IRDye® Infrared Dyes

ADVANCING DISCOVERY WITH INFRARED IMAGING

BRIGHT PERFORMANCE

LOWER BACKGROUND

HIGHER SIGNAL-TO-NOISE

ENHANCED SENSITIVITY

LI-COR®
Biosciences

IRDye®
INFRARED DYES

Bright Performance
Brighter performance than visible fluorophores

Lower Background
Significantly lower background in the near-infrared wavelengths

Higher Signal-to-Noise
Benefit from the brighter fluorescence and lower background

Enhanced Sensitivity
Cleaner backgrounds and intense fluorophores coupled with the right detection system provide you with greater sensitivity for your assays

Advancing Discovery with Infrared Imaging

LI-COR Biosciences' IRDye fluorescent dyes have absorption and emission wavelengths in the near-infrared (NIR) spectrum, between 680 and 800 nm. They are optimized for use on LI-COR Infrared Imaging Systems but may be used with a variety of platforms which offer excitation and emission in the near-infrared region. The dyes are designed for antibody, protein, or peptide labeling for use in a variety of detection applications including Western blotting, In-Cell Western™ assays, fluorescence microscopy, tissue section, whole organ and *in vivo* imaging applications. IRDye Infrared Dyes are ideal for simultaneous, multicolor imaging applications due to the narrow emission spectra of the dyes and no crossover between fluorophores.

In the visible wavelength range used by most fluorescent imaging systems, biological components, membranes and plastics produce high background due to light scattering and autofluorescence. This high background limits the sensitivity of visible fluorescent systems and makes it nearly impossible to detect low-abundance proteins at endogenous levels. At the infrared wavelengths detected by the Odyssey® Infrared Imaging System, both autofluorescence and light scattering are dramatically reduced. The result is the lowest background, highest signal-to-noise ratios, and best detection sensitivity available with a fluorescent system.

Wavelength Ranges of Various Fluorophores

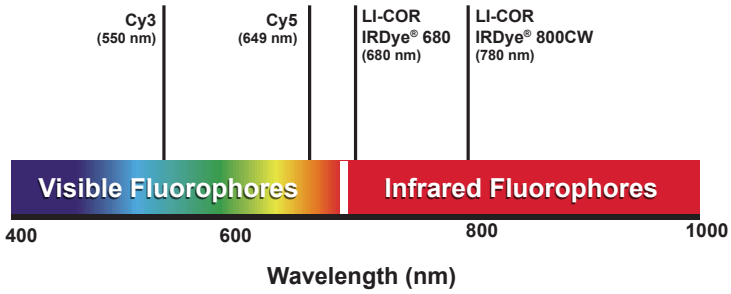
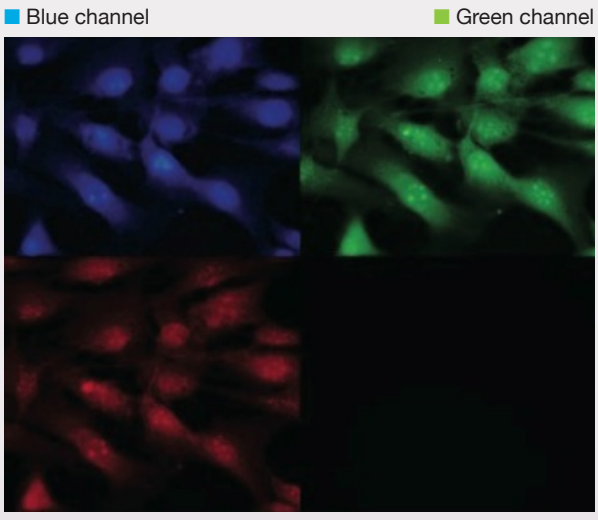


Figure 1. Although commonly used, visible fluorophores do not offer optimal performance for all applications. Cells, tissues, plastics, blotting membranes, and chemical compound libraries all possess intrinsic autofluorescence that can interfere with detection. However, in the near-infrared spectral region (650 – 900 nm), autofluorescent background is dramatically reduced. For this reason, NIR fluorophores, such as IRDye infrared dyes, are able to enhance detection sensitivity and signal-to-noise ratios in applications where autofluorescence had been limiting. This improvement has extended the benefits of fluorescent detection to new applications such as Western blotting and *in vivo* imaging, and can provide improved performance for cell-based assays, protein microarrays, microscopy, and screening of small molecule libraries.



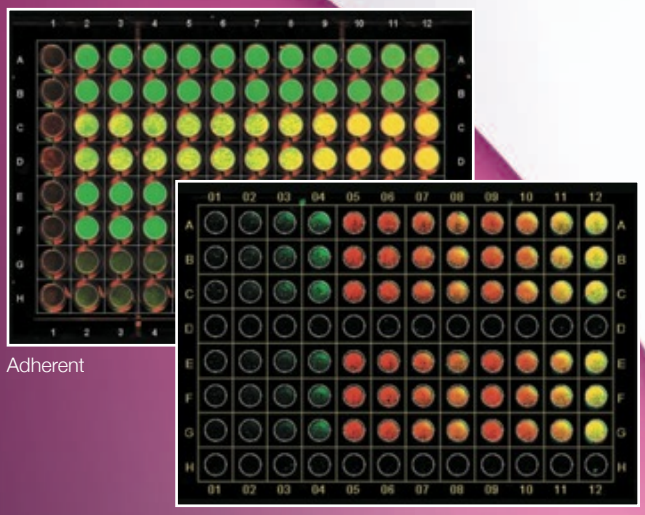
Blue channel: 5582 msec
Green channel: 4977 msec
Red channel: 6007 msec
IRDye 800 channel: 17,578 msec
(Much longer exposure, but still no detectable autofluorescence)

Figure 2. Very low autofluorescence at 800 nm: NIH 3T3 cells were fixed in 0.2% glutaraldehyde. These unstained cells were viewed using standard blue, green, and red filters, plus an IRDye 800 infrared dye filter set from Chroma Technology Corp. Glutaraldehyde fixation caused strong autofluorescence in the visible fluorescence channels (blue, green, and red). However, no autofluorescent background could be seen in the IRDye 800 infrared dye channel, even with a very long exposure (signal would be shown as red in false color).

