ver B

Every Step Covered in One System, One Workflow

The ChemiDoc Pro Imaging System with Advanced Image Analysis is at the center of a connected western blot workflow. It's designed to build greater confidence from gel to quantitative results. Stain-Free technology provides quality checks during electrophoresis and transfer and supports total protein normalization. Four-channel multiplexing enables the capture of more targets from each blot. Intelligent acquisition software and BR.io Advanced Image Analysis streamline and automate imaging, detection, and quantitation, helping you produce consistent results and gain confidence in your western blotting.

Simplify Image Capture and Analysis

Onboard Image Lab Touch Software guides setup and helps you capture faint and intense bands with optimized exposure settings. Front USB ports and automatic transfer to the BR.io Cloud Platform or your network over Ethernet or Wi-Fi make it easy to store, access, and share results. Use web-based BR.io Advanced Image Analysis tools to minimize subjectivity in your data analysis and decrease your time to quantitative results.

Perform Real-Time Quality Checks

Stain-Free technology lets you confirm protein separation and transfer efficiency immediately after electrophoresis and blotting, helping you identify and address issues before proceeding with antibody incubation and detection.

Cover More Applications and Up to Four Targets

Interchangeable trays support chemiluminescence and fluorescence blots, Stain-Free and ethidium bromide gels, colorimetric applications, and safe DNA stains. Four-channel multiplex imaging also allows you to detect multiple fluorescent targets on a single blot.

Save Space and Energy

The compact system fits beneath standard laboratory shelving and sits flush against a back wall. An integrated status light allows researchers to monitor the imager from across the lab, while customizable standby mode helps reduce energy use.

Maintain Secure, Current Workflows

Support compliance with U.S. FDA 21 CFR Part 11 requirements for electronic records and electronic signatures with Image Lab Software, Security Edition. Over-the-air Image Lab Touch Software updates help keep your imaging workflows secure and up to date.

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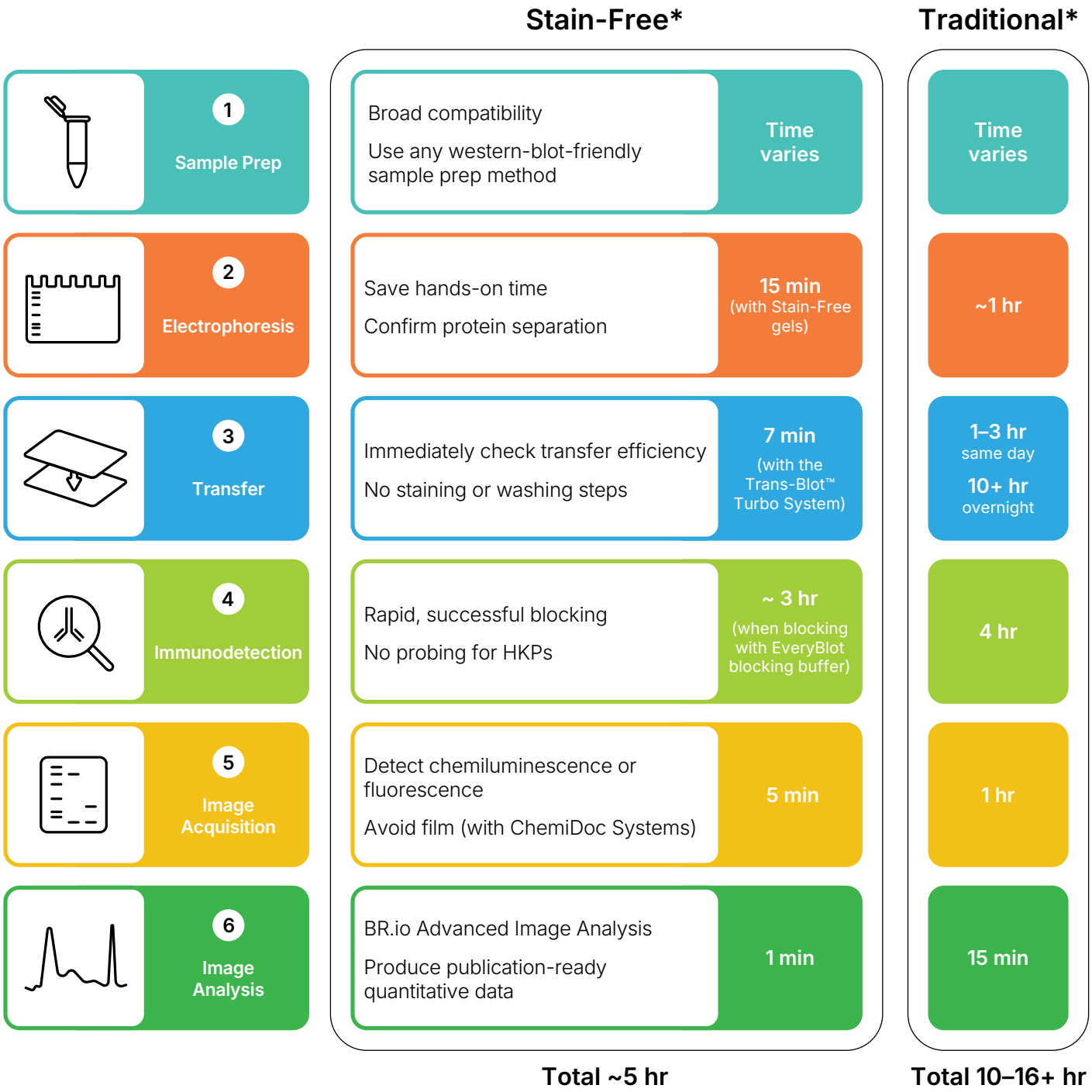
Stain-Free Western Blotting: Same Workflow, One-Third the Time

