invitrogen

STUNNINGLY EASY WESTERN BLOT AND GEL IMAGING

iBright Imaging Systems for western blot and gel documentation

ThermoFisher SCIENTIFIC

State-of-the-art western blot and gel imaging systems

Invitrogen™ iBright™ Imaging Systems offer multiple powerful features to help make imaging and analyzing western blots and gels easy. The high-resolution 9.1-megapixel (MP) camera and suite of automated features help you produce publication-quality data fast. Our touchscreen interface is carefully crafted to provide a smooth image capture experience. Built-in software and stand-alone Invitrogen™ iBright™ Analysis Software are designed to streamline image analysis. Read on to see how you can empower your lab with an iBright Imaging System.

Watch now: iBright Imaging Systems overview »

iBright Imaging Systems family

Invitrogen™ iBright™ CL750 Imaging System

Core essential western blot and gel imaging functions to efficiently transition from the darkroom and film

Invitrogen™ iBright™ CL1500 Imaging System

Expanded application support with many of the same high-performance specifications as the premier iBright FL1500 model

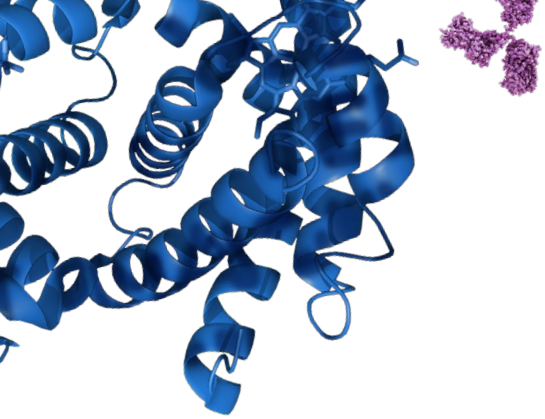
Invitrogen™ iBright™ FL1500 Imaging System

Maximum application support, including fluorescent western blot imaging with up to four fluorescence channels at a time

Green LED-powered transilluminator

Large 18.0 cm x 22.5 cm imaging area

Benchtop footprint



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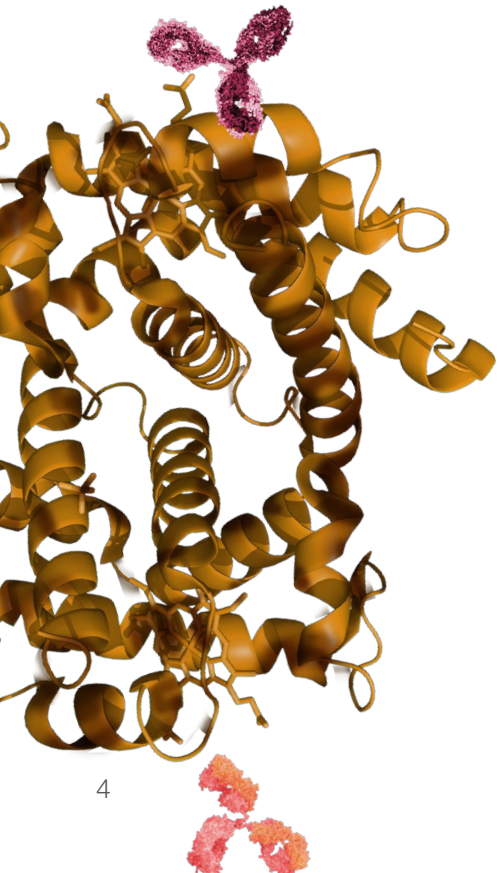
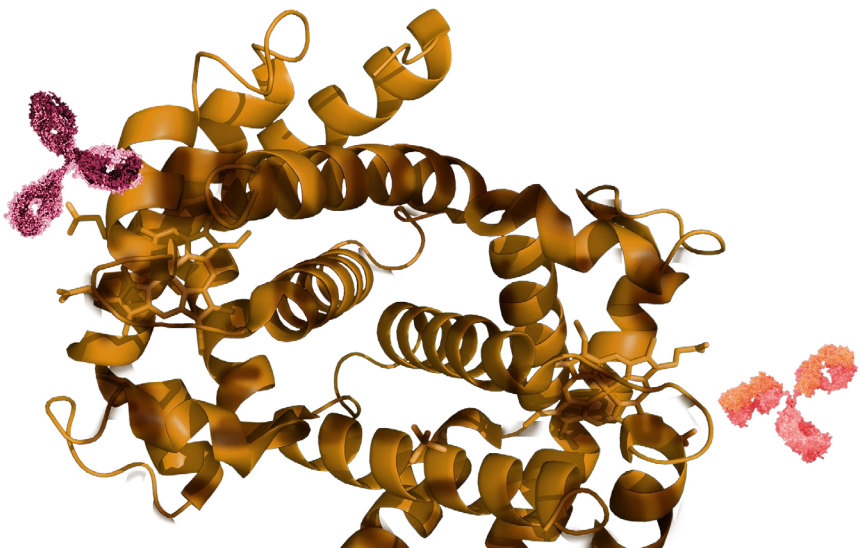




Convenient, intuitive operation and workflows

Feel at home with our touchscreen interface

The 12.1-inch capacitive LCD screen on iBright Imaging Systems responds similarly to your other high-quality touchscreen devices.

Zoom in

Zoom out

Pan

Swipe

The interface layout is simple and easy to learn. Workflows are similar between imaging modes for a smooth imaging experience regardless of sample type.

Gallery: access previously captured images

Mode selection: dropdown menu to select imaging modes (chemiluminescent blot, fluorescent blot, nucleic acid gel, protein gel, and universal mode)

Help: on-board help and information

Settings: access general instrument settings, configurations, and service tools

Sign in: create a new user account or sign in to an existing account

Drawer: open or close the sample drawer

Color option: select color or grayscale image view

Exposure dial: select or turn the dial to set manual exposure time or fine-tune exposure time

Image view window: display selected image in the window for user view and interaction

Capture: acquire images using exposure time set by user or instrument

Edit channels: open multiple channel options to review and edit each channel

Split screen: select one-window or two-window image view

More options: open image adjustment options

Trash: delete current images

Export: edit image information and export current images to destinations of choice

Analyze: initiate analysis workflow using current images

Live view: go back to live-streaming sample view

Figure 1. View of the fluorescent blots mode of the iBright FL1500 Imaging System.

Watch now: Capture images fast with Smart Exposure technology »

Powerful camera and automated technologies

Get publication-quality data fast

Capture crisp, clear, publication-quality images with a 9.1-MP cooled charge-coupled device (CCD) camera. With a large pixel depth, you can choose to take full advantage of the camera's high resolution, or bin (combine) pixels to increase sensitivity when needed. However, when adjusting binning there is a trade-off between image resolution, sensitivity, and image capture speed. In each image capture mode, iBright Imaging Systems have a default binning setting to balance resolution, sensitivity, and image capture speed, but binning can also be adjusted, offering flexibility. Take the guesswork out of achieving the optimal image with automatic exposure, sample rotation, zoom, and focus.

Smart Exposure automatic-exposure technology

Smart Exposure™ technology rapidly determines optimal exposure time, minimizing the potential for over- or underexposed images and the need to repeat exposures to capture the desired signal.