** Data courtesy of Drs. Harold Fisk and Mark Winey, University of Colorado, Boulder. Image captured with Leica DM RXA epifluorescent deconvolution microscope, outfitted as follows: xenon light source, IRDye 800 filter set from Chroma Technology (EX: HQ740/35x, DC: 770DCXR, EM: HQ780LP), and Cooke SensiCam CCD camera without extended spectral range.*

NIR Fluorescent Applications
Protein and Cellular Assays

Detection of proteins on Western blots and in microplate-based cellular assays, including In-Cell Western™ (ICW) immunofluorescent assays, is not optimal with visible fluorophores because membranes, plastics, and many biological samples have relatively high autofluorescence in the visible wavelength range. IRDye® reagents have a wide linear detection range that increases quantification accuracy compared to methods such as chemiluminescence. IRDye protein labeling kits, IRDye NHS esters, and labeled conjugates such as secondary antibodies are available for application development (see Ordering Information).



Adherent

Suspension

The In-Cell Western Assay
Developed by LI-COR Biosciences in 2001

Western Blot Analysis of ERK Activation
IRDye Near-Infrared Dye Gives Superior Performance

ERK1/2 and phospho-ERK were detected in lysates of unstimulated and EGF-stimulated A431 cells. Two fold serial dilutions of lysate are shown.

1. Odyssey Near-Infrared Images: The single-color images (1b & 1c) were collected simultaneously. Images were overlaid (1a) to show both total ERK and phospho-ERK (yellow color indicates overlap of red and green signals). The mobility shift caused by phosphorylation can be seen in the EGF-stimulated lysate.

2. Visible Fluorescence Images: 532 nm and 633 nm images were collected separately. High background obscures visual observation of phospho-ERK and the mobility shift in the EGF-stimulated lysate.

Microscopy

IRDye infrared dyes can add two channels for fluorescent microscopy that are well separated spectrally from visible fluorophores. Bright fluorescence, no signal crossover with visible fluorophores, and the low NIR background of biological samples produce high quality images (Figures 3-5). Many microscopes can be adapted with filter sets (see www.licor.com/microscopyReqs for details). For applications requiring extended exposure to excitation light, IRDye 700DX provides excellent photostability. Cell and tissue damage is reduced during prolonged exposures since NIR excitation light has lower energy than shorter wavelength visible light.

** Data courtesy of Drs. Harold Fisk and Mark Winey, University of Colorado, Boulder. Image obtained with a Leica DM RXA deconvolution microscope, xenon lamp, and Cooke SensiCam CCD camera.*

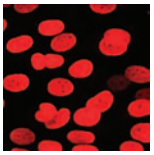


Figure 3. NIH 3T3 cells stained with anti-histone H3 primary antibody and IRDye 700DX secondary antibody. Images obtained with a Zeiss Axiovert 100 epifluorescent microscope using a mercury lamp.

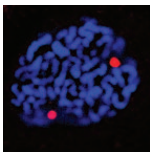


Figure 4*. Staining of duplicated centrosomes. Condensed chromosomes are stained with DAPI (blue). The two centrosomes (red dots) are stained with a primary antibody against pericentrin (a centrosomal component) and IRDye 800CW secondary antibody.

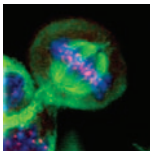
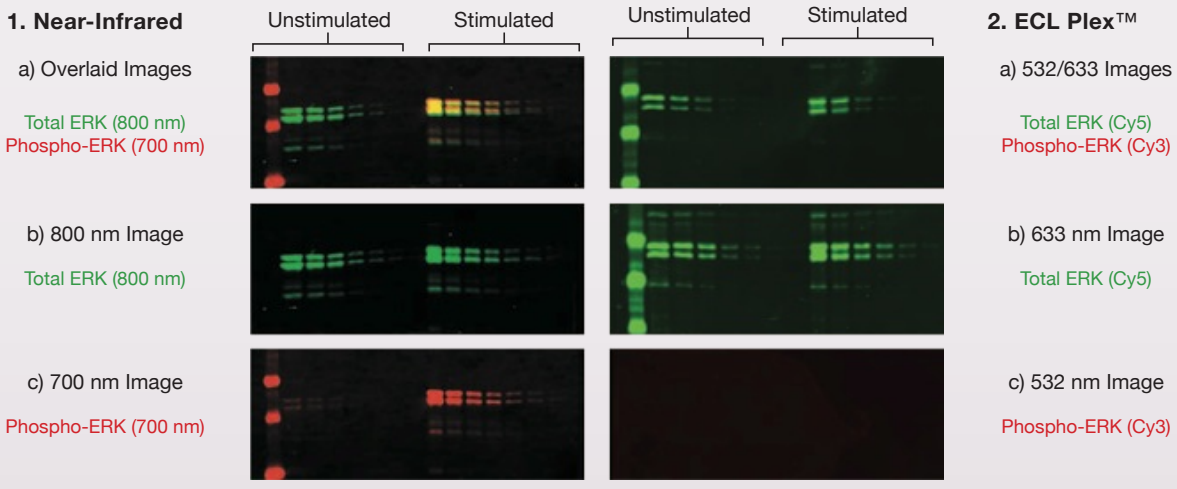


Figure 5*. Three-color image of a mitotic cell. NIH 3T3 cells were stained with anti-tubulin primary and IRDye 800CW secondary antibody (shown in green), human CREST serum to show kinetochores (Texas Red®, red (false color)), and Hoechst for chromosomal DNA (blue).