At the foundation of the ChemiDoc Pro System western blot workflow is Stain-Free technology, helping you save time and gain visibility from the start. Confirm protein separation after electrophoresis and verify transfer before adding antibodies, so you can identify potential issues before investing additional time and reagents. Compared with traditional western blotting, these built-in checkpoints and fewer processing steps reduce total workflow time from approximately 10–16 hours to ~5 hours, saving about 11 hours.



Visit **bio-rad.com/StainFree** for more information.

Stain-Free workflow completes in ~5 hours versus 10–16+ hours for traditional western blotting, with Stain-Free-enabled quality checks after key steps. Adapted from Bio-Rad bulletin 3429. HKPs, housekeeping proteins.
*Times shown are estimates for typical protocols and may vary with sample type, protocol, reagents, and instrumentation.

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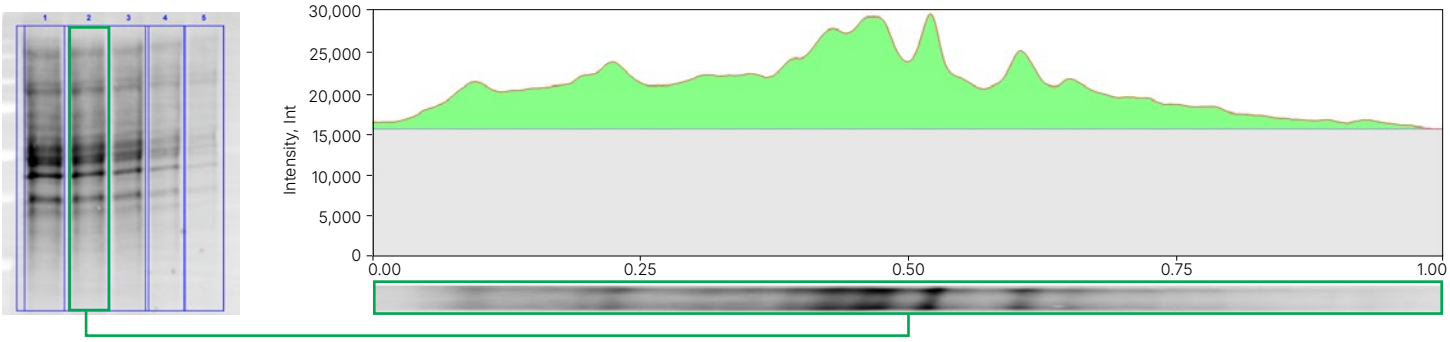
Generate More Reliable Data With Total Protein Normalization

Beyond streamlining western blotting, Stain-Free technology provides a more representative basis for normalization. By measuring the total protein signal in each lane, Stain-Free imaging eliminates reliance on a single housekeeping protein and the need to strip and reprobe for a loading control.

Normalize to Total Protein for More Reliable Comparisons

For Stain-Free total protein normalization, lane profiling measures the combined protein signal across each selected lane. By distinguishing protein signal from background, Image Lab Desktop Software generates the total protein measurement used to normalize and compare samples.



