ODYSSEY®

Family of Imaging Systems

QUANTITATIVE WESTERN BLOTS

HIGH SENSITIVITY

WIDE, LINEAR DYNAMIC RANGE

NO FILM OR DARKROOM

WIDE RANGE OF APPLICATIONS

LI-COR®

Experience Excellence

ODYSSEY®
Family of Imaging Systems

Quantitative Western Blots
The accuracy and linearity of infrared fluorescent detection provides confidence in differences of protein expression

High Sensitivity
Infrared laser technology offers the best detection at the optimum wavelengths

Wide, Linear Dynamic Range
A broad, linear dynamic range accurately detects both strong and weak bands on the same blot, without the uncertainty and inconvenience of multiple exposures

No Film or Darkroom
Save valuable time and money on film and darkroom expenses. Eliminate "blown out" lanes and the need for multiple exposures

Wide Range of Applications
Western Blots, In-Cell Western™ Assays, Coomassie-Stained Gels, DNA Gels, Fluorescent Gel-Shift Assays, Tissue Imaging, *In Vivo* Imaging, Whole Organ Imaging, Protein Arrays

The Standard for Western Blot Technology

As a researcher, your goal is to efficiently present the most accurate data possible. For more than 30 years, traditional chemiluminescent detection with film has provided data that have been published by scientists worldwide.

Over the past decade, LI-COR® has revolutionized methods for protein detection that completely eliminate the need for film. Traditional chemiluminescent detection with film provides proven sensitivity, and LI-COR offers industry-leading technologies to maintain that sensitivity and improve your data quality to make it the clearest and most accurate it can be. LI-COR has used its expertise in optical design to provide methods for both chemiluminescent, as well as infrared fluorescence protein detection, without the use of film.

Benefits of Digital Imaging with an Odyssey System:

- Save valuable money on film (Table 1)
- Eliminate costs related to darkroom maintenance
- No need for multiple exposures
- A wide, linear dynamic range without saturation or "blown out" lanes
- Accurate detection of strong and weak bands in one exposure
- Sensitivity equal to or greater than that of film
- Eliminate the need for excessive washes and hazardous waste associated with film development
- Reduce the negative environmental impact related to film development. For more information, please visit: *www.licor.com/green*

Whether you are looking to improve your Western blot data by simply moving to digital chemiluminescent detection or by transitioning to quantitative Western blot technology using infrared fluorescent imaging, we will help you find the best solution for you and your lab.

Odyssey Family of Imaging Systems

ODYSSEY CLx

The most versatile of all Odyssey systems

ODYSSEY Sa

An economical infrared imaging system for any lab

ODYSSEY Fc

An economical dual-mode chemiluminescent and infrared imaging system

LI-COR's experience in life science research ensures innovative technology that meets the needs of every researcher and improves the results you obtain.

Western Blot Cost Comparison

Infrared Detection vs. Chemiluminescence

Cost Savings			
Reagents	IR Detection (2 Targets)	Chemiluminescence (1 Target)	Chemiluminescence (strip and reprobe for second target) 2-target total
Secondary Antibody (15 mL) Recommended Dilutions: (1:15,000 for IR#; 1:2,500 for Chemi)	$0.68	$0.33	$0.66
Chemiluminescent Substrate (2 mL)	---	$5.70 (2 mL)	$11.40 (2 mL)
Film (2-4 pieces of film/blot)	---	$7.68	$15.36
Protein Markers Two-color Protein Marker for IR (2 µL) Standard Protein Marker for Chemi (10 µL)	$1.16	$4.68	No charge to reuse marker
Cost Extra Cost Per Blot Compared to IR*	$1.84	$18.39 (2 mL) $16.55	$27.42 (2 mL) $25.58

#IRDye 800CW and IRDye 680RD were used for IR calculations.
*Based on GE Healthcare pricing. September 20, 2011. Assumes 10 x 10 cm blot.

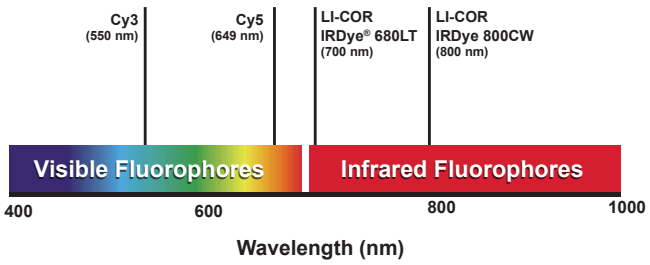
Table 1. Moving to digital imaging with Odyssey infrared imaging technology will save money for your lab. Not only will you save money on reagents, all Odyssey imaging systems eliminate the costs related to film and darkroom expenses.

The Infrared Fluorescence Advantage

Advancing Western Blots with Infrared Fluorescence Detection

LI-COR® pioneered infrared Western blots more than ten years ago. Using infrared detection offers numerous benefits, when used with corresponding infrared fluorescent-labeled secondary antibodies.

- Quantitative analysis and a wide linear dynamic range that is not available with traditional chemiluminescent methods
- Detect strong and weak bands on the same blot, without blowouts or hidden bands (Fig. 1)
- Detect two targets simultaneously on the same membrane to increase quantification accuracy
- At the 700 nm and 800 nm infrared wavelengths, both autofluorescence and light scatter are dramatically reduced (Fig. 2)
- Infrared dyes offer advanced signal stability that allows for convenient and reproducible data that are not time-sensitive – data are not contingent on the lifespan of an enzymatic reaction
- More than 4,000 peer-reviewed publications cite data from Odyssey® Imaging Systems



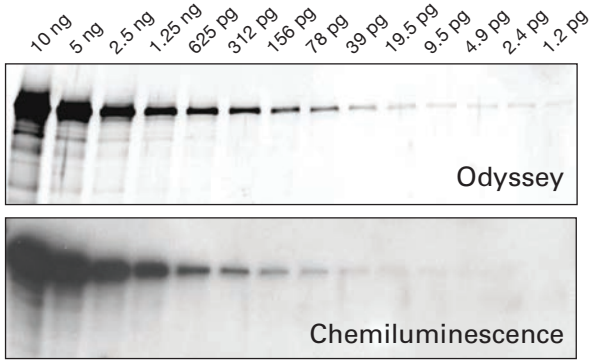


Figure 1. Serial dilutions (10 ng to < 1 pg) of purified human transferrin (Tf) were used to assess Western blot sensitivity. An example of typical results obtained with Odyssey imaging technology. The above data illustrate the detection of 1.2 pg of Tf, while only 4.9-9.5 pg is detected with chemiluminescence. **Infrared fluorescent detection sensitivity is approximately 200-fold greater than other studies with visible fluorophores (Cy®3, Cy®5, or FITC).** (Data generated on Odyssey Classic)

Membrane Autofluorescence is Dramatically Reduced

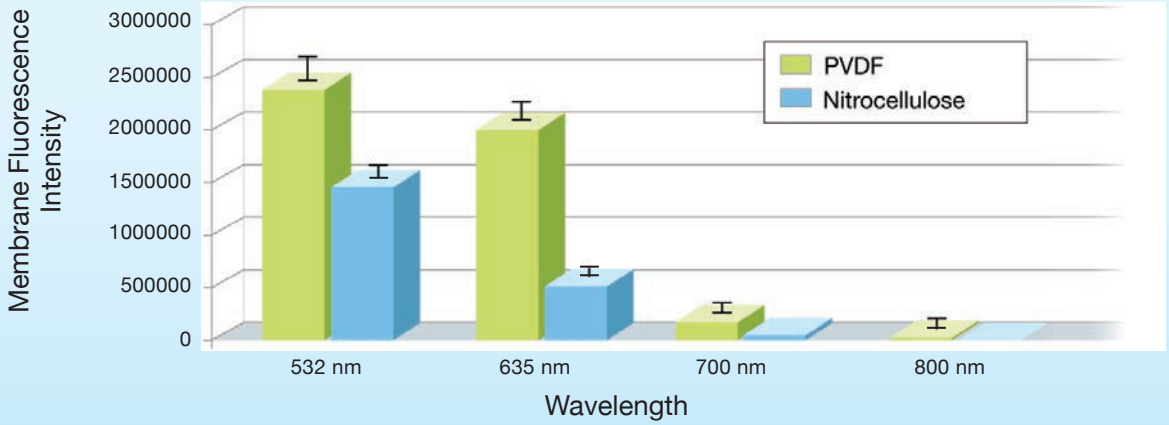


Figure 2. Nitrocellulose and PVDF membranes were imaged with Odyssey infrared imaging technology at Intensity = 5 for both 700 nm and 800 nm wavelengths. The same membranes were scanned at a 532 nm and 635 nm wavelength with a PMT = 500 on a GenePix® 4100A (Molecular Devices). Autofluorescence was much lower at infrared wavelengths.