Lower background in the near-infrared substantially increases sensitivity



Molecular Imaging

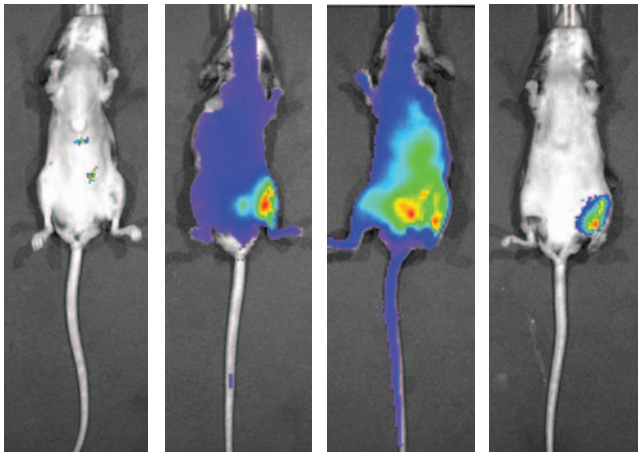


Figure 6. IRDye infrared dyes have the best wavelengths for *in vivo* imaging performance: Tracking the distribution of butyrylcholinesterase labeled with IRDye 800CW following intramuscular injection. Imaged on a Xenogen® IVIS® 200 (Caliper Life Sciences).

** Data courtesy of Dr. Ellen Duysen, University of Nebraska Medical Center, Omaha, NE.*

Light Penetration

The tracking of probes labeled with IRDye 800CW has become popular for optical imaging (Figure 6) because near-infrared fluorophores minimize the optical challenges of detecting photons in tissues. A fundamental consideration in optical imaging is maximizing the depth of tissue penetration, which is limited by the absorption and scattering of light. Light is absorbed by hemoglobin, melanin, lipids, and other compounds present in living tissue (Figure 7). Scattering decreases as wavelength increases. Dyes and fluorescent proteins absorbing below 700 nm are difficult to detect in small amounts at depths below a few millimeters. In the NIR region (700 - 900 nm), the absorption coefficient of tissue is at its lowest, and light can penetrate to depths of several centimeters. Above 900 nm, light absorption by water begins to cause interference.

Autofluorescence

Autofluorescence is also an important consideration. Naturally-occurring compounds in animal tissue can cause considerable autofluorescence throughout the visible spectral range up to about 700 nm, which can mask the desired signal. IRDye 800CW has excitation/emission maxima at 774 nm/789 nm, precisely centered in the region known to give optimal signal-to-noise ratio for optical imaging.

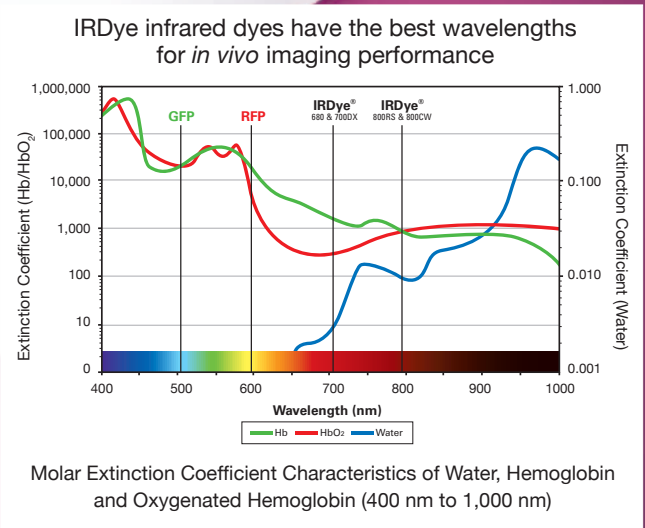


Figure 7. The NIR spectral region (700-900 nm) for optimal imaging. Hemoglobin in tissue strongly absorbs light in the visible spectrum. For most visible fluorescent dyes, this limits the penetration of excitation light and the escape of fluorescence. IRDye infrared dyes absorb and emit near the absorption minimum of hemoglobin and below wavelengths where water absorption increases.

Optical Molecular Imaging Agents

Development of validated optical targeting agents for molecular imaging can be complex and time-consuming. LI-COR Biosciences, a worldwide leader in optical agent development, has an ongoing research team developing high quality agents. These agents provide plug-and-play solutions, allowing researchers to do more discovering and less developing.

For oncology researchers, LI-COR offers the most extensive line of oncology imaging agents in the world, providing an ever expanding tool box for detecting tumors earlier, monitoring progression of tumors, visualizing vasculature and lymphatics (see above).

In addition, many of these agents are useful in a variety of other areas, including structural imaging, inflammation, arthritis and more.

These agents include:

Receptor Targeting Agents

- IRDye EGF – Targets EGFR which is overexpressed on many cancer cell lines
- IRDye RGD – Targets the overexpresssion of $\alpha_v\beta_3$ integrin receptors commonly found in numerous cancer cell lines

(continued on next page)

Molecular Imaging (cont.)