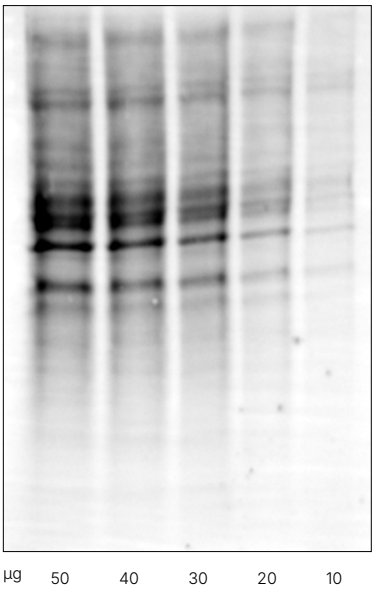
Stain-Free imaging for total protein normalization.

Lane profiling of total protein signal helps remove background and refine band detection.

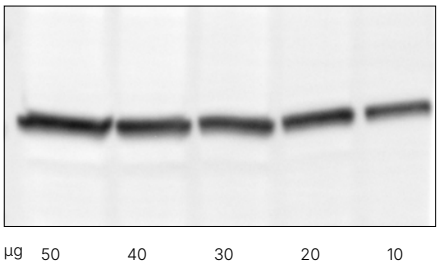
Reflect Sample Loading More Accurately

As the amount of loaded protein increases, the Stain-Free total protein signal remains close to the ideal linear response. In contrast, β-tubulin and β-actin increase less proportionally and may underestimate differences in sample loading.

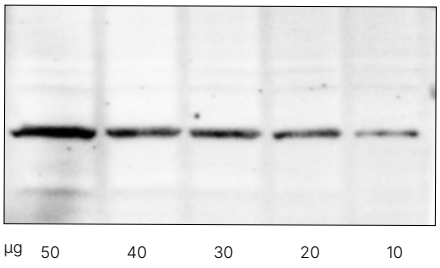
A. Stain-Free blot image



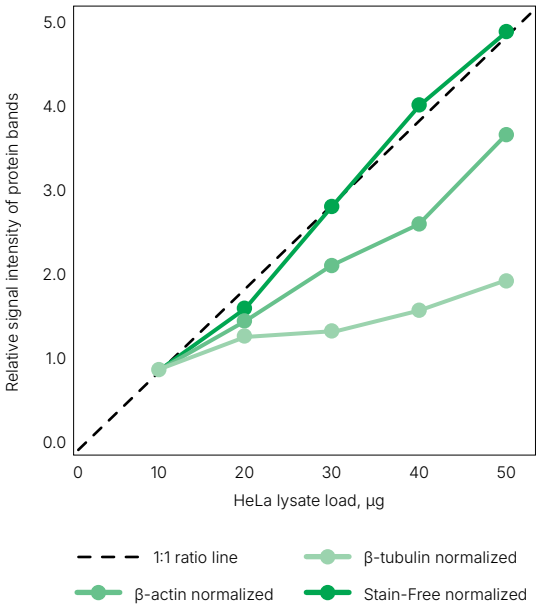
B. β-tubulin



C. β-actin



D. Linear range plot



Learn why Stain-Free technology is the foundation of reliable western blot analysis at **bio-rad.com/TPNcourse**

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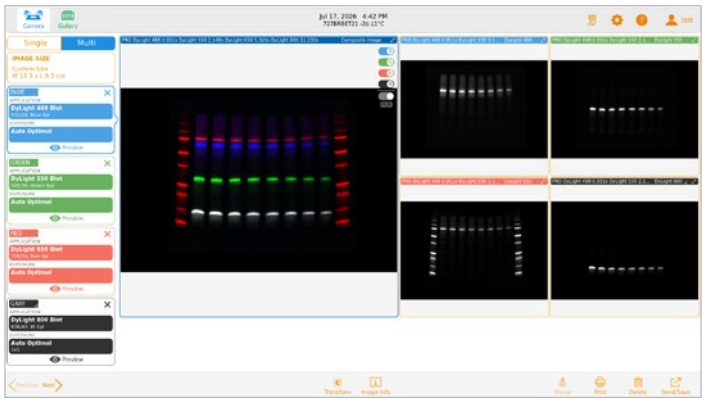
Discover More From Every Blot With Four-Channel Multiplexing

Detect and quantify up to four proteins simultaneously to conserve samples, distinguish closely sized or modified targets, and eliminate stripping, reprobing, and membrane cutting. Adapt imaging to your research by tailoring the tray, excitation source, emission filter, iris, and focus settings, then save each custom application for future use.

Isolate and Compare Signals With Ease

Image Lab Touch Software brings all four signals together in a single-color composite for a complete blot view. Intuitive controls let you turn individual channels on and off, making it easy to examine signals independently and identify areas of overlap.