- Available in all models and in all 5 detection modes
- In fluorescent blot mode, optimal exposure times for each channel are determined separately
- Smart Exposure technology can also be applied to a specific region of interest within a gel or blot, which can be useful if the sample has undesired artifacts that produce nonspecific signal or if certain lanes are not of interest

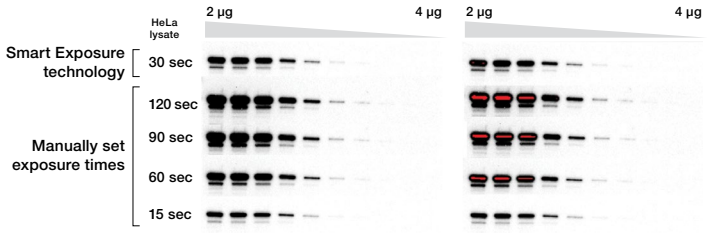


Figure 2. Minimal pixel saturation is observed in the image captured with exposure time determined by Smart Exposure technology, while the range of data captured is maximized. The set of images on the right is the same as the images on the left, but with the saturated pixels feature of the iBright system turned on (saturated pixels are displayed in red). The same blot was imaged using the exposure time determined by Smart Exposure technology, or four manually set exposure times.

Automatic sample rotation

Rather than having to open the sample drawer and repeatedly reposition your sample to achieve proper alignment, iBright CL1500 and FL1500 Imaging Systems automatically determine the sample position and can rotate samples left or right up to 10° on a mechanically rotating sample stage. Mechanical rotation eliminates the need to digitally rotate the sample, which preserves the integrity of the data, as digital rotation can lead to data alterations.

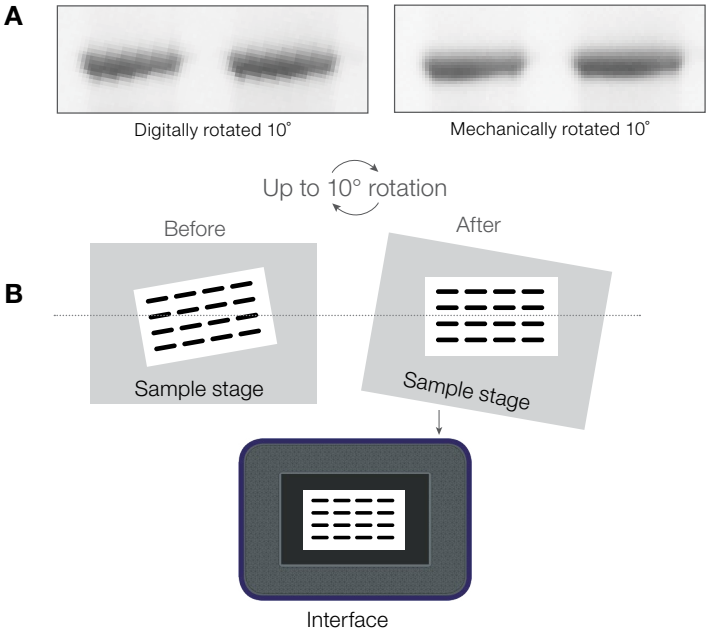


Figure 3. Digital rotation vs. mechanical rotation. (A) Pixels rotate with digital rotation so bands appear jagged. With mechanical rotation, the sample itself rotates, so bands remain smooth in appearance as the pixels remain aligned. **(B)** Graphic depicting iBright Imaging System sample stage before and after rotation.

Automatic zoom and automatic focus

In addition, iBright Imaging Systems automatically determine if the sample requires zoom in order to maximally utilize the 22.5 cm x 18.0 cm field of view. If imaging a single blot or gel, the camera will automatically zoom toward the sample up to a 2x zoom. 1–2x zoom is mechanical with iBright CL1500 and FL1500 Imaging Systems, whereas 1–2x zoom is digital with iBright CL750 Imaging Systems. Mechanical zoom maximizes sensitivity by moving the camera closer to the sample stage and thus reduces focal length.

- iBright CL1500 and FL1500 systems offer 1–8x zoom (1–2x mechanical + 1–4x digital)
- iBright CL750 system offers 1–2x digital zoom
- Focus is automatically adjusted for each zoom level

1x zoom: (no zoom) field of view is 22.5 x 18.0 cm (W x D), ideal for 4 mini gels/membranes for high-throughput imaging
2x zoom: field of view encompasses 1 mini or midi gel/membrane
4–8x zoom: see fine band detail—may be useful for visualizing bands that are close together in molecular weight

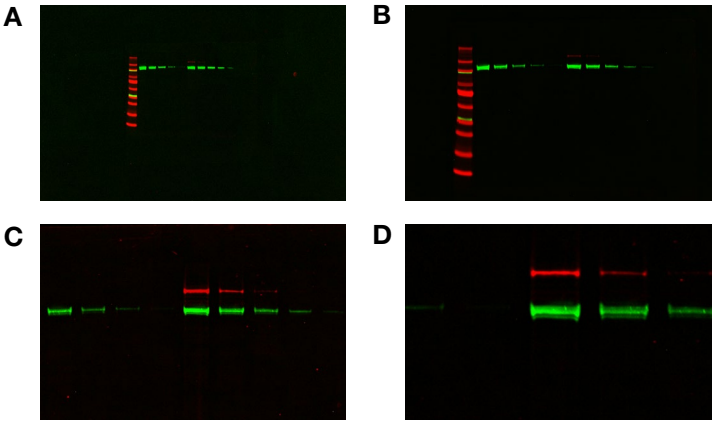


Figure 4. Zoom function. (A) Unzoomed image of a fluorescent western blot. **(B)** Blot at 2x zoom. **(C)** Blot at 4x zoom. **(D)** Blot at 8x zoom. (blot not repositioned during successive zooms)

Essential imaging modes and applications

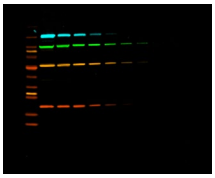
The core applications you need and the specialty applications you want

iBright Imaging Systems offer up to five imaging modes to support multiple applications. Efficiently and easily capture data from protein gels, nucleic acid gels, chemiluminescent western blots, fluorescent western blots, and more. A visible image of the sample (gel or membrane) is automatically captured in each imaging mode, which can simplify image analysis workflows such as molecular weight analysis.

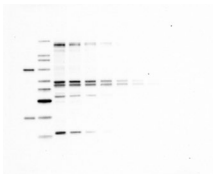
Table 1. Image capture modes.

Imaging mode	What examples of signal can be captured?
Protein gel	Colorimetric staining of gels (e.g., Thermo Scientific™ Pierce™ Silver Stain and Invitrogen™ Simply Blue™ Safe Stain) and membranes (e.g., Ponceau S, Thermo Scientific™ Pierce™ Reversible Protein Stain), fluorescence staining of gels (e.g., Invitrogen™ SYPRO™ Ruby Stain)
Nucleic acid gel	Ethidium bromide and a variety of fluorescent nucleic acid stains (e.g. Invitrogen™ SYBR™ stains)
Chemiluminescent blot	Chemiluminescence with horseradish peroxidase (HRP) and alkaline phosphatase (AP) substrates (e.g., Thermo Scientific™ SuperSignal™ and Invitrogen™ WesternBreeze™ substrates)
Fluorescent blot	Fluorescence with visible range and near-infrared (near-IR) fluorophores (e.g., Invitrogen™ Alexa Fluor™ and Alexa Fluor™ Plus conjugates)
Universal	Custom mode to image samples containing multiple signals, such as chemiluminescence, fluorescence, colorimetric stains, and/or visible images; image display is similar to fluorescent blot mode and allows one to assign false color to any sample

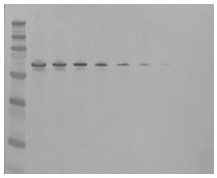
Core imaging applications



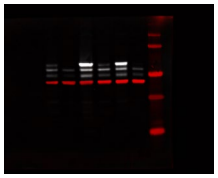
Fluorescent western blots



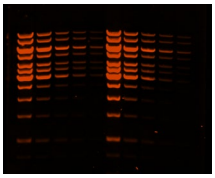
Chemiluminescent western blots



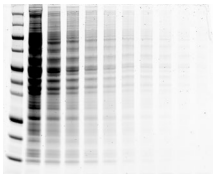
Colorimetric western blots



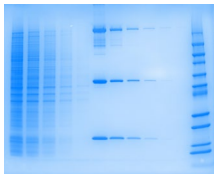
Combined fluorescent and chemiluminescent western blots