Transport Targeting Agents

- IRDye 2-DG – Targets the Glut1 transport which exhibits elevated rates of glycolysis in many tumor cell lines

Contrast Agents

- IRDye PEG – A non-specific contrast agent used for vascular, lymphatic and general tumor imaging

Structural Agents

- IRDye BoneTag™ – A calcium chelating tetracycline derivative for targeting bone and providing additional structural information

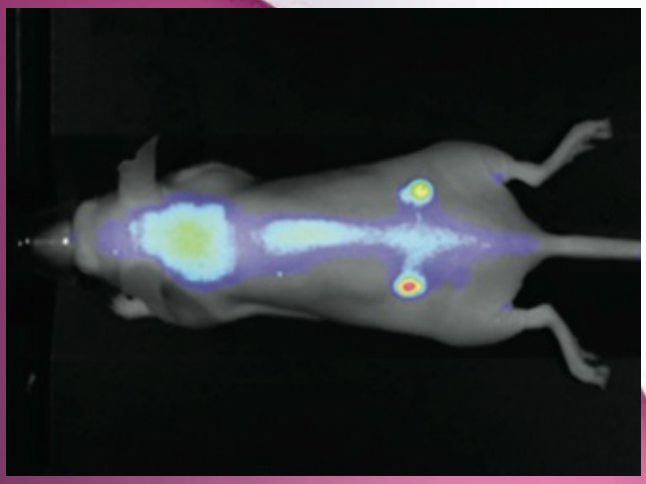


Figure 8. Nude mouse bearing a U87 tumor (left hip) and an A431 tumor (right hip). Image acquired using the Pearl® Imager (LI-COR Biosciences) 24h post I.V. injection of 1 nmole IRDye 800CW RGD.

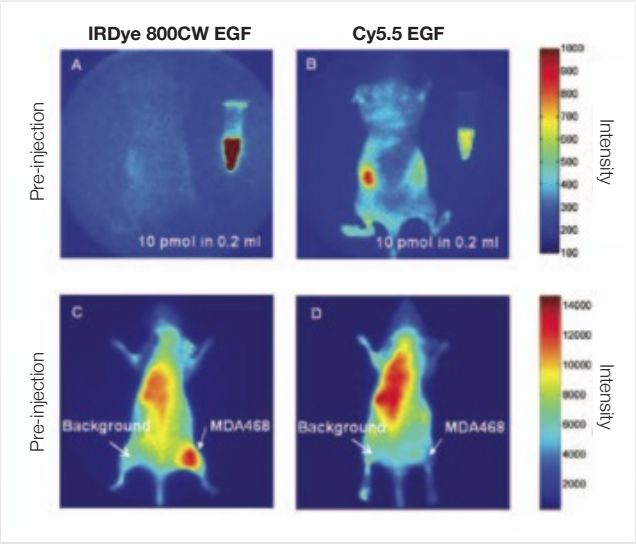


Figure 9. A and B: Comparison of pre-injection mice illuminated with 785 nm (Figure A) and 660 nm (Figure B) light. Also shown is a vial of IRDye 800CW EGF or Cy5.5 EGF. Autofluorescent signals in Figure A are significantly lower than Figure B. C and D: Animals bearing EGFR-positive MDA-MB-468 xenograft injected with IRDye 800CW EGF (Figure C) and Cy5.5 EGF (Figure D). NIR detection in Figure C shows more efficient targeting of the tumor than the Cy5.5 visible wavelength fluorophore detected in Figure D.

IRDye® Labeling Reagents

IRDye infrared dyes exhibit excellent brightness in fluorescence experiments. IRDye 800CW, IRDye 680LT, IRDye 700DX, and IRDye 680 dissolve readily in water without formation of aggregates, even in the presence of inorganic salts. Conjugates of these dyes give excellent performance in aqueous media, including buffers such as PBS. The less hydrophilic IRDye 800RS provides a good balance between aqueous and organic solubility for nucleic acid applications.

IRDye infrared dyes can be used to label antibodies, nucleic acids, peptides, proteins, carbohydrates, and viruses. Table 1 contains labeling recommendations for each IRDye infrared dye.

IRDye NHS Ester dyes can be coupled to molecules (Figure 10) that contain primary or secondary aliphatic amine groups (for example, lysine residues). Compounds such as carbohydrates, RNA, and DNA require functionalization with one or more amino-linker groups prior to labeling with these dyes.

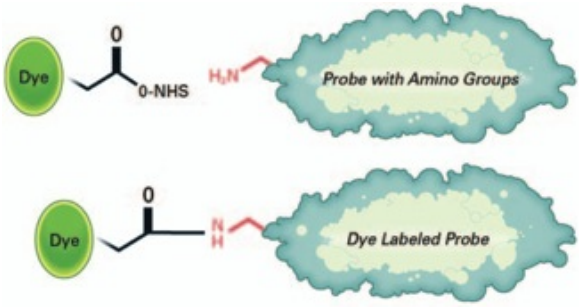


Figure 10. NHS ester reacting with primary aliphatic amine (top). Dye label attached through amide bond (bottom).

Table 1. Recommended IRDye Infrared Dyes for Labeling

	Proteins	Peptides	Nucleic Acids
IRDye 800CW NHS Ester	■	■	
IRDye 800RS NHS Ester			■
IRDye 680LT NHS Ester	■	■	
IRDye 700DX NHS Ester	■	■	
IRDye 680 NHS Ester	■	■	
IRDye 800 Phosphoramidite			■
IRDye 700 Phosphoramidite			■

Ordering Information

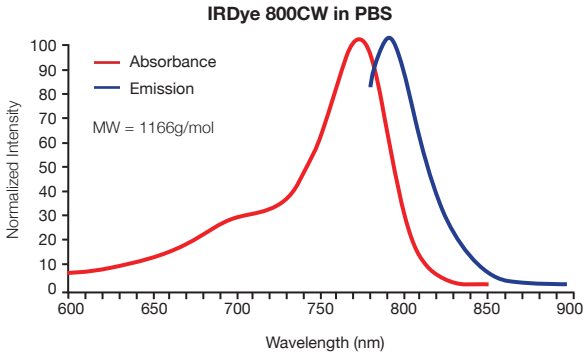
IRDye® – NHS Esters

NHS Ester dyes can be coupled to molecules that contain primary or secondary aliphatic amine groups (for example, lysine residues). Compounds such as carbohydrates, RNA, and DNA require functionalization with one or more amino-linker groups prior to labeling with these dyes.