Customize Imaging for Your Assay

Choose the tray and light settings, adjust the iris and focal offset, and visualize excitation and emission ranges for your application.

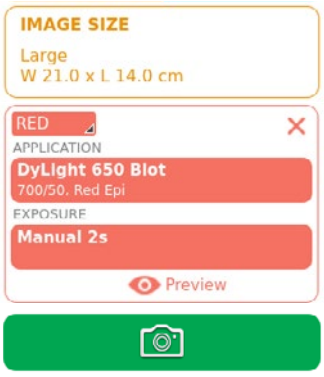
Get the Complete Picture From Every Blot

Capture faint bands and intense signals clearly in the same image. The ChemiDoc Pro Imaging System with BR.io Advanced Image Analysis combines intelligent acquisition software with high-sensitivity imaging and automated analysis to deliver clear, quantitative fluorescence and chemiluminescence images across a broad range of signal intensities.

Acquire Publication-Quality Images in Seconds

Image Lab Touch Software guides you through image acquisition and automatically selects the appropriate camera settings, illumination sources, and filters for your application.

Intuitive Workflow



Define image size

↓

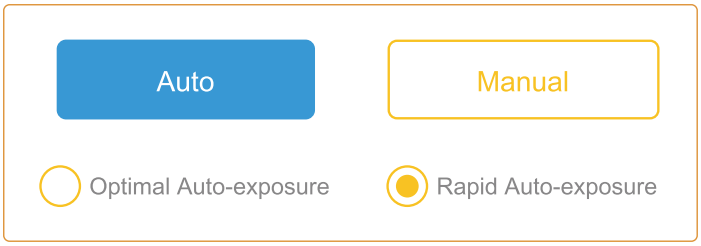
Select application and exposure

↓

Acquire image and save via USB or network

Choose the Right Auto-Exposure Setting

Select the exposure mode that best matches your imaging goal.



Optimal Auto-exposure

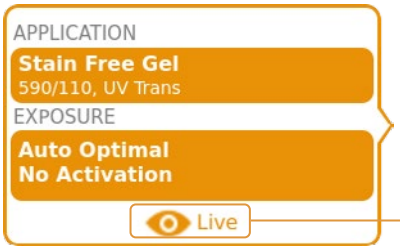
- Provides exposure with best sensitivity and dynamic range
- Recommended for quantitative evaluation

Rapid Auto-exposure

- Faster acquisition with lower sensitivity and dynamic range
- Recommended for qualitative evaluation

Optimize Exposure for the Bands That Matter Most

Image Lab Touch Software guides you through image acquisition and optimizes exposure for bands of interest. Simply define a region of interest in Preview mode to optimize exposure for specific bands. Preview mode ensures the full dynamic range of your detector is used for the bands that matter most.