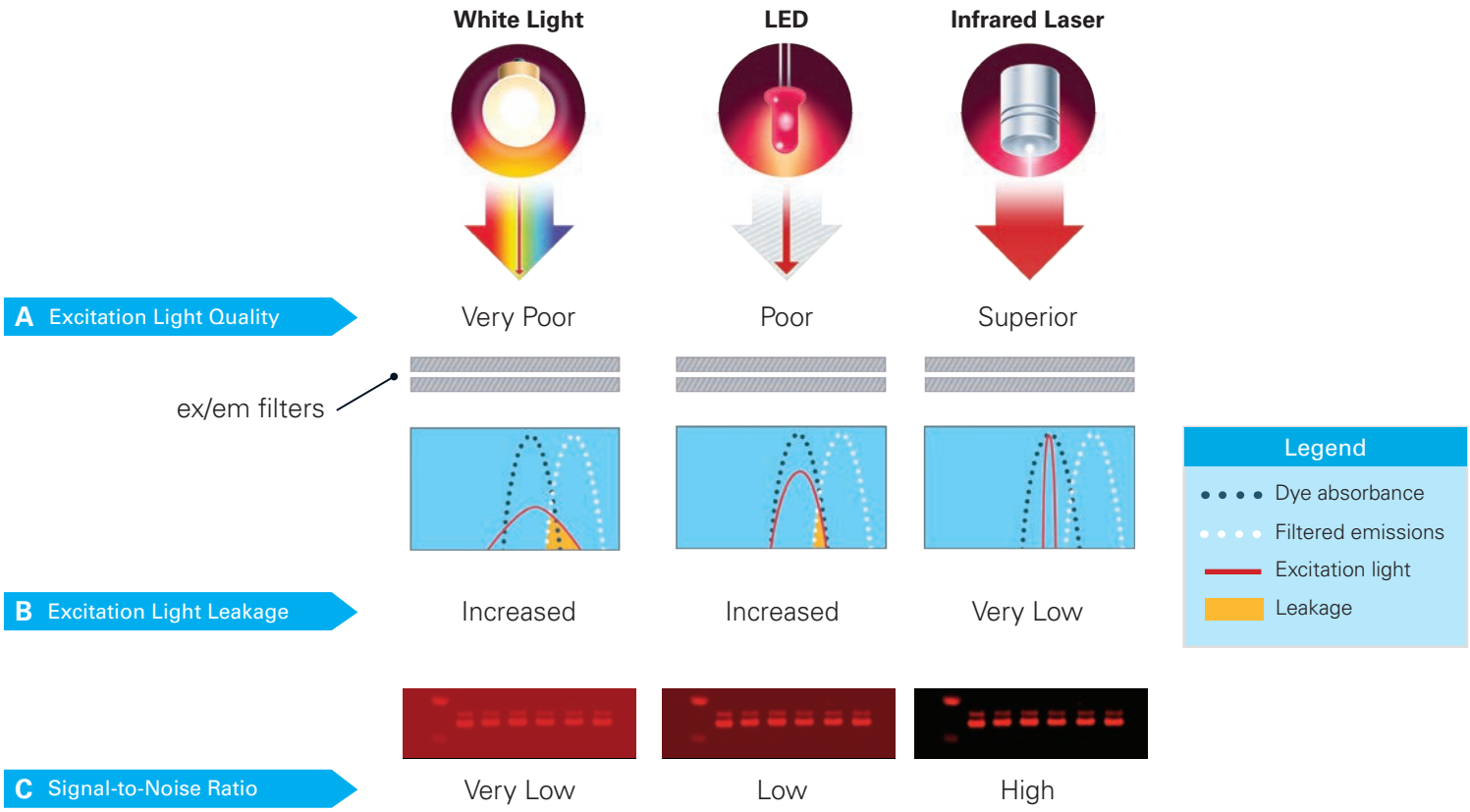


Figure 3. Improved performance using infrared lasers. A) Infrared lasers deliver excitation light in the narrow wavelength band desired, unlike LED or white light sources. B) Leakage of excitation light (yellow shading) increases image background. C) LI-COR filtering technology dramatically reduces excitation light leakage, for decreased image background and sensitive detection of low abundant targets.

LI-COR's laser technology has the best detection at the optimum wavelengths. **When compared to other instruments using infrared fluorescence, the 700 nm and 800 nm channels within the Odyssey family of imagers are always the most sensitive.**

Sensitivity

All Odyssey platforms use infrared laser excitation that out-performs LED and visible white light systems (Fig. 3). Biological materials, membranes, and plastics produce high background due to light scattering and autofluorescence in the visible wavelength range used by most fluorescent imagers. This limits the sensitivity of visible fluorescent systems and makes it difficult to detect low-abundance proteins at endogenous levels without saturation of stronger bands.

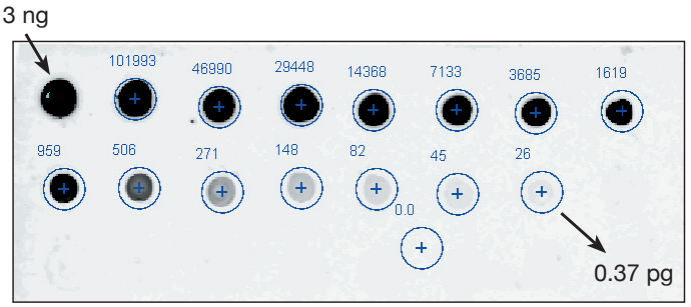
Infrared laser excitation results in the highest signal-to-noise ratios, and the best detection sensitivity available with a fluorescent system.

Infrared lasers offer high-speed detection with increased sensitivity when compared to systems that use LED and visible white light. This increased sensitivity offers a clear image of your data that is unmatched by other digital imaging systems.

Quantitative Western Blots

This is digital imaging at its best. All LI-COR® Odyssey® Imaging Systems give you the power to quantify your data over the widest dynamic range available. While detection with film is exceptionally sensitive and useful for 'yes' or 'no' answers, it presents challenges that can be overcome by making a transition from film to the increasingly popular method of detection that uses infrared fluorescence technology.

The dynamic nature of enzyme labels and film allows you to capture only a snapshot of the enzymatic reaction and is highly dependent on timing and exposure, limiting linear range and offering only partially quantitative results (Fig. 4, 5). With the infrared fluorescence method, film and enzyme labels are replaced with infrared fluorescent-labeled antibodies. The accuracy and linearity of the LI-COR Odyssey imaging technology offers you the opportunity to be confident about differences you see in protein levels. Your infrared fluorescent blots can be archived, then imaged and quantified again months later, if needed (Fig. 7).



Two-fold serial dilutions of labeled antibody (3 ng to 0.37 pg) were spotted on nitrocellulose and imaged in the 700 nm channel.

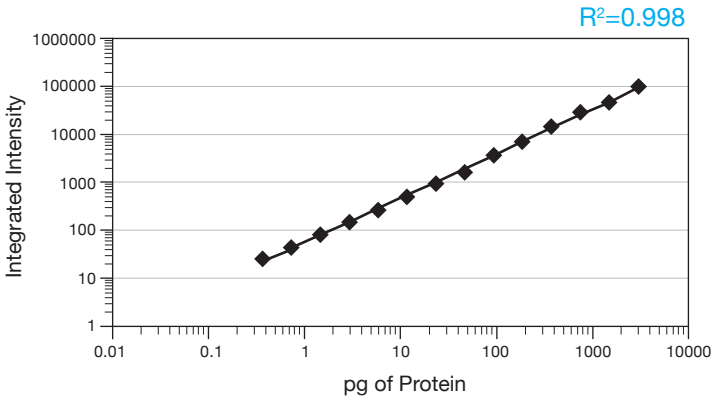


Figure 4. Through the innovative use of infrared fluorescent-labeled antibodies rather than enzyme labels, all Odyssey infrared imaging systems provide a broad, linear dynamic range to accurately detect strong and weak bands on the same Western blot. Refer to individual product specifications for more information on dynamic range.