IRDye 800CW

IRDye 800CW is the dye of choice for protein/antibody labeling applications and for nucleic acid applications requiring high labeling density. This dye has the highest water solubility and salt tolerance of the IRDye 800 series.

IRDye 800CW NHS Ester 0.5mg 929-70020
IRDye 800CW NHS Ester 5.0mg 929-70021

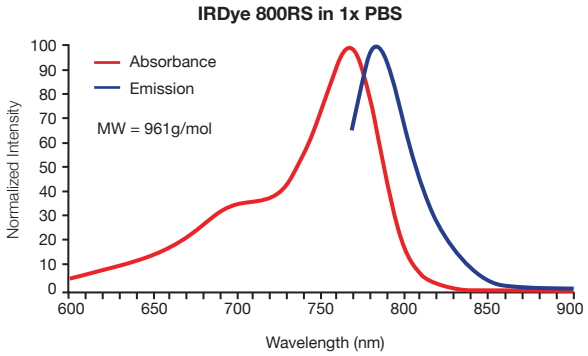


Solvent	Ext. Coeff. (M^{-1} cm^{-1})	Abs Max (nm)	Em Max (nm)
Methanol	300,000	778	794
Water	240,000	774	789
1X PBS	240,000	774	789
PBS: Methanol	270,000	777	791

IRDye 800RS

IRDye 800RS is the dye of choice for nucleic acid applications. Nucleic acids labeled with this dye are easily purified with reverse-phase chromatography. The dye has good water solubility, but low salt tolerance, and is more hydrophobic than IRDye 800CW. This dye is not recommended for most protein applications.

IRDye 800RS NHS Ester 0.5mg 929-72020
IRDye 800RS NHS Ester 5.0mg 929-72021



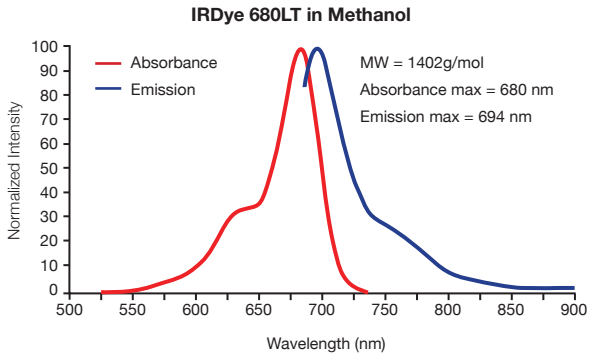
Solvent	Ext. Coeff. (M^{-1} cm^{-1})	Abs Max (nm)	Em Max (nm)
Methanol	300,000	770	786
Water	200,000	767	786
1X PBS	200,000	767	786
PBS: Methanol	200,000	770	786

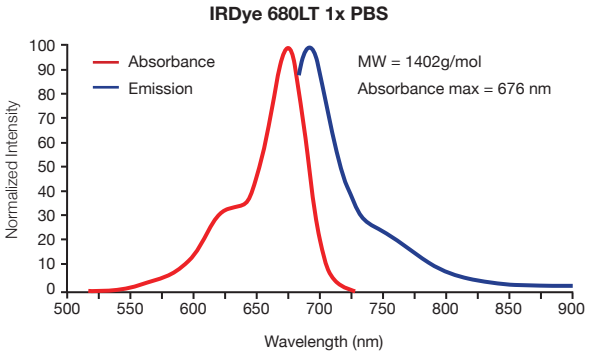
Introducing New “Bright” IRDye® 680LT

The new IRDye 680LT dye is highly soluble in water and is significantly brighter and more photostable than many other 700 nm near-infrared dyes tested. The spectral characteristics of IRDye 680LT are well suited for use on LI-COR imaging instruments with absorbance and emission maxima in aqueous solution and methanol of 676 and 693 nm, respectively.

Dye Brightness

IRDye 680LT matches or surpasses the brightness of Alexa Fluor® 680. Fluorescence determinations were made at a fixed antibody concentration of 10µg/mL in physiological buffer using dye-labeled goat anti-rabbit (GAR) conjugates prepared in-house. Fluorescence was measured using a PTI Fluorometer at the optimum excitation and emission wavelengths of each dye. The fluorescence intensity of each conjugate increased with increased degree of labeling. A plot of degree of labeling versus fluorescence (Figure 11) shows that the dynamic range for the 680LT GAR is much broader than the Alexa Fluor 680 which quickly levels off above D/P 3.4. The leveling off of the Alexa Fluor 680 conjugates is due to self-quenching. IRDye 680LT conjugates continue to increase in fluorescence intensity to at least D/P 6.4 which was the highest degree of labeling tested. Overall, IRDye 680LT is significantly brighter than Alexa Fluor 680.





IRDye 680LT NHS Ester, 0.5 mg.....929-71010
IRDye 680LT NHS Ester, 5.0 mg.....929-71011

Solvent	Ext. Coeff. (M^{-1} cm^{-1})	Abs Max (nm)	Em Max (nm)
Methanol	250,000	680	694
1X PBS	250,000	676	693
PBS: Methanol	250,000		

Ordering Information

IRDye® 680LT (cont.)

Functional Testing

The brightness and photostability of IRDye 680LT make it an excellent choice for Western blots, In-Cell Western™ Assays and microscopy. Goat anti-rabbit secondary antibodies which were labeled with IRDye 680LT and Alexa Fluor 680 for fluorescence measurements were used for functional testing. In-Cell Western data mimics the fluorescence measurement data for the dye-labeled conjugates. The usable range for IRDye 680LT is wider than for Alexa Fluor 680. As well, overall fluorescence intensity or "brightness" at comparable D/P ratios is greater for IRDye 680LT than for Alexa Fluor 680. The signal intensity was 2 to 3 fold higher for cells stained with IRDye 680LT labeled secondary antibody compared to the Alexa Fluor 680 conjugates.