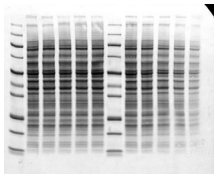
Fluorescently stained nucleic acid gels



Fluorescently stained protein gels

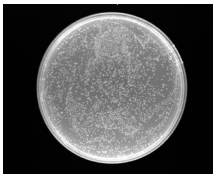


Colorimetric stained protein gels

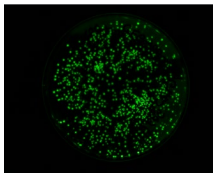


Colorimetric membrane stains

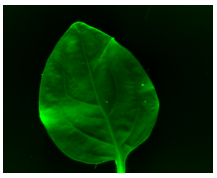
Specialty imaging applications*



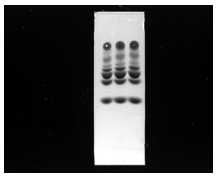
Colony plates



GFP expression in plates



Leaf sections



Thin-layer chromatography (TLC) plates

Figure 5. Images pictured for fluorescently stained nucleic acid gels and protein gels stained for colorimetric detection shown in pseudocolor (false color applied). Data are captured in grayscale.

* Applications provide a qualitative visualization of the object or confirmation of the presence of signal. Not recommended for quantitation.

Accelerate your work with multiplexed fluorescence

Expand the possibilities—enabling you to get more data with each experiment

Multiplexing helps make research more efficient and productive. You can visualize the signal from a protein of interest simultaneously with the signal of a loading control protein, differentiate proteins of similar molecular weights, and evaluate complex biological pathways. With the five fluorescent channels of the iBright FL1500 Imaging System, researchers can multiplex with up to four fluorophores, combining fluorophores in both the visible fluorescence range and near-IR range.

Smart Exposure acquisition technology further improves the capture of multiplexed fluorescence western blot data, because exposure times are optimized for each fluorescence channel separately.

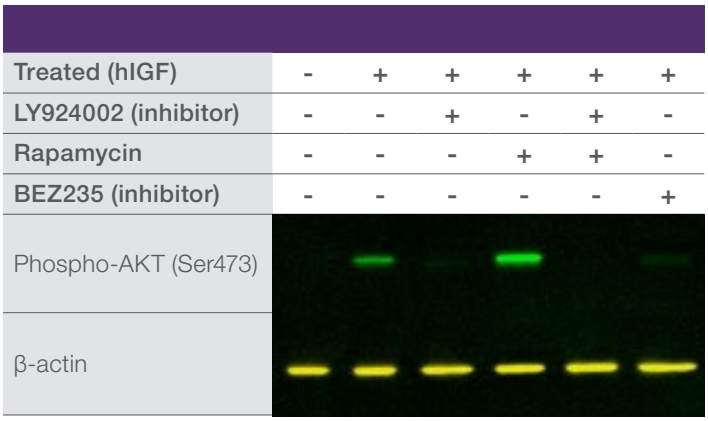


Figure 6. With fluorescence multiplexing, the signal of each protein is captured in different fluorescence channels, which enables detection of two or more proteins on the same blot without stripping and reprobing. Human colon cancer cells (HCT116) were serum-starved for 24 hours and pretreated with LY294002 (50 µM, 1 hr), rapamycin (10 nM, 1 hr) and/or BEZ235 (500 nM, 1 hr). Following pretreatment, Insulin-like growth factor-1 (hIGF-1) was added to each sample (12.8 nM, 15 min). Cells were lysed and prepared for reducing SDS-PAGE and 20 µg of each sample was electrophoresed on a Invitrogen™ Novex™ 4-20% Tris-Glycine Gel, WedgeWell™ format. The protein was transferred to PVDF membrane and the resulting blot was blocked with Thermo Scientific™ Blocker™ FL buffer and then probed with the following primary antibodies overnight: anti-pAKT Rabbit mAb and anti-β-actin Mouse mAb. The blot was washed and probed with the following secondary antibodies for one hour: Invitrogen™ Goat Anti–Rabbit IgG–Alexa Fluor™ Plus 546 and Goat Anti–Mouse IgG–Alexa Fluor™ Plus 800 conjugates. The blot was then washed and imaged on the iBright FL1500 Imager using appropriate settings. Composite image shows the overlayed channels from each protein (p-AKT: Alexa Fluor Plus 800 conjugate) and β-actin: Alexa Fluor Plus 546 conjugate)).

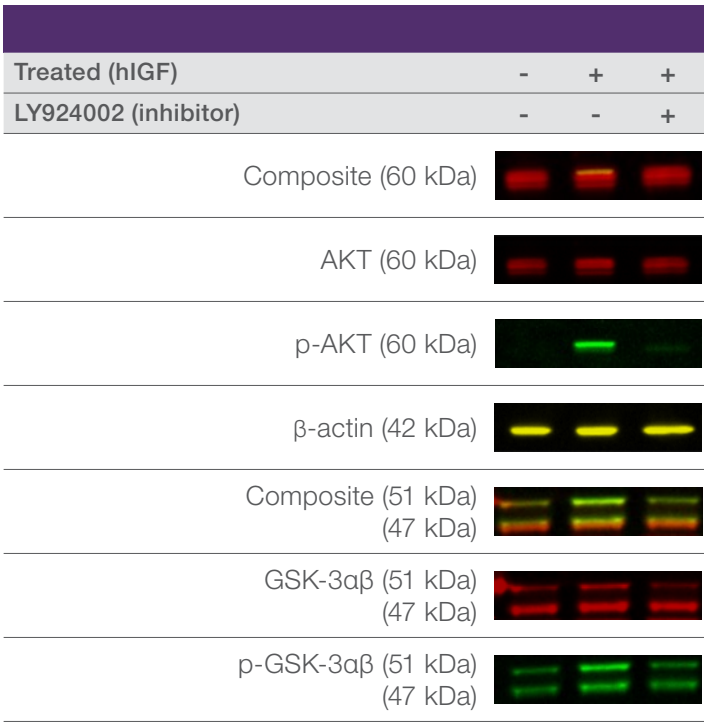
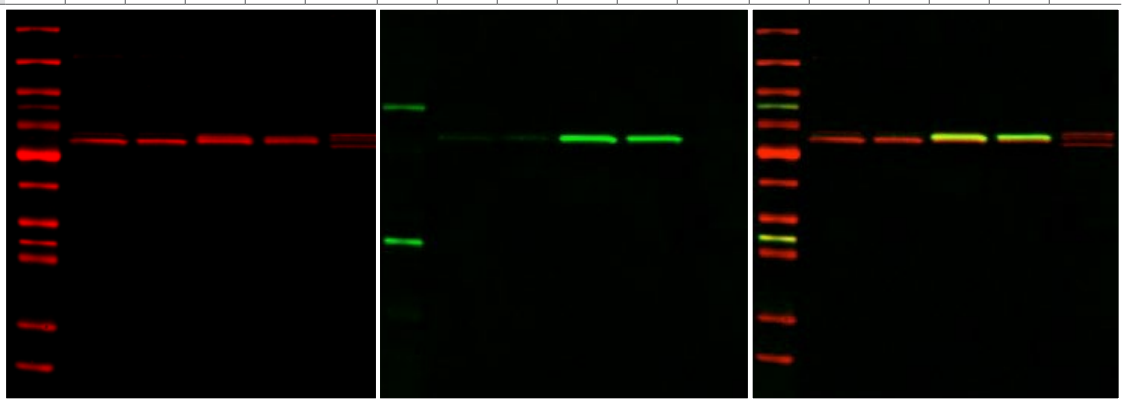