Select Region of Interest

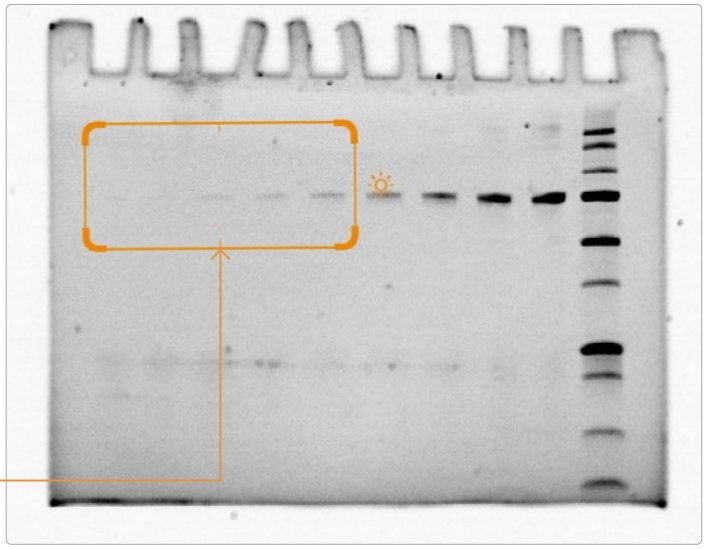
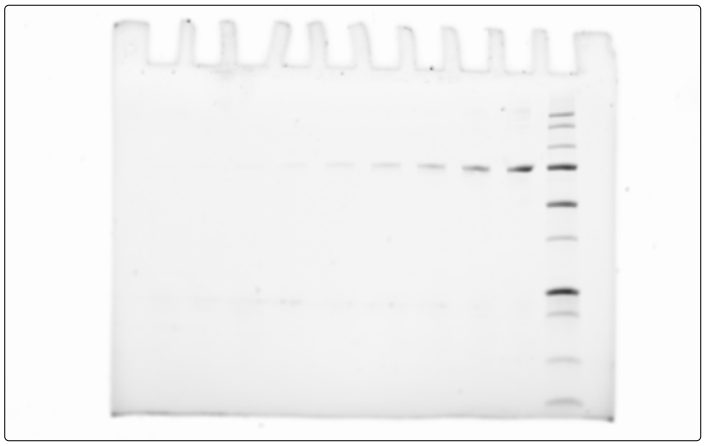
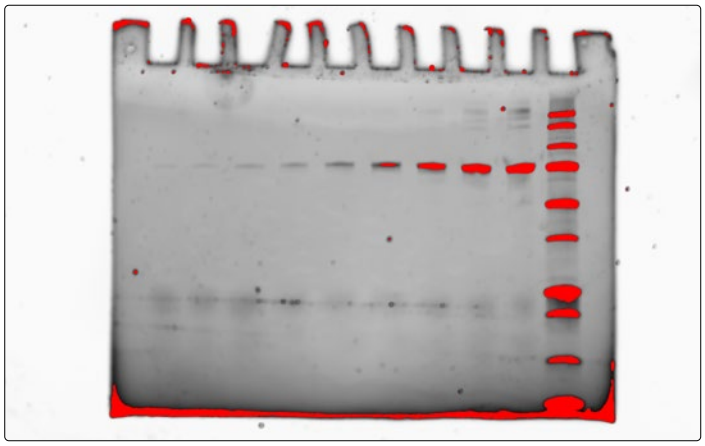


Image Exposure Optimization

Use Preview mode to fine-tune exposure in real time, so you get the right image for your gels and blots on the first try, with no re-imaging.





Optimal Auto-exposure. Full field of view, exposure time 2.768 seconds (left). Selected region of interest (orange above), with red indicating saturation, exposure time 20.694 seconds (right).

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Capture Clear Fluorescence and Chemiluminescence Images

The ChemiDoc Pro System combines a high-sensitivity CMOS sensor, high-intensity LED excitation, mechanical zoom,* and Advanced Image Analysis on the BR.io Cloud Platform to capture clear, quantitative fluorescence and chemiluminescence images, even in low-light conditions. Advanced Image Analysis helps distinguish overlapping signals from four independent fluorescence channels, including signals from modified and unmodified target forms. To expand your multiplexing options, use the TrailBlazer™ Antibody Tag Kit to conjugate primary antibodies with StarBright™ Dyes.

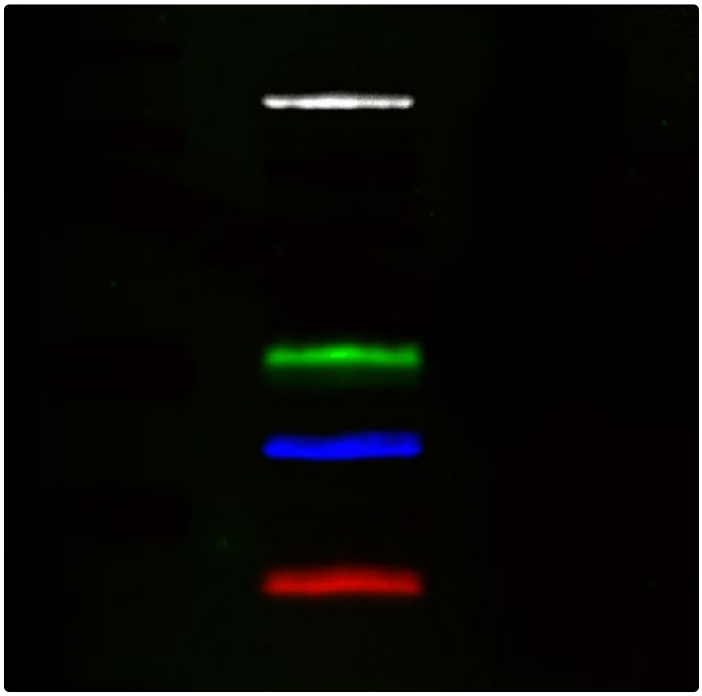
Four-Color Multiplex Protein Detection

White: StarBright Violet 515 conjugated to Poly (ADP-Ribose) Polymerase 1 IgG1 Antibody

Green: StarBright Yellow 605 conjugated to p53 IgG2a Antibody

Blue: Beta Actin Primary Antibody detected with a StarBright Blue 700 Secondary Antibody

Red: StarBright Red 815 conjugated to Proliferating Cell Nuclear Antigen IgG2a Antibody



TrailBlazer

StarBright Dyes

BR.io

Generate Accurate, Reproducible Western Blot Data Every Time With Advanced Image Analysis on the BR.io Cloud Platform

Move effortlessly from image capture to automated analysis using BR.io Advanced Image Analysis. The ChemiDoc Pro Imaging System transfers images automatically to the BR.io Platform with no USB required. BR.io Advanced Image Analysis streamlines and automates analysis, helping deliver consistent, reproducible results.