Photostability

The photostability of IRDye 680LT was compared to Alexa Fluor 680 and IRDye 700DX, an extremely photostable 700 nm fluorescent dye. Test samples were prepared by spotting equimolar amounts of each dye onto nitrocellulose membrane. The membrane was then scanned repeatedly on the Odyssey Infrared Imaging System and the signal intensity was normalized to the control signal at time zero (Figure 12[1]). The relative fluorescence of the 700DX samples was unchanged, the 680LT fluorescence decreased slightly and the Alexa Fluor 680 fluorescence decreased significantly. IRDye 700DX was the most stable dye, followed by IRDye 680LT and Alexa Fluor 680.

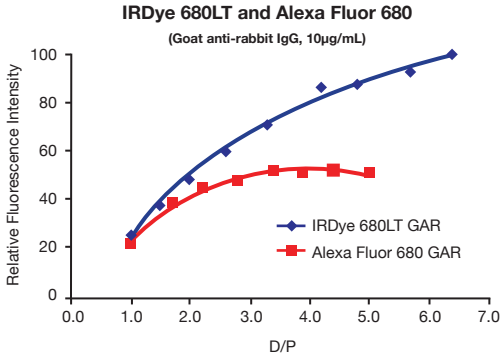


Figure 11: Relative fluorescence of goat anti-rabbit IgG labeled with IRDye 680LT and Alexa Fluor 680.

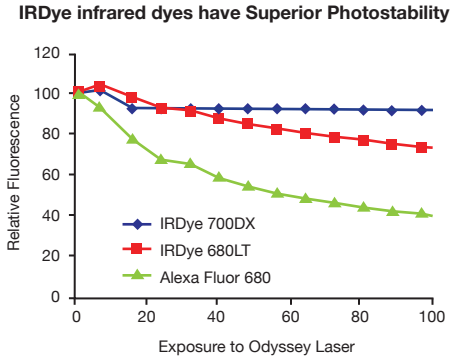


Figure 12: Photostability of 25 fmoles of IRDye 700DX, IRDye 680LT and Alexa Fluor 680. Signal intensity is normalized to the respective maximum intensity at time = 0.

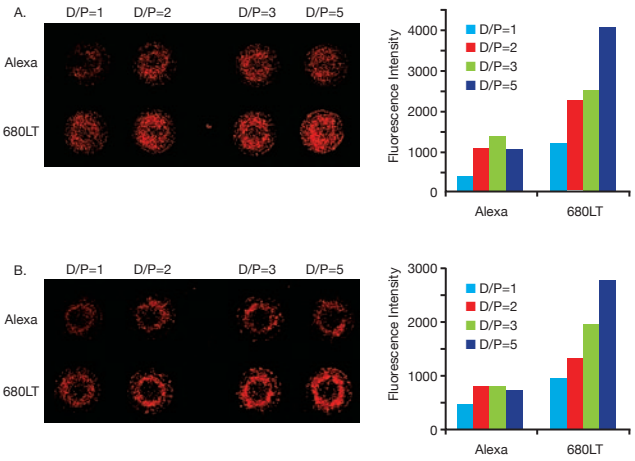


Figure 13: Superior fluorescence intensity of IRDye 680LT: Comparison of cell staining signals from goat anti-rabbit secondary antibodies labeled with IRDye 680LT or Alexa Fluor 680 at different D/P ratios for cultured SK-BR-3 (A) or SK-OV-3 (B) cells. The images were scanned on the Odyssey® System. Signal intensities were quantified and are shown on the right. The signal intensities were 2- to 10-fold higher depending on the dye molecules per antibody molecule (D/P) for IRDye 680LT compared to Alexa Fluor 680.

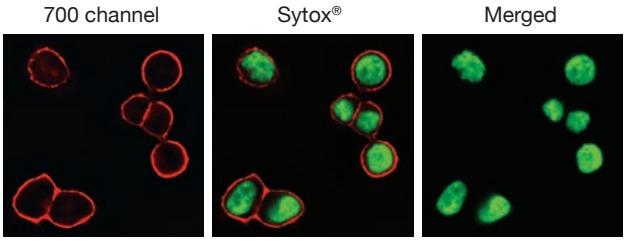
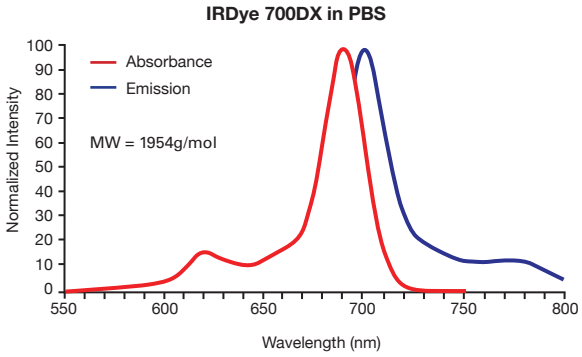


Figure 14: Immunofluorescence staining of HER2 protein on SK-BR-3 cell membrane. Cells were cultured on cover slips. After fixation and permeabilization, cells were incubated with rabbit anti-HER2 mAb (CST), followed by 680LT labeled (D/P=3.3) goat anti-rabbit secondary antibody. Sytox green dye was used to stain the nuclei. Images were acquired on an Olympus microscope and deconvolved using the accompanying software.

IRDye® 700DX

IRDye 700DX is ideal for protein/antibody/nucleic acid labeling and other applications where high water solubility is essential. This dye has excellent photostability (Figure 12), water solubility, and salt tolerance, but is sensitive to acids.