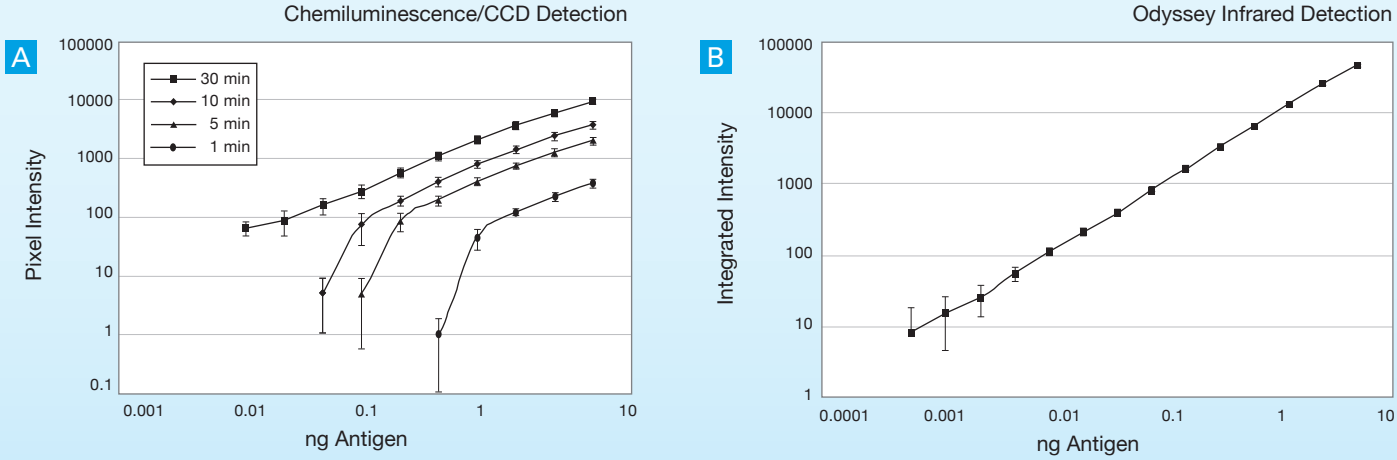


Figure 5. A dot blot assay was used to compare the linear ranges of chemiluminescent and infrared fluorescent detection. Dilutions of mouse antibody were spotted and detected with HRP- or IRDye® infrared dye-labeled goat anti-mouse antibodies. Chemiluminescent data (Panel A) were collected using ECL substrate and a CCD camera with varying exposure times; the infrared image (Panel B) was obtained in a single scan with Odyssey infrared imaging technology. For a 30-minute chemiluminescent exposure, the data set was linear over a 250-fold dynamic range, but not proportional. By contrast, **infrared detection displayed a quantitative linear range greater than 4000-fold (3.6 orders of magnitude)**. A paper detailing this study can be downloaded at *www.licor.com/chemiccd*. (Data generated on Odyssey Classic)

Wide Dynamic Range

Through the innovative use of infrared fluorescent antibody conjugates, Odyssey imaging systems provide a broad, linear dynamic range to accurately detect both strong and weak bands on the same Western blot. By contrast, the dynamic, enzymatic nature of chemiluminescence allows you to capture only a "snapshot" of the enzymatic reaction and is highly dependent on timing and exposure, limiting linear range and offering only qualitative or partially quantitative results.

Multiplex Detection

The Odyssey Family of Imagers provides simultaneous two-color target analysis with the 700 nm and 800 nm infrared fluorescent detection channels (Fig. 6). Two-color Western blot analysis makes normalization easy by using one channel for normalizing. It also eliminates errors introduced by stripping and reprobing or by comparison of separate blots. Superior image clarity and detail make it easier to detect subtle mobility shifts caused by protein modifications such as phosphorylation.

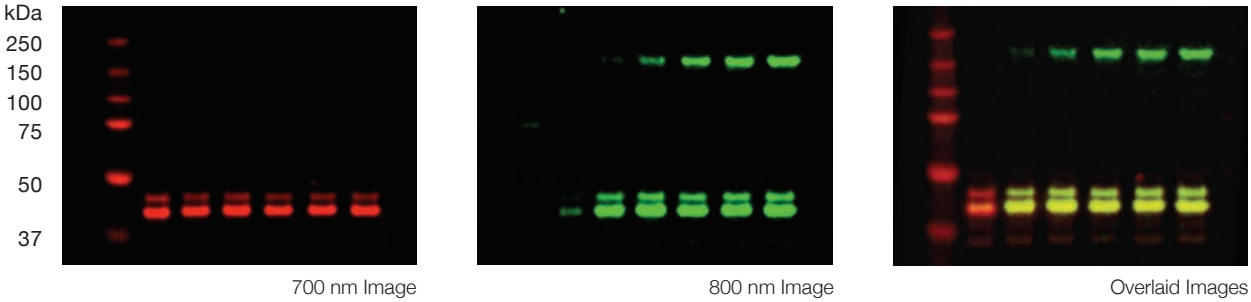


Figure 6. Detect two targets and monitor protein phosphorylation. Lysates (10 µg/well) of A431 cells treated with EGF were separated and transferred to nitrocellulose. The blot was probed with rabbit anti-ERK1 and mouse anti-phospho-ERK primary antibodies (Santa Cruz Biotechnology) and then detected with goat anti-rabbit IRDye 680 (red) and goat anti-mouse IRDye 800CW (green) secondary antibodies, respectively. The blot was imaged with the Odyssey Fc Imager for 2 minutes in each channel. Overlapping ERK (red) and phospho-ERK (green) signals are displayed in yellow. This phospho-ERK1 antibody cross-reacts with phospho-EGFR (upper green band).

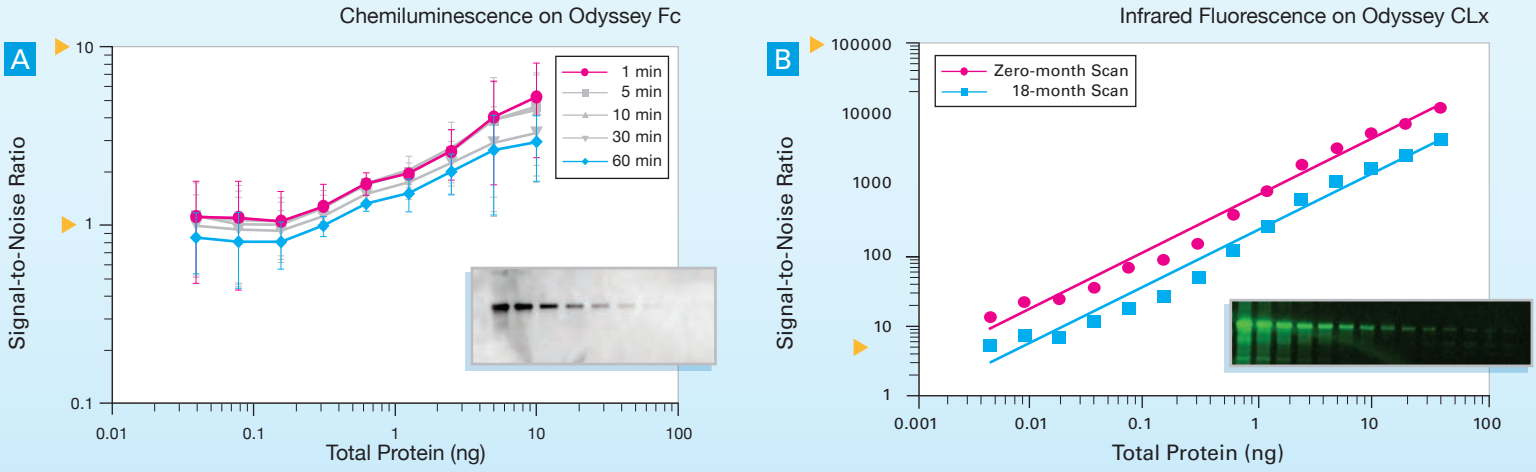


Figure 7. Western blots containing purified transferrin were processed using chemiluminescence (10 ng – 1.2 pg) or infrared detection (40 ng – 4.8 ng). Panel A shows the loss of signal for chemiluminescence detection after 60 minutes on the Odyssey Fc. Panel B shows the stability of a Western blot processed with IRDye 800CW secondary antibody after 18 months imaged on the Odyssey CLx. **The lower limit of detection is maintained in the infrared Western blot with a signal-to-noise ratio (SNR) above 5 for all 14 of the data points, even after storage for 18 months**. Compare this to the chemiluminescence detection where only 5 of the same data points have SNR above 1 after 60 minutes.