- Automatically detect bands and lanes and generate an exportable analysis table
- Determine molecular weight, subtract background, and compare band intensity
- Access unlimited cloud storage from any computer
- Protect your data in the cloud with enterprise-grade security and encryption

*U.S. Patent No. 9,618,733.

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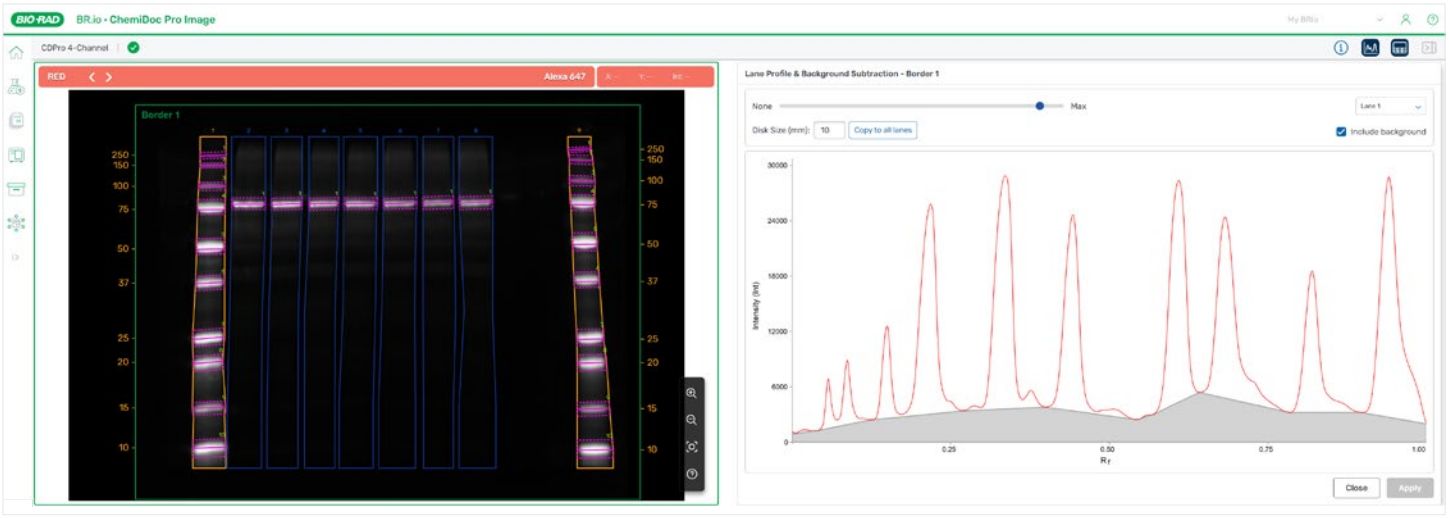
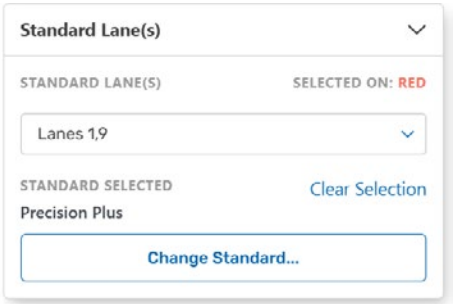
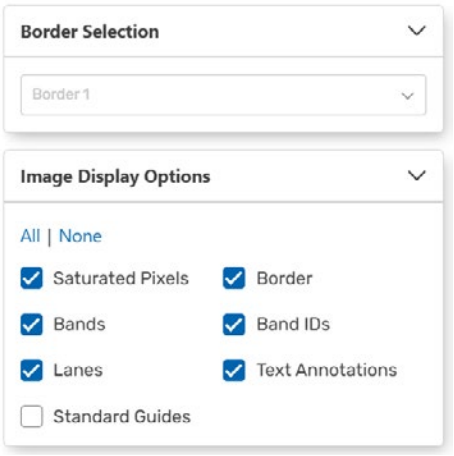
Distinguish True Signal From Background