IRDye 700DX NHS Ester 0.5mg 929-70010
IRDye 700DX NHS Ester 5.0mg 929-70011



Solvent	Ext. Coeff. (M^{-1} cm^{-1})	Abs Max (nm)	Em Max (nm)
Methanol	210,000	680	687
Water	165,000	689	700
1X PBS	165,000	689	700

Ordering Information

IRDye® QC-1 NHS Ester

IRDye QC-1 is the first non-fluorescent quencher that can efficiently quench fluorescence from a wide range of fluorophores from the visible to near-infrared regions (from approximately 500 to 800 nm) in a fluorescence resonance energy transfer (FRET) system. For the first time, you do not need to carefully match the donor's fluorescence spectrum and the acceptor's absorption spectrum to determine which acceptor is suitable for your FRET application(s). Just pair the IRDye QC-1 with the visible or near-infrared fluorophore within the wide wavelength range of the quencher.

IRDye QC-1 is a water-soluble, monoreactive NHS ester dye, which allows it to be used to label peptides, proteins, nucleic acids, etc., through the amine group on such molecules. A water-soluble quencher simplifies the labeling and purification process.

IRDye QC-1 NHS Ester 0.5 mg 929-70030
IRDye QC-1 NHS Ester 5.0 mg 929-70031

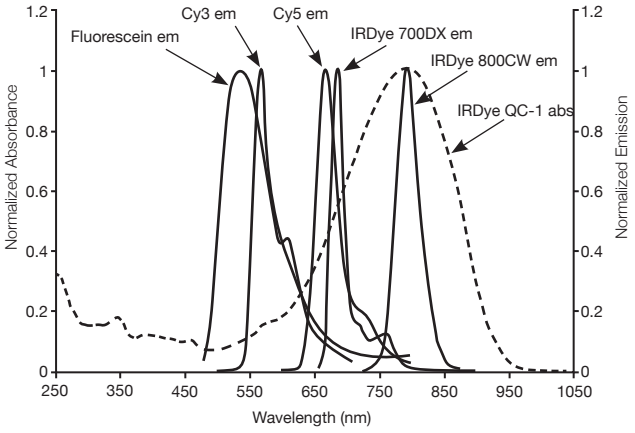


Figure 15: Spectral overlap between the absorption spectrum of IRDye QC-1 and the fluorescence spectra of fluorescein, Cy3, Cy5, IRDye 700DX, and IRDye 800CW.

Fluorescence Quenching Efficiency of IRDye QC-1 Against Various Fluorophores in FRET-Based Octapeptide Caspase 3 Substrate Systems.

Donor (Fluorophore)	Acceptor (IRDye QC-1)
Fluorescein	97.5%
Cy3	98.1%
Cy5	97.9%
IRDye 680	98.8%
IRDye 700DX	98.8%
IRDye 800CW	98.7%

IRDye® 800CW Protein Labeling Kits

IRDye 800CW Protein Labeling Kit – High MW (1.0 mg) 928-38040
This kit is designed to label 1.0 mg of high molecular weight (45-200 kDa) protein.
The kit is sufficient for three labeling reactions.

IRDye 800CW Protein Labeling Kit – Low MW (1.0 mg) 928-38042
This kit is designed to label 1.0 mg of low molecular weight (15-45 kDa) protein.
The kit is sufficient for three labeling reactions.

IRDye 800CW Protein Labeling Kit – Microscale (0.1 mg) 928-38044
This kit is designed to label 0.1 mg of protein with molecular weight 14-200 kDa.
The kit is sufficient for three labeling reactions.

IRDye® 680LT Protein Labeling Kits

IRDye 680LT Protein Labeling Kit – High MW (1.0 mg) 928-38066
This kit is designed to label 1.0 mg of high molecular weight (45-200 kDa) protein.
This kit is sufficient for three labeling reactions.

IRDye 680LT Protein Labeling Kit – Low MW (1.0 mg) 928-38068
This kit is designed to label 1.0 mg of low molecular weight (15-45 kDa) protein.
This kit is sufficient for three labeling reactions.

IRDye 680LT Protein Labeling Kit – Microscale (0.1 mg) 928-38070
This kit is designed to label 0.1 mg of low molecular weight (14-200 kDa) protein.
This kit is sufficient for three labeling reactions.

Ordering Information

IRDye® Conjugates

LI-COR IRDye infrared conjugates are optimized for a wide variety of applications, including Western blots, In-Cell Western™ Assays, In-Gel Westerns, On-Cell Westerns, protein arrays, tissue section imaging, and molecular imaging. All IRDye labeled secondary antibodies are highly cross-adsorbed.

IRDye 800CW Goat Anti-Mouse IgG (H+L), 0.5 mg	926-32210
IRDye 800CW Goat Anti-Rabbit IgG (H+L), 0.5 mg	926-32211
IRDye 800CW Donkey Anti-Mouse IgG (H+L), 0.5 mg	926-32212
IRDye 800CW Donkey Anti-Rabbit IgG (H+L), 0.5 mg	926-32213
IRDye 800CW Donkey Anti-Goat IgG (H+L), 0.5 mg	926-32214
IRDye 800CW Donkey Anti-Chicken (H+L), 0.5 mg	926-32218
IRDye 680LT Goat Anti-Mouse IgG (H + L), 0.5 mg	926-68020
IRDye 680LT Goat Anti-Rabbit IgG (H + L), 0.5 mg	926-68021
IRDye 680LT Donkey Anti-Mouse IgG (H + L), 0.5 mg	926-68022
IRDye 680LT Donkey Anti-Rabbit IgG (H + L), 0.5 mg	926-68023
IRDye 680LT Donkey Anti-Goat IgG (H + L), 0.5 mg	926-68024
IRDye 680LT Donkey Anti-Chicken IgG (H + L), 0.5 mg	926-68028
IRDye 680LT Goat Anti-Rat IgG (H + L), 0.5 mg	926-68029
IRDye 680LT Donkey Anti-Guinea Pig IgG (H + L), 0.5 mg	926-68030
IRDye 680 Goat Anti-Mouse IgG (H+L), 0.5 mg	926-32220
IRDye 680 Goat Anti-Rabbit IgG (H+L), 0.5 mg	926-32221
IRDye 680 Donkey Anti-Mouse IgG (H+L), 0.5 mg	926-32222
IRDye 680 Donkey Anti-Rabbit IgG (H+L), 0.5 mg	926-32223
IRDye 680 Donkey Anti-Goat IgG (H+L), 0.5 mg	926-32224
IRDye 680 Donkey Anti-Chicken (H+L), 0.5 mg	926-32228
IRDye 680 Goat Anti-Rat (H+L), 0.5 mg	926-32229
IRDye 800CW Labeled Streptavidin, 0.5 mg	926-32230
IRDye 680LT Labeled Streptavidin, 0.5 mg	926-68031
IRDye 680 Labeled Streptavidin, 0.5 mg	926-32231