Odyssey® Family Applications

	ODYSSEY CLx	ODYSSEY Sa	ODYSSEY Fc
	The most versatile of all Odyssey systems	An economical infrared imaging system for any lab	An economical dual-mode chemiluminescent and infrared imaging system
Infrared Western Blots	✓	✓	✓
Chemiluminescent Detection	–	–	✓
Coomassie-Stained Gels	✓	✓	✓
DNA Gels	✓	✓	✓
Syto® 60	✓	✓	✓
Ethidium Bromide	–	–	✓
SYBR® Family	–	–	✓
In-Cell Western™ Assays	✓	✓	–
On-Cell Western Assays	✓	✓	–
Protein Arrays	✓	✓	–
EMSAs	✓	–	–
Tissue Section Imaging	✓	✓	–
Whole Organ Imaging	✓	–	–
Small Animal Imaging	✓	–	–
ELISAs	✓	✓	–

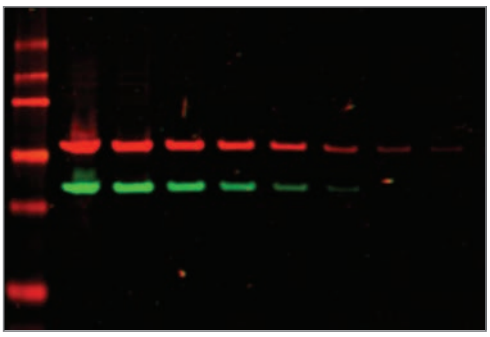
Table 2. Applications supported by Odyssey imaging technology. Odyssey imaging technology offers researchers the tools necessary to achieve clear, high quality data for many different applications.

IRDye® Infrared Dyes and Antibodies

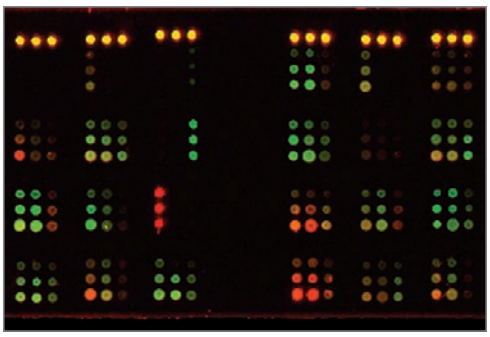
Infrared dyes provide a key performance advantage on the Odyssey Family of Imaging Systems. LI-COR's pioneering family of IRDye infrared dyes are synthesized with reactive functional groups that enable easy covalent coupling to antibodies and other biomolecules. IRDye infrared dye secondary antibodies and conjugates are optimized for a wide variety of applications.

Order antibodies on-line at:
*www.licor.com/shoponline**

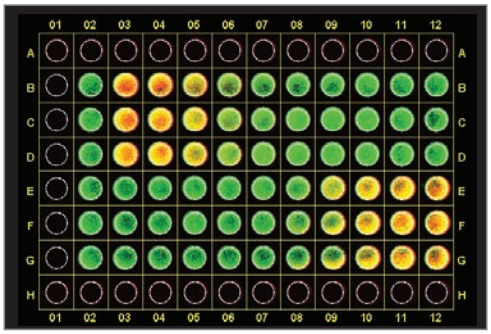
** Ordering on-line available to U.S. customers only*



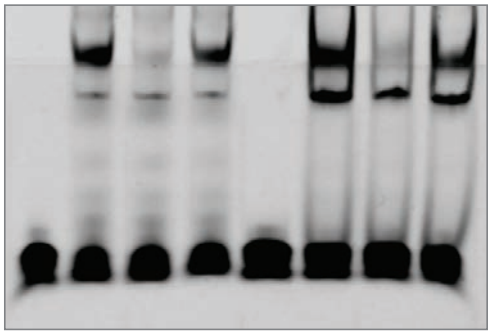
IR Fluorescent Western Blots



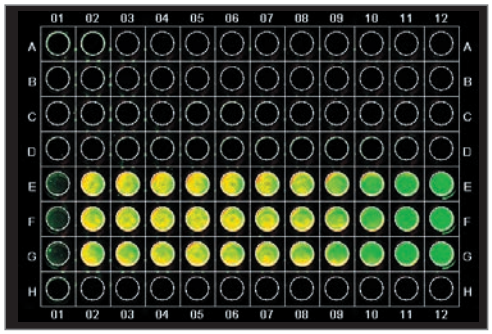
Protein Arrays



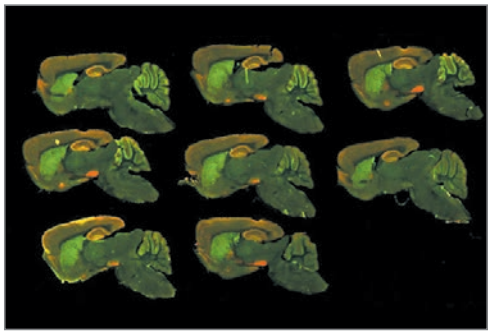
On-Cell Western Assays



EMSA/Gel Shift Assays



In-Cell Western™ Assays



Tissue Section Imaging

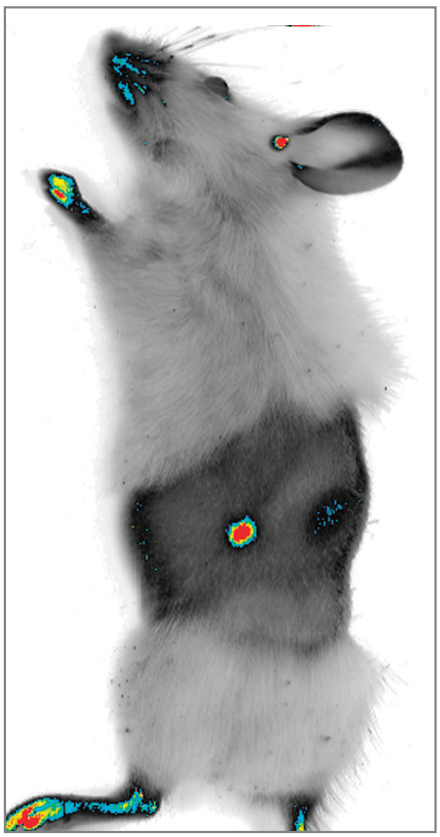
Data courtesy C. Kearns, University of Washington

In-Cell Western™ Assay for Ratiometric Protein Analysis

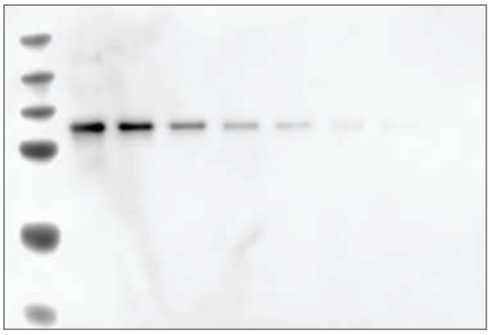
The In-Cell Western Assay is an immunocytochemical assay performed in microplate format (Fig. 8). In a typical workflow, target-specific primary antibodies and infrared-labeled secondary antibodies are used to detect target proteins in fixed cells, and fluorescent signal from each well is quantified (Fig. 9). Accuracy is enhanced and data are more meaningful because proteins are detected in their cellular context.