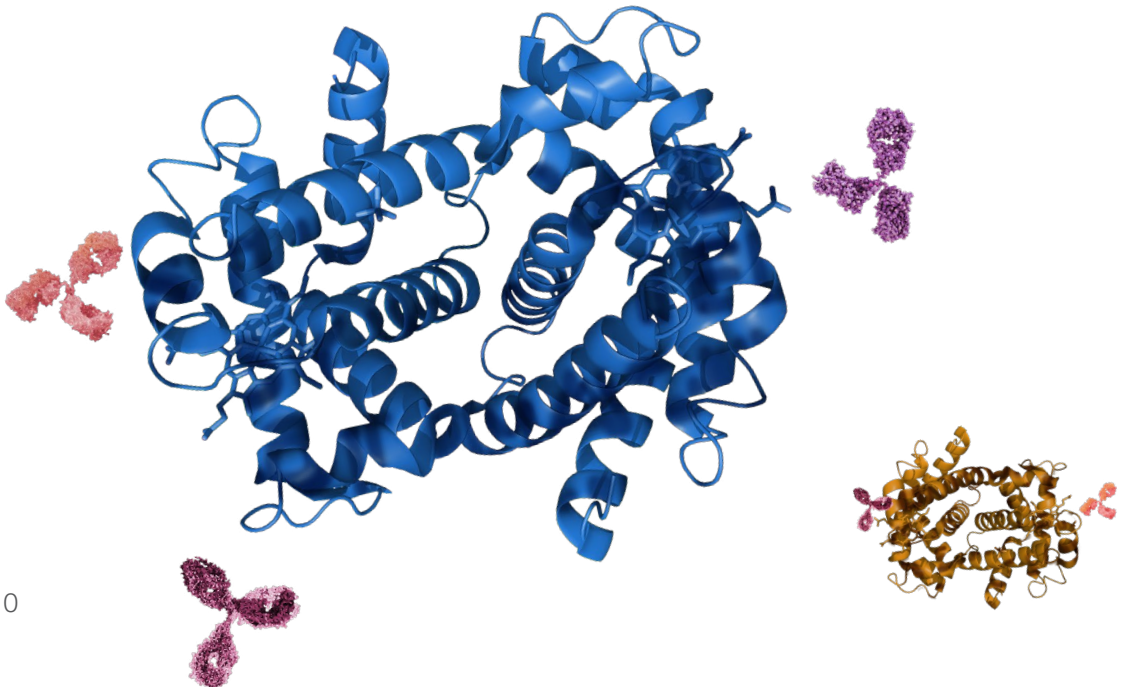
Figure 7. Leverage multiplexing to use western blotting as a tool to study complex biological pathways. Western blot analysis demonstrating the phosphorylation of AKT and GSK-3αβ after IGF-1 treatment of human colon cancer cells (HCT116). HCT116 cells were serum-starved for 24 hours and pretreated with the PI3K pathway inhibitor LY294002 (50 µM, 1 hr). Following pretreatment, Insulin-like growth factor-1 (hIGF-1) was added to each sample (12.8 nM, 15 min) to activate the PI3K pathway. Cells were lysed and prepared for reducing SDS-PAGE and 30 µg of each sample was electrophoresed on a Novex 4-20% Tris-Glycine Gel, WedgeWell format. The protein was transferred to PVDF membrane and the resulting blot was blocked with Blocker FL buffer. Blot 1 was probed with primary antibodies anti-pAKT rabbit mAb and anti-AKT mouse mAb overnight. Blot 1 was washed and probed with Invitrogen™ Goat Anti-Rabbit Alexa Fluor™ Plus 800 and Goat Anti-Mouse Alexa Fluor™ Plus 647 conjugates. Blot1 was washed again and probed with Invitrogen™ anti-β-actin mAb DyLight™ 488 conjugate for one hour. Blot 1 washed and imaged on the iBright FL1500 Imager using appropriate settings.Blot 2 was probed with primary antibodies anti-p-GSK-3αβ rabbit mAb and anti-GSK-3αβ mouse mAb overnight. Blot 2 was washed and probed with Invitrogen™ Goat Anti–Rabbit IgG–Alexa Fluor™ Plus 647 and Goat Anti–Mouse IgG–Alexa Fluor Plus 800 conjugates. Blot 2 was washed and imaged on the iBright FL1500 Imager using appropriate settings.

Sample	NIH-3T3				HeLa	NIH-3T3				HeLa	NIH-3T3				HeLa
Load (µg):	20	10	20	10	10	20	10	20	10	10	20	10	20	10	10
PDGF	-	-	+	+	-	-	-	+	+	-	-	-	+	+	-

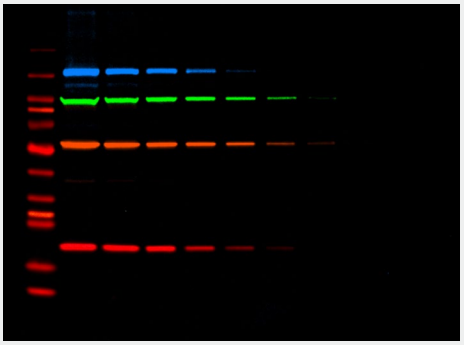


AKT Phospho-AKT Composite

Figure 8. Fluorescent multiplexing allows for clear distinction of multiple targets on the same blot, even when they have similar molecular weights. A composite image is shown along with images showing the single-color signals of individual proteins. Visualizing the individual signals can enable assessment of details that may be harder to see in a composite. PDGF was used to induce phosphorylation of AKT (Ser 473) in mouse embryo fibroblast cells (NIH-3T3). The cells were lysed and prepared for reducing SDS-PAGE and electrophoresed on a Novex 4-20% Tris-Glycine Gel, WedgeWell format. The proteins were transferred to PVDF membrane and the resulting blot was blocked with Blocker FL buffer and probed with the following primary antibodies overnight: anti-pAKT rabbit mAb and anti-AKT mouse MAb. Blot was washed and probed with the following secondary antibodies for one hour: Goat Anti–Rabbit IgG–Alexa Fluor Plus 647 and Goat Anti–Mouse IgG–Alexa Fluor Plus 800 conjugates. The blot was washed and imaged on the iBright FL1500 Imager using appropriate settings.



Multiplex with up to four fluorophores and simultaneously capture a membrane image

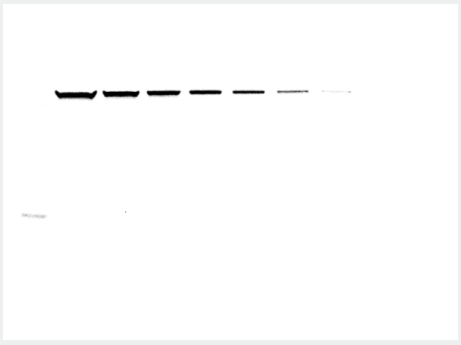


Four-color fluorescent blot

Alexa Fluor Plus 488 dye—RB1 protein with GST and HA tag (134 kDa)

Alexa Fluor 546 dye—calreticulin protein (55 kDa)

Alexa Fluor Plus 680 dye—p23 protein (23 kDa)



Alexa Fluor Plus 800 dye—HSP90 protein (90 kDa)

Membrane—iBright prestained marker

Figure 9. Four-color multiplexed fluorescent blot: false-color composite top left, and individual channels shown in grayscale as pictured.

Table 2. iBright FL1500 Imaging System filter sets.