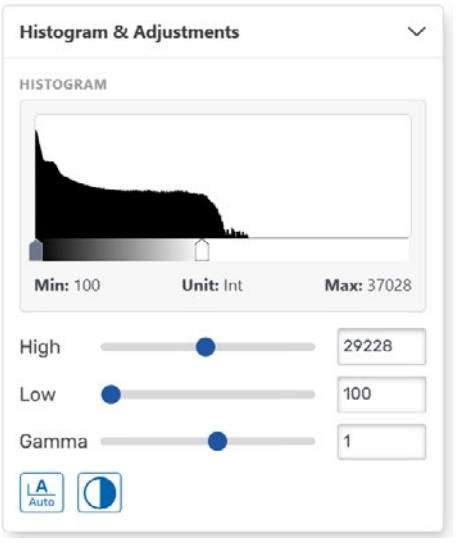
Advanced Image Analysis on the BR.io Cloud Platform displays detected bands in a lane profile, where each peak represents the signal from an individual protein band. The software distinguishes each band's signal from the underlying background, enabling accurate measurement and comparison of band intensity across lanes and samples.



Advanced Image Analysis automatically finds your bands and creates lanes as soon as your image is uploaded to the BR.io Platform. If you prefer to make custom adjustments, familiar editing tools are available.



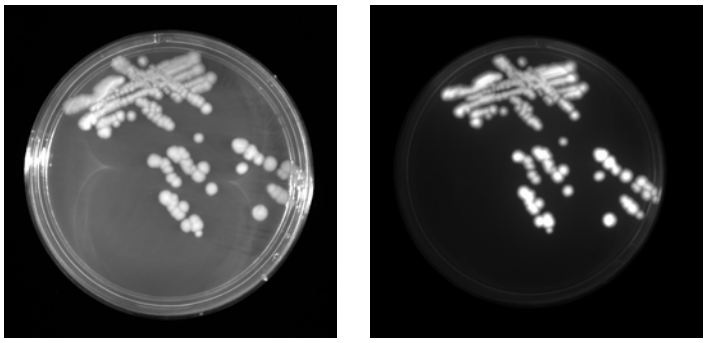




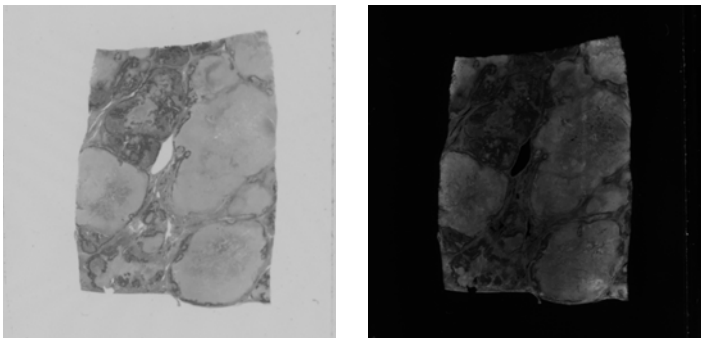
Go Beyond Western Blotting With Expanded Imaging Capabilities

The ChemiDoc Pro Imaging System supports applications beyond western blotting, helping you capture, review, and document multiple sample formats.

- In-Cell Western (ICW) assays
- Tissue slide documentation
- Cell-culture plates
- Bioluminescence



***E. coli* transformed with pGLO plasmid.** Colorimetric application on Blot Tray (left), and Alexa Fluor 488 application on Blot Tray (right).



Human liver metastatic carcinoma. FastBlast application on White Tray (left), and custom application for fluorescence: Epi-Blue, Green filter, iris 10%, Blot Tray (right).

Protect Electronic Records With Confidence

Support secure, traceable workflows in regulated pharmaceutical and biotechnology environments. When properly configured and administered, Image Lab Software, Security Edition, helps laboratories support 21 CFR Part 11 and FDA cGMP requirements by enabling the secure maintenance, verification, and tracking of electronic records generated by Image Lab Touch Software on the ChemiDoc Pro Imaging System.