IRDye® Optical Molecular Imaging Agents

IRDye 800CW 2-DG Optical Probe 926-08946
IRDye 800CW EGF Optical Probe.....926-08446
IRDye 800CW RGD Optical Probe 926-09889
IRDye 800CW PEG Contrast Agent 926-68031
IRDye 800CW BoneTag™ (40 nmol) 926-09375
IRDye 680 BoneTag (80 nmol).....926-09376
IRDye 800CW Carboxylate (100 nmol).....929-08972

IRDye® Phosphoramidites

Infrared phosphoramidites provide a means of producing infrared-labeled oligonucleotides on a DNA synthesizer. Fast deprotection chemistry allows dye-labeled oligonucleotides to be synthesized and HPLC purified in one day.

IRDye 800 Phosphoramidites (100 µMol).....4000-33
IRDye 700 Phosphoramidites (100 µMol).....4200-33

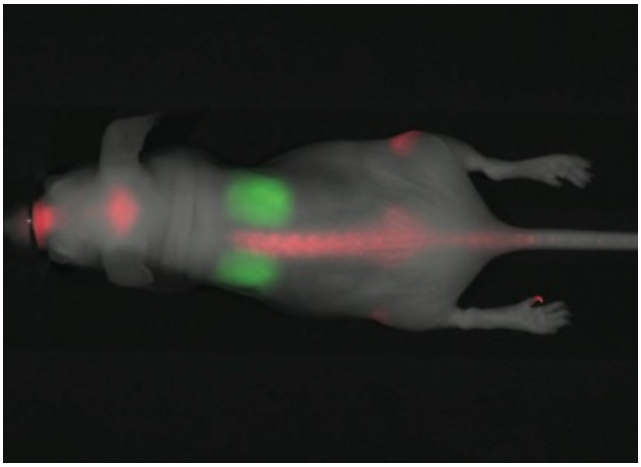


Figure 16*: IRDye infrared dye optical probes have superior background and sensitivity performance: Dorsal view of a nude mouse injected with MDA-231 Luc breast cancer cells (IC injection 3 weeks prior to imaging) which demonstrated metastasis to the lungs (dorsal view). IRDye 680 BoneTag was injected 7 days prior to imaging (red). IRDye 800CW EGF was injected 4h prior to imaging (green).

**Data courtesy of Ivo Que, Leiden University Medical Center, Lieden, The Netherlands. Image acquired using the Pearl® Imager (LI-COR® Biosciences).*

www.licor.com

- IRDye infrared dye technical and product information
- Broad range of applications and products
- Technical Support
- Educational Resources
- Relevant Publications
- On-line Ordering and Customer Support

LI-COR Translational Research

LI-COR Translational Research is seeking to facilitate the use of IRDye 800CW labeled imaging agents in clinical studies for detection of disease, its progression, and for monitoring treatment and drug efficacy.

We have performed a study examining the toxicity of IRDye 800CW in Sprague-Dawley rats. The study was performed in a manner compatible with that needed for a Phase 0/eIND. These data have been accepted for publication in Molecular Imaging and Biology (*M. Marshall et all. 2010, in press*).

Contact us for more information.

Translational.Research@licor.com

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Products and Applications Guide

Check out the Products and Applications Guide for a list of instruments, reagents and accessories designed for your Infrared Imaging needs.

Available online at:
www.licor.com/bio

Applications and Products

Application	Product
Proteomic	
2D Gel	NHS ester dyes
Apoptosis	Caspase substrate
Blot overlay	Secondary antibodies
Cell migration	Secondary antibodies
Cell or virus tracking	NHS
Cell proliferation, survival	NHS ester dyes
ELISA	Secondary antibodies, streptavidin
EMSA	Primers
Glycoprotein analysis	Streptavidin
In-Cell Western™ assay	Secondary antibodies
Immunoprecipitation	Secondary antibodies
Microscopy	Secondary antibodies, probes
On-Cell Western assay	Secondary antibodies
Protease assay	NHS, QC-1
Protein array	Secondary antibodies
Reverse phase array	Secondary antibodies
Small animal imaging	NHS, probes
Tissue section imaging	Secondary antibodies
Transwell assay	Secondary antibodies
Western blotting	Secondary antibodies
Genomic	
Genotyping	Primers, amidite
DNA sequencing	Primers, amidite, terminators
Northern blot	Primers, amidite
Southern blot	Primers, amidite
Tilling	Primers, amidite

References

1. X. Peng, D.R. Draney, W.M. Volcheck, G.R. Bashford, D.T. Lamb, D.L. Grone, Y. Zhang, C.M. Johnson, Phthalocyanine dye as an extremely photostable and highly fluorescent near-infrared labeling reagent., Proceedings of SPIE 6097, 2006.

LI-COR®
Biosciences

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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