Excitation channel	Filter range (nm)	Emission channel	Filter range (nm)	Compatible fluorophore examples
EX1	455-485	EM1	508-537	Alexa Fluor 488, Alexa Fluor Plus 488
EX2	515-545	EM2	568-617	Alexa Fluor 546, Alexa Fluor Plus 555
EX3	608-632	EM3	675-720	Alexa Fluor 647, Alexa Fluor Plus 647
EX4	610-660	EM4	710-730	Alexa Fluor 680, Alexa Fluor Plus 680
EX5	745-765	EM5	800-850	Alexa Fluor 790, Alexa Fluor Plus 800
EX (Green Trans)	490-520	EM2	568-617	Ethidium Bromide, SYBR Safe, SYBR Gold, SYPRO Ruby, SYPRO Orange

Note: Avoid using channels EX3/EM3 and EX4/EM4 together in a multiplex experiment because of the high degree of spectral overlap of dyes that would be captured in these channels.

Streamlined image analysis

Complete the simple data capture experience with on-instrument data analysis and iBright Analysis Software

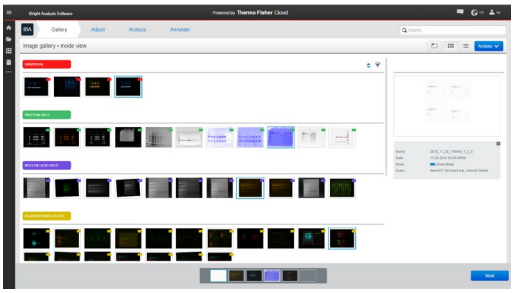
Invitrogen™ iBright™ Analysis Software is our free software for organizing and analyzing images captured on iBright Imaging Systems. Our iBright Analysis Software was designed to build upon the analysis functions that can be performed through the instrument's on-board software, with the convenience of multiple software formats depending on preference and need.

The standard iBright Analysis Software is available in two formats: a desktop version (compatible with both PC and macOS™ computers) and a version accessible via web browser through our cloud-based Thermo Fisher™ Connect Platform. We also offer a third version of iBright Analysis Software called iBright Analysis Software—Secure, adapted from the desktop version of our software and designed to support FDA Regulation 21 CFR Part 11 compliance as part of our 21 CFR Part 11 compliance support package.

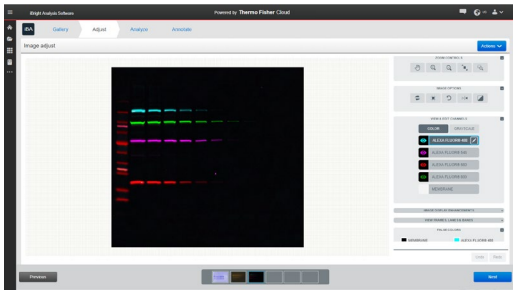
All versions of iBright Analysis Software utilize four main workspaces: gallery, adjust, analyze, and annotate. Whether making a simple adjustment for a presentation, or to compare subtle differences between important samples, our software has you covered. We regularly update our software to add new features and to continuously improve the user experience.

Watch now: Analyzing images on-board iBright Imaging Systems »

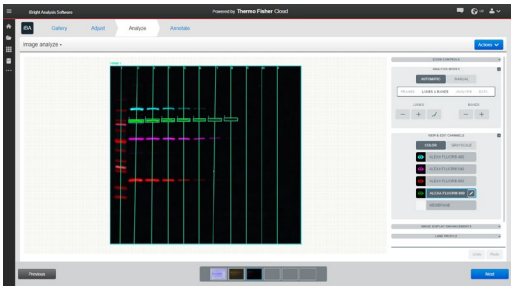
iBright Analysis Software workspaces



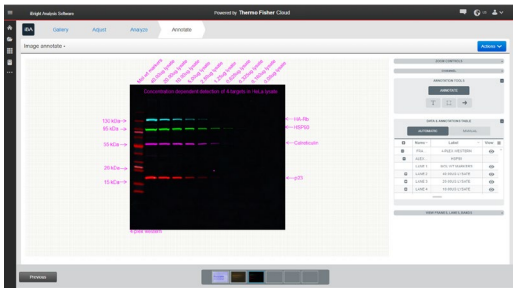
The "Gallery" tab contains tools to store, view, and manage your image files.



The "Adjust" tab contains image-editing tools.



The "Analyze" tab contains tools for lane and band analysis.



The "Annotate" tab contains tools to add notes to images.

For further details about the Connect Platform and data security, go to **thermofisher.com/cloudsecurity**

Integrated 21 CFR Part 11 compliance support

Flexible software solution to enable requirements for security, auditing, and electronic signatures

The FDA released the Electronic Records and Signatures Rule, known as 21 CFR Part 11 in August 1997. This rule defines the requirements for the use of electronic documents in place of paper documents. The law specifies the system elements, controls, and procedures that are necessary to ensure the reliability of electronically stored records.

21 CFR Part 11 compliance is composed of both procedural and technical requirements. Procedural requirements are the standard operating procedures instituted by the end user, and technical requirements are the functional characteristics of the compliance management software used. Satisfying the technical requirements does not guarantee 21 CFR Part 11 compliance alone. Compliance is the consequence of the end user's work process and systems used.

* iBright SAE Software license is required for activating SAE mode and iBright Analysis Software–Secure, allowing communication with the SAE Module. **Important:** It is recommended that the SAE Module be managed by only specific personnel responsible for 21 CFR Part 11 compliance procedures within the institution.

The **Invitrogen™ iBright™ SAE Software Solution for 21 CFR Part 11 Support** is a flexible solution to enable requirements for security, auditing, and electronic signatures (SAE). Our package consists of the following components:

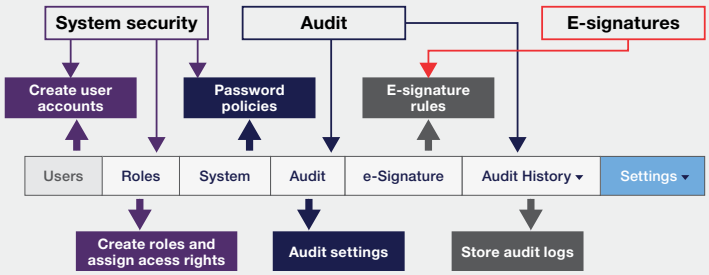
1. SAE Module software, including SAE Administrator Console installed on network-connected computer and the iBright Imaging Systems–specific application profile

   Each instrument or software that is configured in the SAE Administrator Console is called an "application" (e.g., iBright systems, Applied Biosystems™ QuantStudio™, and Invitrogen™ Attune™ instruments) and requires installation of the appropriate application profile

2. iBright SAE Software License
3. iBright instrument with SAE mode activated* (firmware v1.5.0 or above)
4. iBright Analysis Software–Secure* (version of iBright Analysis Software designed to support 21 CFR Part 11 compliance)

SAE Administrator Console is the tool used to configure system security, auditing, and e-signature settings to meet user-specific requirements.

The SAE Module utilizes an SAE server that runs in the background and stores SAE settings, accounts, and records. By default, the SAE server is installed on the same computer as the SAE Administrator Console, which should be a network-connected computer configured with a static IP address.



Function	Description
System security	Controls user access to an application by allowing creation of user account and defining user privileges through roles and managing password policies
Auditing	Tracks actions performed by users, changes to the SAE module settings, and creation of audit reports
Electronic signature	Determines if users are required to fulfill signature requirements before performing specific functions

Figure 10. High-level overview of SAE Administrator Console software functions.

Flexible protein normalization

Get a better understanding of your data with our normalization workflow

Data validation and normalization are key in any experiment. Scientific experiments are typically designed with built-in controls or checkpoints to monitor or correct for the inherent variability in samples or experiments. In western blotting, variability is usually due to unequal sample protein concentration, inconsistent sample loading onto the gel, and/or irregularities during transfer.