Advantages of the In-Cell Western Assay

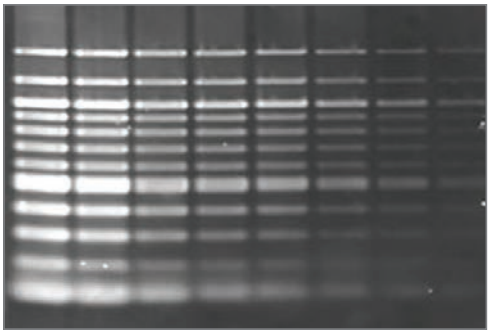
- Simultaneous, two-target detection enables precise quantification and accurate measurement of abundance or phosphorylation of one target by normalization against another target or DNA stain.
- Direct detection of proteins in their cellular context eliminates variabilities and artifacts caused by cell lysis. In-cell detection can provide more relevant results than enzyme assays with purified proteins.
- Infrared-labeled conjugates yield high sensitivity for measuring small changes in protein amount or modification.
- Analyze multiple targets in 96- or 384-well plates.
- Fast, microplate-based assay – lysate preparation, gel loading, electrophoresis, and membrane transfer are eliminated.
- Ideal for screening cell treatments or drug candidates for effects on target proteins.



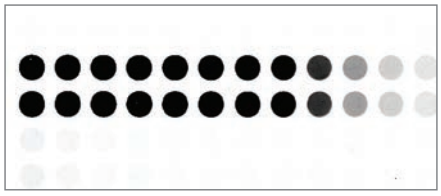
Small Animal Imaging



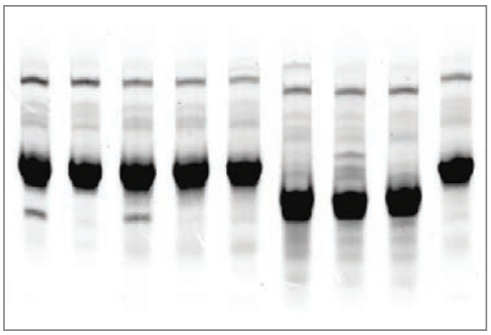
Chemiluminescent Western Blots



DNA Gel Staining

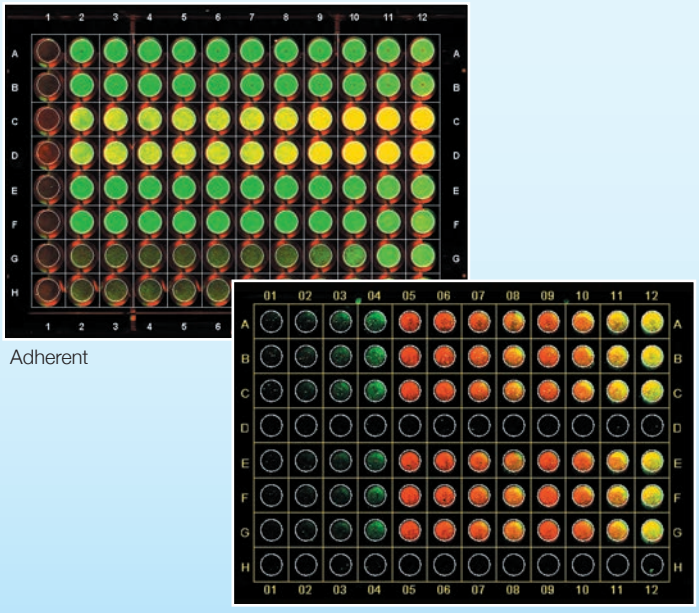


ELISA



Coomassie-Stained Gels

Figure 8. In-Cell Western Assay



Adherent

Suspension

In-Cell Western Assay Workflow

Grow Adherent/Suspension Cells in Microplate

Fix and Permeabilize Cells, Block

Primary Antibody Incubation

Secondary Antibody Incubation (DNA Staining, if desired)

Image and Quantify

Figure 9. Typical In-Cell Western Assay Workflow

	ODYSSEY CLx	ODYSSEY Sa	ODYSSEY Fc
	The most versatile of all Odyssey systems	An economical infrared imaging system for any lab	An economical dual-mode chemiluminescent and infrared imaging system
Maximum Scan Area	25 cm x 25 cm	7 cm x 11 cm	10 cm x 12 cm
Resolution	21-337 µm	20-500 µm	125 µm
Excitation Source	Point Source Laser	Point Source Laser	Area Illumination
Detection Method	Avalanche Photodiode	Avalanche Photodiode	CCD
Dynamic Range	4 logs (Manual) >6 logs (AutoScan)	4 logs	>6 logs
Infrared Western Blots	✓	✓	✓
Chemiluminescent Detection	–	–	✓
Coomassie-Stained Gels	✓	✓	✓
DNA Gels	✓	✓	✓
Syto® 60	✓	✓	✓
Ethidium Bromide	–	–	✓
SYBR® Family	–	–	✓
In-Cell Western™ Assays	✓	✓	–
On-Cell Western Assays	✓	✓	–
Protein Arrays	✓	✓	–
EMSAs	✓	–	–
Tissue Section Imaging	✓	✓	–
Whole Organ Imaging	✓	–	–
Small Animal Imaging	✓	–	–
ELISAs	✓	✓	–

Table 2. Applications supported by Odyssey imaging technology. Odyssey imaging technology offers researchers the tools necessary to achieve clear, high quality data for many different applications.

Experience Excellence

We know that your time is incredibly valuable, and therefore, the research tools you work with must be reliable, easy to use, and deliver superior results. That's why LI-COR has worked for the past 40 years to innovate in ways that exceed researchers' expectations.

With LI-COR you will experience excellence with our people, our products, in the service you receive, and in the scientific results you obtain.

- **Our People:** With an average of 10 years of service per employee, we are prepared help you with your research needs.
- **Our Service:** Call us and talk to real people, not an automated system. We're committed to help you find the right answers.
- **Our Products:** We design and manufacture our instruments, reagents, and software to the highest standards and quality.
- **Your Results with a LI-COR Product:** We will never compromise the quality of your results with any LI-COR product.

ODYSSEY® CLx
Infrared Imaging System

The Odyssey CLx is the next generation of the Odyssey Classic, the most trusted and established standard in quantitative Western blot technology.

- The most flexible and multifunctional platform of the Odyssey imaging systems
- Accommodates a wide variety of applications
- Largest imaging surface of all Odyssey imaging systems (25 cm x 25 cm)

Two Independent Infrared Detection Channels

Two separate lasers and detectors simultaneously detect both fluorescent signals. The optical system employs diode lasers and solid-state detectors with long lifetimes and very low maintenance requirements. Infrared laser excitation outperforms systems that use white light, LED light sources, and

- ☑ Established standard in Quantitative Western blot technology for 10+ years
- ☑ Most versatile Odyssey system for numerous applications
- ☑ Largest imaging surface of all Odyssey systems (25 cm x 25 cm)

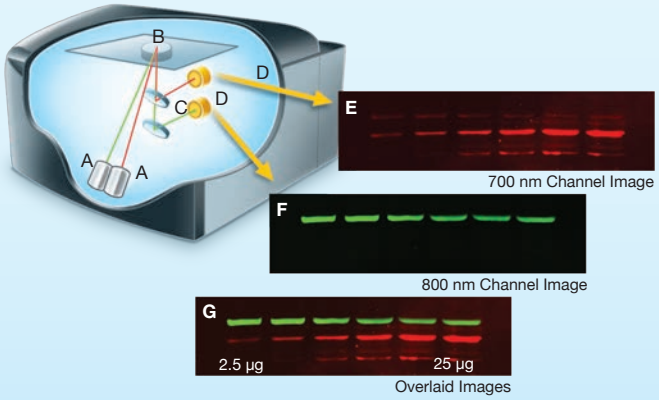


Figure 10. Beams from solid-state 700 nm and 800 nm lasers (A) are focused to form an excitation point on the scanning surface. A microscope objective (B), focused on the excitation point, collects light from both fluorescing infrared dyes. Light from the microscope objective is passed through a dichroic mirror (C) that splits the light into two fluorescent signals. The fluorescent signals travel through two independent optical paths and are focused on separate silicon avalanche photodiodes (D) and detected. In this example, 700 nm fluorescence (IkappaB) is shown in red (E) and 800 nm fluorescence (Tubulin) is shown in green (F). The two colors were imaged simultaneously in a single scan and can be displayed separately or together in a single image (G).*

** Data courtesy of Dr. Catrin Albrecht, IUF, Germany*

filter wheels by delivering higher intensity excitation light to the fluorophore. A variety of fluorescent dyes and stains are compatible with the 700 nm and 800 nm excitation wavelengths of the two diode lasers in the Odyssey CLx. Spectral overlap is minimized by a 100 nm separation of the two detection channels, and optical filtering ensures that each detector measures fluorescence from only one of the infrared dyes (Fig. 10).