- Control system access with unique user identification codes and passwords
- Protect electronic records in secured directories
- Track record activity through time- and date-stamped audit trails
- Authenticate users when electronic signatures are applied

FDA
21 CFR Part 11

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ChemiDoc Pro Imaging System Specifications

Automation Capabilities

Feature	Description
BR.io Advanced Image Analysis	Automated blot and gel analysis and storage in BR.io Cloud Platform
Smart Tray Technology*	ChemiDoc Imaging Systems automatically recognize your application-specific tray and adjust imaging parameters and software options accordingly
Auto-focus	Precalibrated focus for any zoom setting or sample height
Auto-exposure	Two auto-exposure algorithms (rapid or optimal)
Signal Accumulation Mode (SAM)	Automates image capture for chemiluminescent blots and Stain-Free gel activation
Image flat fielding	Dynamic; precalibrated and optimized for every application

*U.S. patent 8,913,127.

Hardware Specifications

Specification	Details
Touch-screen functionality	Multitouch capable (2 points)
Display resolution	1,920 x 1,080 pixels
Display size	13.3 in
Maximum image area (W x H)	21 x 14 cm
Detector†	Cooled back-side illuminated (BSI) CMOS, 9.07 megapixels
Quantum efficiency (QE)	~80% QE at 425 nm, maximum QE of ~90% at 530 nm
Bit depth	65,535
Dynamic range	>4 orders of magnitude
LED excitation sources	Trans-UV Trans-Blue Trans-Amber Epi-UV Epi-Blue Epi-Green Epi-Red Epi-Far Red Epi-IR
Emission filters	Chemiluminescence, 511/252 Standard/gel, 590/110 Blue, 532/28 Green, 595/36 Red, 700/50 Far red, 715/30 Infrared, 836/47
Data output	Image Lab SCN, MSCN, SSCN, MSSCN, TIFF (16-bit or 8-bit), and JPEG
Instrument weight	39 kg, 86 lb
Instrument size (W x D x H)	45 x 62.5 x 45 cm
Operating voltage	100–250 V, 50–60 Hz
Operating temperature	10–28°C
Operating humidity	20–80% relative humidity (noncondensing)

†U.S. patent pending.

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Ordering Information

Imaging System

17011351	The ChemiDoc Pro Imaging System is a full-feature instrument for imaging and quantifying nucleic acids and protein in gels and western blots. Capable of imaging fluorescent western blots (RGB, far-red, near-IR), chemiluminescent western blots, all common nucleic acid and protein gel stains, plus Stain-Free gels. Includes internal computer, 13.3" touch-screen display, CMOS camera, Blot Tray, UV Tray, White Tray, and Blue Tray with XcitaBlue Goggles and Storage Rack, Image Lab Touch Software, Image Lab Desktop Software, and BR.io Advanced Image Analysis.

ChemiDoc Pro System Imaging Tray

12026421	Blot Tray for ChemiDoc Pro Imaging System (1 unit included in 17011351)
12019873	White Sample Tray for ChemiDoc Pro and ChemiDoc Go Imaging Systems (1 unit included in 17011351)
12019748	Blue Sample Tray for ChemiDoc Pro and ChemiDoc Go Imaging Systems with XcitaBlue Viewing Goggles (1 unit included in 17011351)
12012189	UV/Stain-Free Sample Tray for ChemiDoc Pro, ChemiDoc Go, and GelDoc™ Go Imaging Systems (1 unit included in 17011351)

Analysis Software

12012931	Image Lab Software on USB drive (available free for download at Bio-Rad.com/ImageLab)
17006130	Image Lab Software, Security Edition, 1 license
17006171	Image Lab Software, Security Edition, 5 licenses
17006172	Image Lab Software, Security Edition, 10 licenses

Additional Accessories

12012164	UV Safety Shield for ChemiDoc Pro, ChemiDoc Go, and GelDoc Go Imaging Systems
1708377	Holder for Sample Trays and UV Shield (1 unit included in 17011351)
1708185	XcitaBlue Viewing Goggles (1 unit included in 17011351)
12012190	Gel Alignment Templates for ChemiDoc Pro, ChemiDoc Go, and GelDoc Go Imaging Systems (1 unit included in 17011351)
12026511	Microscope Slide Alignment Template for the ChemiDoc Pro, ChemiDoc Go, and GelDoc Go Imaging Systems (1 unit included in 17011351)
12023287	IQ/OQ Kit for the ChemiDoc Pro Imaging System, for installation qualification and operational qualification
1703760	Gel Cutter
1653320	Gel Releasers
12018650	Wi-Fi Adapter, U.S. Only
12018509	Wi-Fi Adapter, Global (except India)

Visit **bio-rad.com/ChemiDocPro** for more information.

The ChemiDoc Pro, ChemiDoc Go, and GelDoc Go Imaging Systems mentioned in this brochure are for Research Use Only. Not for use in diagnostic procedures.

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