These sources of inconsistency can be monitored with visible or fluorescent gel- and membrane-based labeling methods followed by quantitation of total protein in each lane or by exogenous loading controls. Sample consistency and health can also be evaluated using internal housekeeping protein controls such as GAPDH, β-tubulin, β-actin, or cyclophilin B.

iBright Imaging Systems and iBright Analysis Software support automated and customizable quantitation and normalization options to monitor or mathematically compensate for experimental or sample variability, including normalization approaches based on both housekeeping proteins (HKPs) and total lane protein.

HKPs are assumed to be expressed constitutively at the same levels across experiments. However, recent studies have shown that expression of housekeeping proteins can change across different cell types and biological conditions. Therefore, some scientific publishers and funding agencies now require other forms of normalization, or validation of normalization controls, to ensure reproducibility and accuracy of quantitative western blotting results. With total lane protein–based normalization (TPN), the abundance of the target protein is normalized to the total amount of protein in each lane, and is not dependent on a single loading control protein.

The Invitrogen™ No-Stain™ Protein Labeling Reagent is designed to support total lane protein labeling of post-transfer membranes for TPN-based normalization and can be imaged on an iBright Imaging System.

See how easy it is to perform total protein normalization on an iBright Imaging System »

No-Stain Protein Labeling Reagent for total lane protein-based normalization

- **Easy-to-use protocol**—mix and add reagents to label proteins within 10 minutes
- **Flexible visualization**—from a wide range of imagers with UV, green or blue light LED transilluminators, or fluorescence (488 nm) light sources
- **Accurate total protein normalization**—broad linear range for detection of 1–80 µg total protein loads
- **Sensitive and stable signal**—detection down to 20 ng per band with a stable signal compatible with downstream chemiluminescent and fluorescent antibody detection

Leveraging No-Stain Protein Labeling Reagent for TPN-based normalization can yield improved accuracy compared to HKP-based normalization.

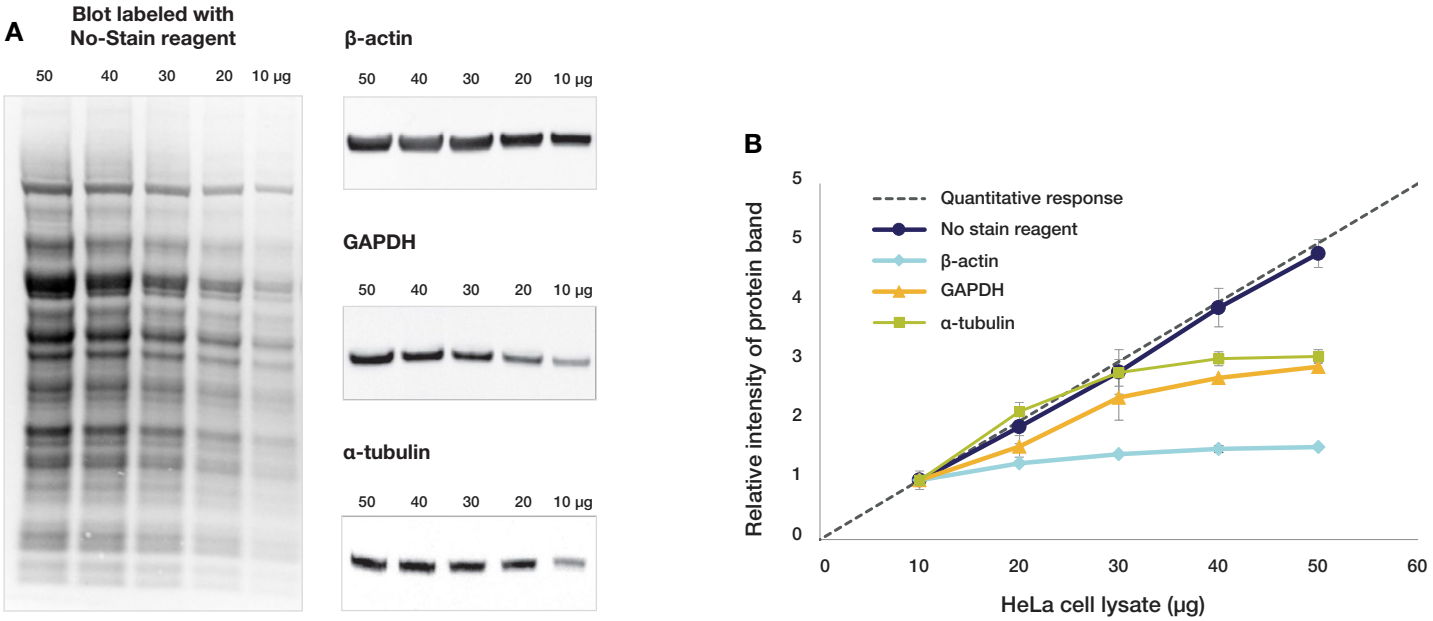


Figure 11. Signals from housekeeping proteins get saturated with increasing protein loads of HeLa lysate. (A) Western blots of HeLa lysate labeled with No-Stain reagent or probed for β-actin, GAPDH, or α-tubulin. **(B)** Densitometric analysis of blots from panel A—signal from the HeLa cell lysate labeled with No-Stain Protein Labeling Reagent stays linear with increasing lysate protein loads.

Furthermore, the No-Stain Protein Labeling Reagent–based TPN provides excellent concordance with protein load.

Normalization method	Percent errors for methods from predicted response according to HeLa lysate protein loaded in gel				
	10 µg	20 µg	30 µg	40 µg	Average (20–40 µg)
No-Stain reagent	0.0%	5.1%	5.8%	2.3%	4.4%
β-actin	0.0%	35.9%	51.9%	61.9%	49.9%
GAPDH	0.0%	21.4%	20.1%	31.8%	24.4%
α-tubulin	0.0%	7.9%	6.3%	23.9%	38.1%

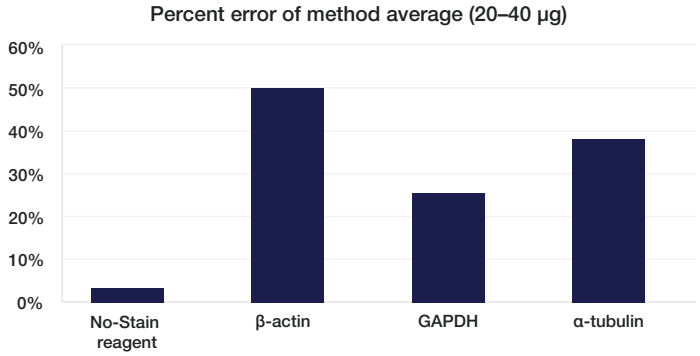


Figure 12. No-Stain Protein Labeling Reagent–based TPN yields a lower percent error from predicted response compared to HKP-based normalization. The percent errors for all methods (No-Stain reagent and three HKPs) from the predicted response were computed and compared as shown in the table. The relative intensities were normalized to the 10 µg loads. The relative densitometric signal measured would equate to the predicted densitometric signal, leading to the percent errors for the 10 µg loads being zero. The larger the percent error, the farther the densitometric signal is from the predicted response, resulting in reduced accuracy.

Go green

Green LEDs—our alternative to UV-based transillumination

iBright Imaging Systems use a green LED–powered transilluminator, which effectively excites popular DNA dyes such as ethidium bromide and Invitrogen™ SYBR™ Green dyes.