Now Featuring:

AutoScan Function

- Wide dynamic range captures the entire range of data without saturation in a single, time-saving scan – no need for multiple scans to optimize intensity settings
- An even wider dynamic range is available when detecting high-abundance proteins in a single image

Multiple Blot and Plate Scanning

- Simultaneously scan multiple samples of varied intensities in one scan for increased convenience

Easy-to-Use Image Studio Imaging Software

- One-button image acquisition
- Quick user adoption
- Saves time needed to acquire and analyze data

CLx Applications

Western Blots:
Two-Color Infrared and In-Gel

Cell-Based Assays:
In-Cell Western™ and On-Cell Western

Protein Detection:
Coomassie-Stained Gels, Membrane and Slide Arrays

Small Animal Imaging:
In Vivo, Whole Organ, and Tissue Section

Nucleic Acid Detection:
Mobility Shift Assays, DNA Gel Staining (Syto® 60), and Arrays

Microwell Assays:
ELISA/FLISA, Protein Arrays, and RNAi Analysis

MousePOD® Imaging Accessory*

- Fits on the Odyssey CLx scanning surface and accommodates up to three mice or one rat
- Delivers gas anesthesia to animals via nosecones
- Regulates air temperature to maintain animal's temperature during scanning
- Includes small animal imaging module for Image Studio software to quickly mark tumors, organs, and other regions of interest. Pseudo-color display style helps to quickly isolate regions of interest

**MousePOD and anesthesia system are sold separately*

ODYSSEY® Sa
Infrared Imaging System

The Odyssey Sa Infrared Imaging System features many of the most popular applications available with the other LI-COR® infrared imaging systems. The Odyssey Sa is offered at a cost that is accessible for many researchers, allowing them to incorporate the benefits of infrared fluorescent detection into their labs. The Odyssey Sa system uses the same proven infrared technology that LI-COR customers have trusted for more than a decade with the Odyssey Classic and Odyssey CLx (Fig. 11).

The Odyssey Sa Infrared Imaging System has the flexibility to handle both plate-based assays and quantitative Western blots. With multiplex detection, the Odyssey Sa System allows for two-target Western blot analysis. This makes normalization easy and eliminates error introduced by stripping and reprobing, or by comparison of separate blots.

- ☑ Economical choice for infrared fluorescent users
- ☑ Offers automation flexibility for microtiter plates to high-throughput labs

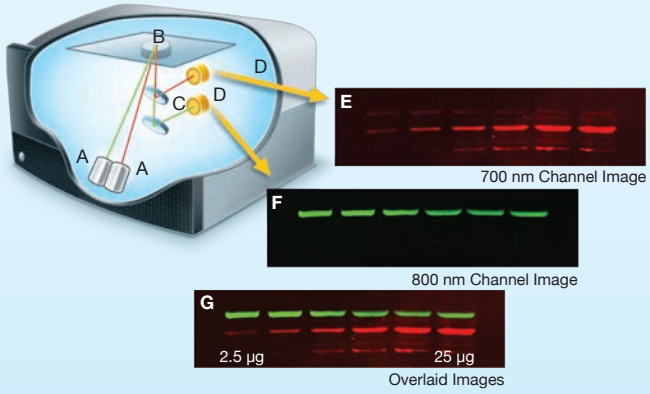


Figure 11. Beams from solid-state 700 nm and 800 nm lasers (A) are focused to form an excitation point on the scanning surface. A microscope objective (B) collects light from both fluorescing infrared dyes when focused on the excitation point. Light from the microscope objective is passed through a dichroic mirror (C) that splits the light into two fluorescent signals. The fluorescent signals travel through two independent optical paths and are focused on separate silicon avalanche photodiodes (D) and detected. Fluorescence in the 700 nm channel (IKappaB) is shown in red (E) and 800 nm (Tubulin) is shown in green (F). The two colors were imaged simultaneously in a single scan and can be displayed separately or together in a single image (G).*

** Data courtesy of Dr. Catrin Albrecht, IUF, Germany*

Figure 12. The Odyssey Sa can be configured to work with the optional BioTek® BioStack™ Automated Microplate Stacking system.

In addition to superior results of infrared Western blot and plate-based analysis, the Odyssey Sa offers flexibility for high-throughput labs. The Odyssey Sa System is compatible with the BioTek® BioStack™ Automated Microplate Stacking System (Fig. 12)*. The BioStack system is available in either 30- or 50-plate configurations when run with the Odyssey Sa Express software for automated plate readout. The Odyssey Sa can also be configured to work with the optional Barcode Reader accessory, allowing the Odyssey Sa Express software to automatically read the most common barcode symbologies.

**BioTek systems sold separately*

Sa Applications

Western Blots:
Two-Color Infrared and In-Gel

Cell-Based Assays:
In-Cell Western™ and On-Cell Western

Protein Detection:
Coomassie-Stained Gels, Membrane and Slide Arrays

Histology:
Tissue Section Imaging

Nucleic Acid Detection:
DNA Gel Staining (Syto® 60), and Arrays

Microwell Assays:
ELISA/FLISA, Protein Arrays, and RNAi Analysis

Actual size of scan area
(7 cm x 11 cm)

ODYSSEY® Fc
Dual-Mode Imaging System

Over the past decade, LI-COR® has revolutionized Western blot analysis through two-color quantitative Westerns and optimized reagents. Building on this experience, the Odyssey Fc again advances Western blot technology by combining the rich history of chemiluminescence with the power and sensitivity of the LI-COR FieldBrite™ XT optical system for exceptional dual-mode detection for both chemiluminescent and infrared fluorescent imaging. The Odyssey Fc, with its patented FieldBrite XT optical technology, provides:

Chemiluminescent Advantages:

- One-touch image acquisition every time – no need for multiple exposures
- No "blown out" lanes or saturation
- No need for software manipulation post image acquisition
- Save valuable money on film and darkroom expenses

Quantitative Infrared Fluorescent Advantages:

- Accurate quantification over 6 logs of dynamic range
- The only laser-based system on the market that also incorporates the advantages of chemiluminescence
- Superior sensitivity over visible fluorescent detection (Fig. 13)

Nucleic Acid Detection:

- Ethidium bromide & SYBR® family of DNA stains for agarose gel digital imaging
- No harmful UV excitation light – safer alternative for downstream DNA applications
- Disposable imaging tray to avoid instrument contamination

- ☑ Offers both chemiluminescent and infrared fluorescent imaging
- ☑ Versatile nucleic acid detection
- ☑ Economical choice for chemiluminescent and infrared fluorescent users

FieldBrite XT Optical System

At the heart of the Odyssey Fc is LI-COR's patented FieldBrite XT optical system (Fig. 14). This CCD camera chip technology, combined with infrared lasers, ensures the highest sensitivity of any CCD camera technology on the market.

Benefits of the FieldBrite XT optical system include:

- Eliminates the need for image "stacking" and the worry of image saturation. The user selects only the total acquisition time before taking the one, and only, image necessary.
- Provides uniformity across the entire field of view with a coefficient of variation of less than 3%. This even laser illumination offers an image that is already flat and uniform without additional software corrections.
- Features an optimized resolution and sensitivity for high quality performance and image quality with low background.

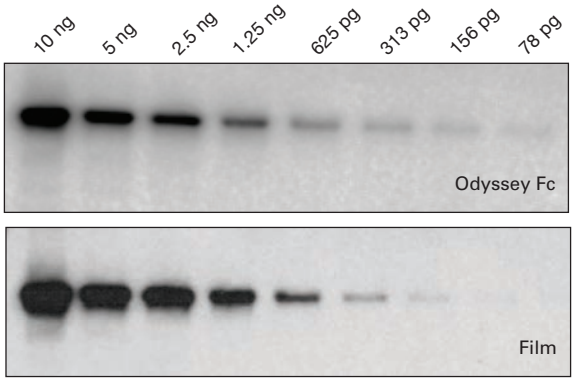


Figure 13. Chemiluminescent detection of purified transferrin, using the Odyssey Fc imager (top) and film exposure (bottom). Detection sensitivity is similar. With Odyssey Fc detection, blowout of stronger bands is reduced and **band resolution is improved**.

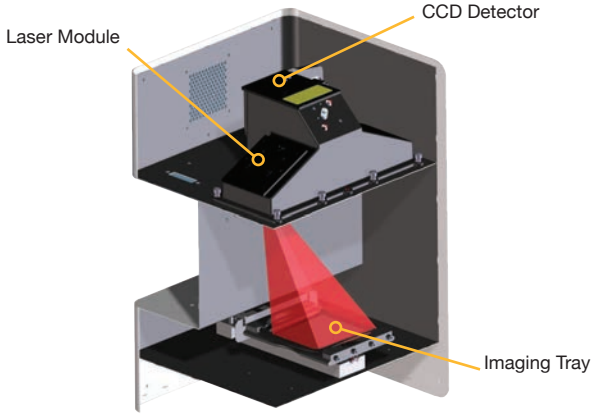


Figure 14. Laser module contains a 700 nm laser and a 800 nm laser. FieldBrite XT technology ensures uniform illumination of the sample, low coefficient of variation (%CV), and exceptional reproducibility. Illustration depicts activation of 685 nm channel.

Fc Applications

Western Blots:
Chemiluminescent, Two-Color Infrared, and In-Gel

Protein Detection:
Coomassie-Stained Gels

Nucleic Acid Detection:
DNA Gel Staining (EtBr, SYBR® Family, and Syto® 60)

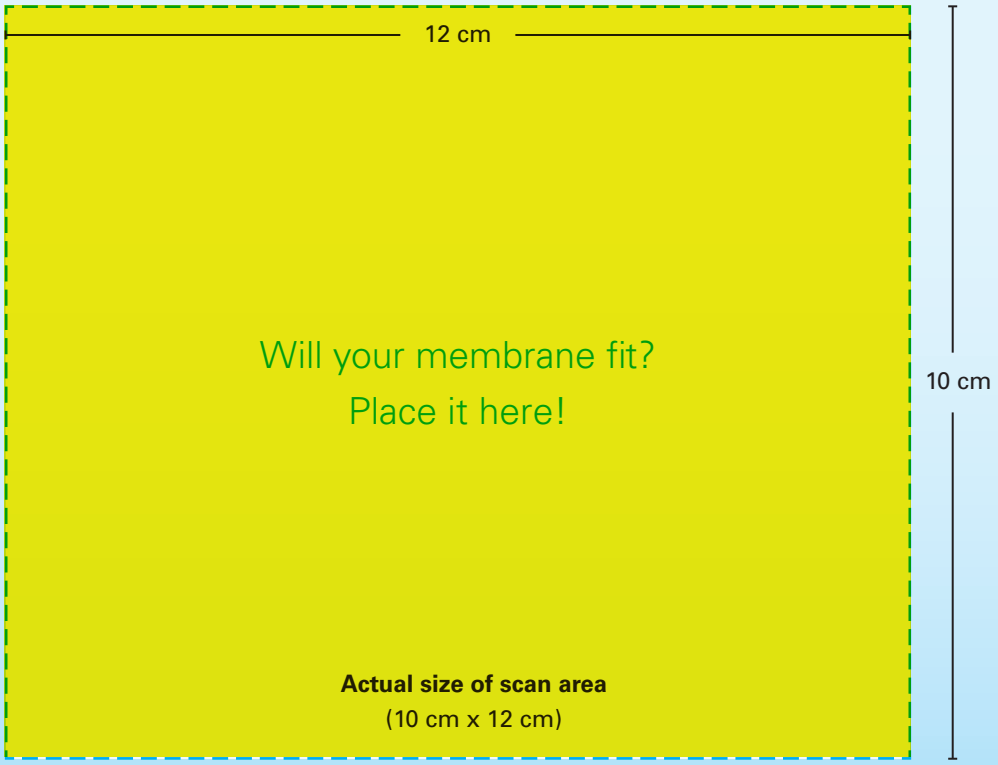


Image Studio Software

Image Studio is an extremely simple and easy-to-use imaging software. It is compatible with Odyssey® CLx and Odyssey Fc imaging systems.

- Easy to use – training for new users is fast and simple
- Intuitive, application-driven ribbon interface (Fig. 16)
- Supports nine different types of analysis, including Western blots, DNA gel documentation, and small animal imaging (Fig. 17)

Lab Notebook

Now you can easily create electronic or hard-copy lab reports customized to meet your specific needs (Fig. 15). Design customized templates in Image Studio using a list-building approach to arrange the content. Then, simply select the desired template to format your data for a custom report.

You can easily design multiple templates and prepare various reports based on your intended audience. If your record-keeping method must vary to meet different documentation requirements (such as GLP or ISO), you can quickly re-arrange a report or add information while maintaining your original Lab Notebook.

Figure 15. Create electronic or hard-copy lab reports customized to meet specific needs and documentation requirements, such as GLP or ISO.

MPX™ Blotting System

The MPX Blotting System is ideal for use with the entire Odyssey Family of Imagers. It can be used for nearly all multiple-target Western blot procedures that utilize PVDF or Nitrocellulose membranes (7 x 8.5 cm). Low-volume channel ports (up to 160 µL) conserve antibody and reduce costs. Twenty-four channel ports are conveniently spaced, staggered, and beveled, creating an efficient workflow using standard or multi-channel pipettes (Fig. 18). Forty-eight targets on a single membrane are possible with the Odyssey family's two-color detection. The MPX Blotting System is compatible with many single-well, precast gels.

Features:

- Screen a single sample and multiple targets on the same blot
- Screen up to 48 targets with the Odyssey Family of Imagers (two-color)
- Conserve antibody and reagents

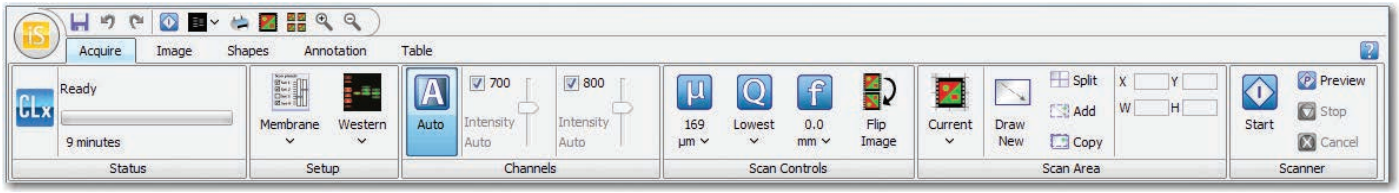


Figure 16. Image Studio is a ribbon-based application that displays analysis and formatting tools for user selection and implementation.