No harmful UV rays

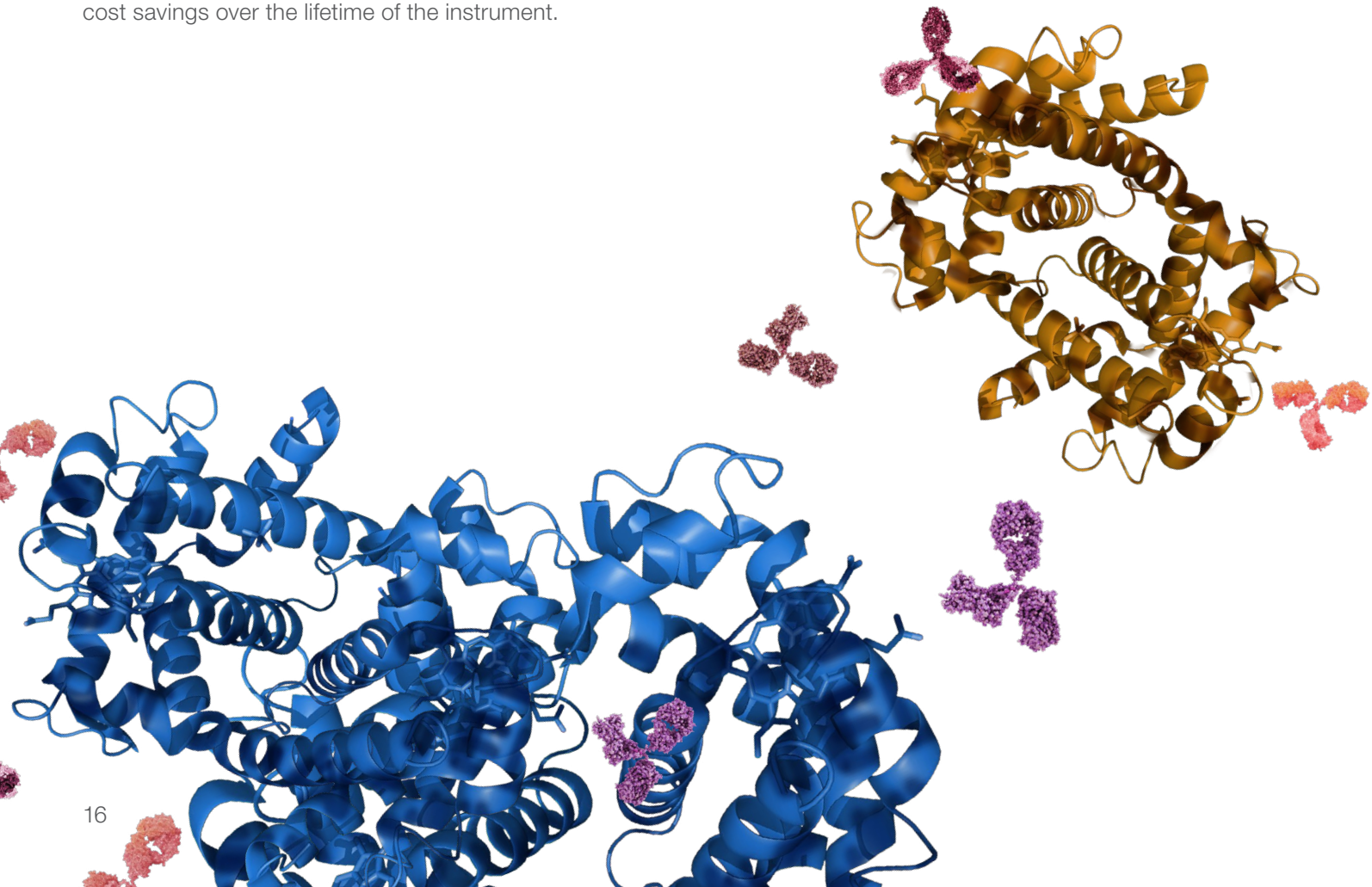
While UV light effectively excites many fluorescent dyes and stains, it poses a health hazard. Prolonged exposure to UV light can damage DNA samples and may compromise the integrity of samples to be used for downstream applications such as subcloning.

No mercury waste

Fluorescent UV transilluminator bulbs can contain mercury, a hazardous substance, and therefore require special care for handling and disposal.

Longer lifetime

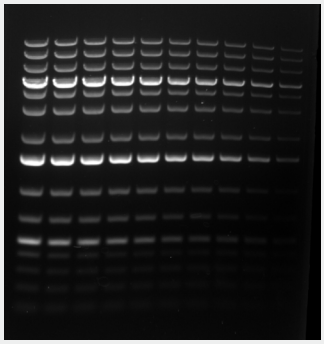
LED bulbs have a substantially longer real-time life than UV bulbs, which can result in considerable cost savings over the lifetime of the instrument.



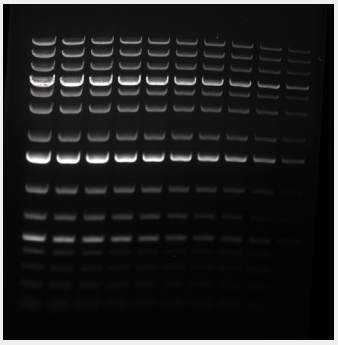
Emission range of the green-LED transilluminator

The emission range of the green-LED transilluminator (490–520 nm) covers the excitation peaks of both SYBR Green and SYBR Gold stains, and the secondary excitation range of ethidium bromide. While the transilluminator covers the secondary excitation range of ethidium bromide, the high-intensity energy of the LED light source compensates and provides visualization comparable to results with UV transillumination.

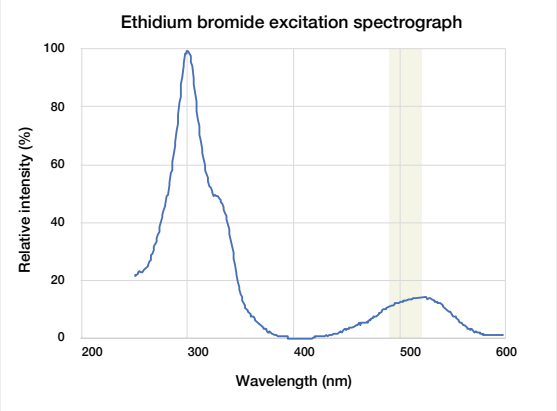
A



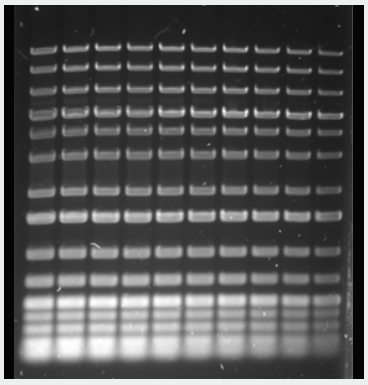
Ethidium bromide–stained gel (excited with iBright green-LED transilluminator).



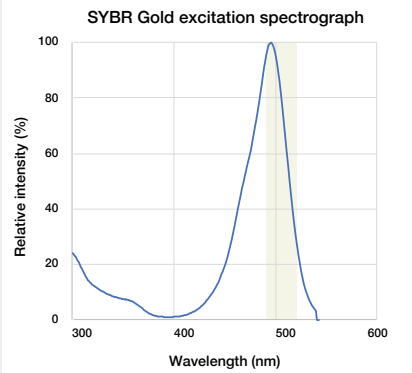
Ethidium bromide–stained gel (excited with UV transilluminator of another imaging system).



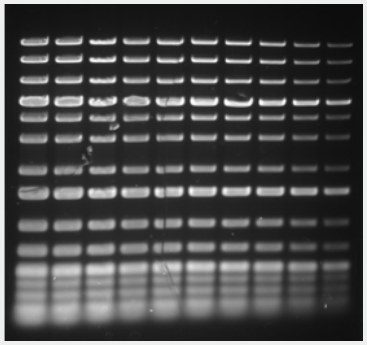
B



SYBR Gold dye–stained gel (excited with green-LED transilluminator).



C



SYBR Green dye–stained gel (excited with green-LED transilluminator).