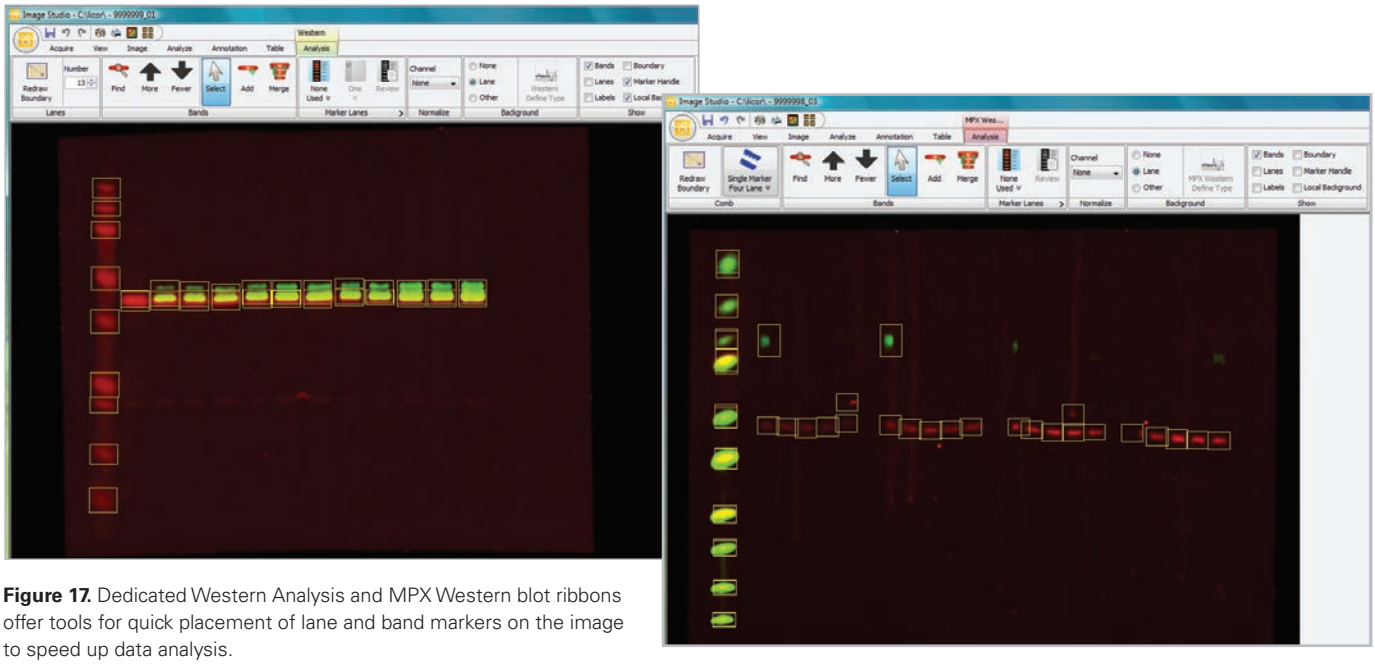
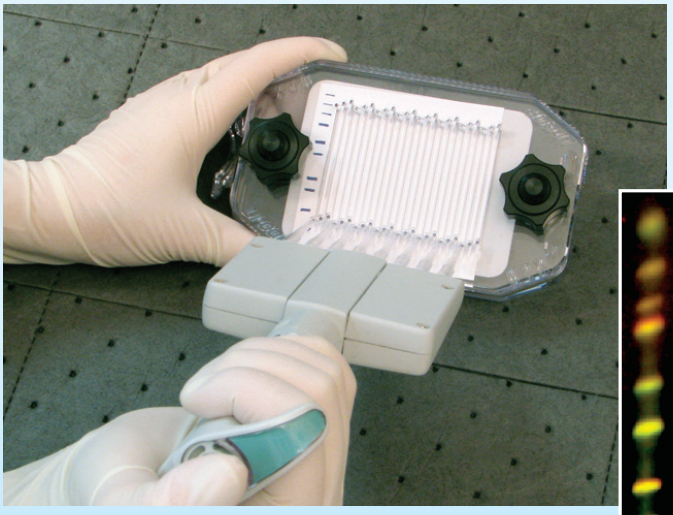


Figure 17. Dedicated Western Analysis and MPX Western blot ribbons offer tools for quick placement of lane and band markers on the image to speed up data analysis.



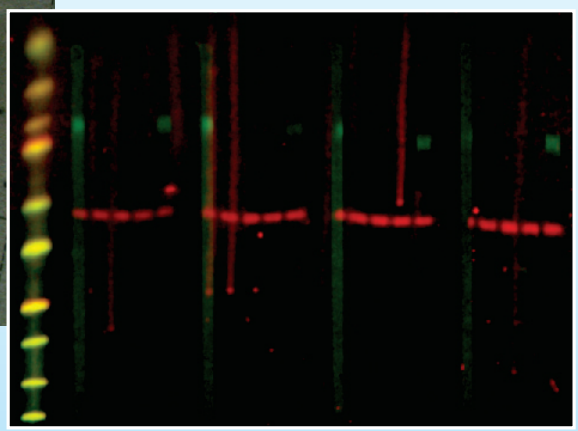


Figure 18. MPX Blotting System and representative Western blot imaged with the Odyssey Fc System shows evaluation of multiple primary and secondary antibody concentrations.

(Pipette not included)

ODYSSEY® CLx System Specifications

Image Field Size:
25 cm x 25 cm

Dynamic Range:
Manual: 4 logs
Auto: > 6 logs

Laser Lifetime:
40,000 working hours

700 Channel Laser Source:
Solid-state laser diode at 685 nm

800 Channel Laser Source:
Solid-state laser diode at 785 nm

Detectors:
Silicon avalanche photodiodes

Scanning Speed:
5-40 cm/s

Resolution:
21-337 µm

Focusing Range:
Microscope is adjustable 0 mm – 4 mm above the scan bed to obtain best signal-to-noise ratio

Operating Conditions:
15-35°C and dew point no greater than 20°C

Power Requirements:
Universal input range is between 100-240 VAC; 4 Amp maximum; 1 Amp typical; 50/60 Hz

Dimensions:
37 h x 53 w x 62 d cm (14.5 x 21 x 24.4 inches)

Weight:
33 kg (72 lbs)

ETL Listed for US/CAN, CE Marked

ODYSSEY Sa System Specifications

Image Field Size:
7 cm x 11 cm

Dynamic Range:
Manual: 4 logs

Laser Lifetime:
40,000 working hours

700 Channel Laser Source:
Solid-state laser diode at 685 nm

800 Channel Laser Source:
Solid-state laser diode at 785 nm

Detectors:
Silicon avalanche photodiodes

Scanning Speed:
6 minutes with 100 µm resolution

Resolution:
20-500 µm

Focusing Range:
0 - 3.95 mm (suitable for focusing through the bottom of compatible microplates with transparent, flat-bottom wells)

Operating Conditions:
15-35°C and dew point no greater than 19°C

Power Requirements:
Universal input between 100-127 VAC and 200-240 VAC; 2.25 Amp maximum; 1 Amp typical; 50/60 Hz

Dimensions:
36 h x 45 w x 57 d cm (14 x 18 x 22 inches)

Weight:
24 kg (53 lbs)

ETL Listed for US/CAN, CE Marked

ODYSSEY Fc System Specifications

Image Field Size:
10 cm x 12 cm

Dynamic Range:
> 6 logs

Uniformity of Illumination:
CV <3% across field

Laser Lifetime:
20,000 working hours

600 Channel Light Source:
Diffuse light at 520 nm

700 Channel Laser Source:
Solid-state laser diode at 685 nm

800 Channel Laser Source:
Solid-state laser diode at 785 nm

Detectors:
Low-noise CCD. Thermoelectrically cooled.

Acquisition Times, per Channel:
- Fluorescence (600, 700, and 800 nm) channels: 30 s, 2 min, 10 min, plus variable time feature
- Chemiluminescence channel: 30 s, 2 min, 10 min, 60 min plus variable time feature

Focusing Range:
Automatic

Operating Conditions:
15-35°C and dew point no greater than 22°C

Power Requirements:
Universal input between 100-127 VAC and 200-240 VAC; 4 Amp maximum; 1 Amp typical; 50/60 Hz

Dimensions:
67.3 cm h x 41.4 cm w x 47 cm d (26.5 x 16.3 x 18.5 inches). Depth with imaging drawer open is 59.7 cm (23.5")

Weight:
27 kg (60 lbs)

ETL Listed for US/CAN, CE Marked

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www.licor.com/bio/distributors

LI-COR®
Experience Excellence

The LI-COR board of directors would like to take this opportunity to return thanks to God for His merciful providence in allowing LI-COR to develop and commercialize products, through the collective effort of dedicated employees, that enable the examination of the wonders of His works.

"Trust in the LORD with all your heart and do not lean on your own understanding. In all your ways acknowledge Him, and He will make your paths straight."

—Proverbs 3:5,6

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