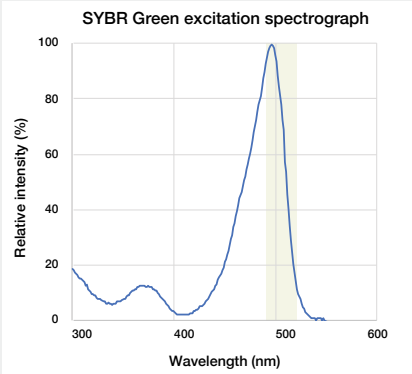


Figure 13. The green-LED transilluminator of iBright Imaging Systems effectively excites popular DNA stains. Excitation spectrographs of **(A)** Ethidium bromide, **(B)** SYBR Gold, and **(C)** SYBR Green gel stains (blue lines) depicted with iBright green-LED transilluminator emission range (490–520 nm) overlaid on top (green boxes). In panel A, the ethidum bromide–stained gel image excited with UV light was generated from an another imaging system with a UV-based transilluminator.

Get superior services and support to maximize your investment

Keep your iBright Imaging System optimized

SmartStart Orientation helps enable your success

Every iBright Imaging System includes a SmartStart Orientation (on-site* for the iBright FL1500 and CL1500 Imaging Systems, and digital for the iBright CL750 Imaging System). Led by professional trainers, the on-site orientation provides interactive education that includes application-specific lectures, hands-on experiment preparation, instrument and software setup, and basic data analysis. For the iBright CL750 Imaging Systems, digital SmartStart Orientation is offered as a convenient option to quickly and efficiently get yourself up to speed in installing, operating, and maintaining your instrument.

To learn more about this eLearning and to access the self-paced course, please visit **thermofisher.com/digitalsmartstartCL750**

Comprehensive warranty and service plans help maximize system uptime

All new iBright Imaging Systems are protected by a standard factory warranty. The iBright CL750 Imaging Systems have a one-year warranty that covers all costs for travel, labor, and parts for repairs, while iBright 1500 series systems come with a two-year warranty with a planned maintenance visit (PM) during the second year. Extended-coverage service plans are available at the time of instrument purchase. Our service plans can help you maximize system uptime, reduce overall repair costs, get fast repair turnaround time from a manufacturer trained and certified field service engineer (FSE), extend the life of your instrument, and help keep it up and running.

To build your personalized service quote, go to **thermofisher.com/ibrightserviceselector**

AB Assurance

The AB Assurance service plan is designed for customers who require expense predictability and productive uptime, including research labs, core service facilities, and hospitals. The AB Assurance service plan will help keep your laboratory running smoothly with preventative maintenance, proactive instrument monitoring, and—should one of your instruments require repair—fast response.

Find out more about the AB Assurance Service Plan at **thermofisher.com/abassurance**

Qualification services

With our instrument qualification services (installation qualification (IQ) and operational qualification (OQ)), you can be confident that your iBright Imaging System is installed and operating according to manufacturer's specifications.

To learn more, contact an instrument qualifications specialist at **thermofisher.com/iqoqpq**

* Note: on-site SmartStart Orientation is not available in all regions, connect with your local sales representation for more details.

Explore our services and support solutions at **thermofisher.com/instrumentservices**

Find the right model for your research

Compare models

Table 3. iBright systems specifications.



	iBright CL750 imager	iBright CL1500 imager	iBright FL1500 imager
	Core essential western blot and gel imaging—transition from darkroom and film-based detection with ease	Expanded application support with many of the same high-performance specifications as iBright FL1500 imager	Maximum application support including fluorescent western blot imaging with up to 4 fluorophores at a time
Camera			
Detector	Cooled 16-bit CCD; 65,535 shades of gray		
Resolution	9.1 megapixels		
Lens	Fixed, 25 mm, f/0.95		
Field of view	22.5 x 18.0 cm (W x D) (image up to 4 mini blots or gels)		
Binning modes	1x1, 2x2, 4x4 (high-resolution/sensitivity settings)	1x1, 2x2, 3x3, 4x4, 5x5, 6x6, 8x8 (maximum flexibility for adjusting resolution and sensitivity based on needs)	
Zoom	1–2x, digital (digital zoom reduces the effective resolution of the zoomed image)	1–8x (1–2x mechanical + 1–4x digital) (mechanical zoom maximizes sensitivity by moving the camera closer to the sample stage, reducing focal length)	
System interface			
Touchscreen	12.1-inch capacitive LCD display; 1,024 x 768 pixels		
Storage and connectivity			
USB	2 x USB 2.0		
Networking	Ethernet port, Connect (cloud-based) connectivity, and optional Wi-Fi (adapter sold separately)		
Image file formats	G2i (proprietary), TIFF, JPG, PNG		
Hard drive	64 GB SSD	256 GB SSD	
System hardware			
Sample drawer and stage	Manually operated drawer with fixed stage	Automatic open/close drawer with automatic rotating sample stage	
Filter sets	• 2 filters (0 excitation, 2 emission)	• 4 filters (2 excitation, 2 emission)	• 12 filters (6 excitation, 6 emission)
Illumination sources	• Green LED (490-520 nm) transilluminator	• Green LED (490-520 nm) transilluminator • Epi white LED	• Green LED (490-520 nm) transilluminator • Epi white LED • Epi near-IR LED
System software			
Automated features	• Automatic zoom • Automatic focus • Automatic exposure (Smart Exposure) • Automatic on-board image analysis		
Stand-alone analysis applications	iBright Analysis Software: desktop version (macOS™ or Windows™ operating systems), Connect Platform (cloud-based), and iBright Analysis Software—Secure (desktop version supporting 21 CFR Part 11 compliance)		
Main supported imaging applications			
Colorimetric-stained protein gels	•	•	•
Fluorescent-stained protein gels	•	•	•
Fluorescent-stained nucleic acid gels	•	•	•
Colorimetric-stained membranes	Limited*	•	•
Chemiluminescent western blots	•	•	•
Colorimetric western blots		•	•
Fluorescent western blots			•
Qualitative visible imaging applications**			
Translucent objects (e.g., colony plates)	•	•	•
Opaque objects (e.g., 2D strips, TLC plates, leaf sections)		•	•
GFP expression in multiwell plates (e.g., 6-well plate)			•
Shipping, warranty, and upgrade			
Upgradability	Not upgradable	Updgradable to iBright FL1500 imager†	Not applicable
Weight	Approximately 47 kg (105 lb)	Approximately 50 kg (110 lb)	
Warranty	1 year from date of purchase	2 years from date of purchase	
Dimensions (L x W x H)	68 x 38 x 60 cm		

* Membranes must be imaged when wet, using Thermo Scientific™ Pierce™ Reversible Protein Stain Kit for Nitrocellulose Membranes or Thermo Scientific™ Pierce™ Reversible Protein Stain Kit for PVDF Membranes.

** Applications provide a qualitative visualization of the object or confirmation of the presence of signal. Not recommended for quantitation.

† Upgrades not available in all regions; please check with your local sales representative for upgrade details.

invitrogen

Whether taking a classic or a more efficient modern approach to gel electrophoresis and western blotting, we offer solutions across the workflow.

Ordering information

Product	Cat. No.
iBright FL1500 Imaging System	
1 instrument, including SmartStart Orientation, and 2-year warranty	A44241
1 instrument, including SmartStart Orientation, 2-year warranty, and license for iBright SAE Software for 21 CFR Part 11	A44241CFR
1 instrument, including 1-year warranty	A44115
iBright CL1500 Imaging System	
1 instrument, including SmartStart Orientation, and 2-year warranty	A44240
1 instrument, including SmartStart Orientation, 2-year warranty, and license for iBright SAE Software for 21 CFR Part 11	A44240CFR
1 instrument, including 1-year warranty	A44114
iBright CL750 Imaging System	
1 instrument, including 1-year warranty and digital SmartStart Orientation	A44116
iBright SAE Software for 21 CFR Part 11	
1 license (single license required per instrument)	A49208

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