PERFORMANCE
WITHOUT COMPROMISE

Azure Imaging Systems
600 | 500 | 400 | 300 | 280 | 200

azure biosystems

Reliable, reproducible imaging for Western blots and more

Azure Biosystems provides a unified Western Blot workflow, from the high-performance imaging system and analysis software to the reagents and consumables. Our imaging systems give you the flexibility you need for your research, while delivering solutions for quantitative Western blot imaging.

Each Azure Imaging System provides:

- **Flexibility**—Sensitivity and performance for fluorescent, chemiluminescent, UV & visible imaging with 4.8 OD dynamic range. High resolution CCD cameras with fast lens options, adjustable optical & lens settings, adjustable height tray with auto-detection and pre-calibrated focus.
- **Quantitative accuracy**—Designed for generating publication quality images up to 420 DPI and easy quantitation. Our reagents, imaging system, and software work seamlessly together to help you follow best practices for Western blot publication.
- **Intelligent workflow**—Our user interface allows total customization over imaging protocols, while ensuring repeatability from sample to sample. Our systems feature Auto-Focus, Auto-Light Control, Auto-Image Capture and dynamic flat fielding. An integrated touchscreen allows ease of use and it can easily be configured with an external PC, if required.
- **Data integrity**—Azure Biosystems meets the standards for publication in all major journals, and additionally offers software to enable 21 CFR Part 11 Compliance.

A. NIR WESTERN BLOT
B. CHEMI WESTERN BLOT
C. CHEMI WB WITH COLOR MARKER
D. 3 COLOR FLUORESCENT WB
E. BIOLUMINESCENT BACTERIA
F. PROTEIN GEL
G. WESTERN BLOT STAINED WITH AZURERED
H. DNA GEL
I. 4 COLOR FLUORESCENT WB

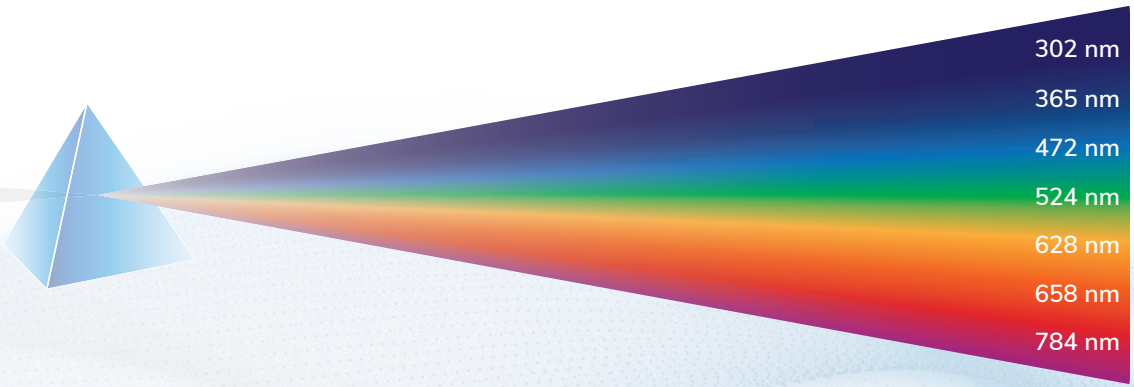
Choose your system

Azure 600	Azure 500	Azure 400	Azure 300	Azure 280	Azure 200
					
NIR	NIR				
RGB		RGB			
CHEMI	CHEMI	CHEMI	CHEMI	CHEMI	
UV	UV	UV	UV	UV	UV
BLUE LIGHT	BLUE LIGHT	BLUE LIGHT	BLUE LIGHT	BLUE LIGHT	BLUE LIGHT
TRUE COLOR	TRUE COLOR	TRUE COLOR	TRUE COLOR	TRUE COLOR	TRUE COLOR
TRANS WHITE	TRANS WHITE	TRANS WHITE	TRANS WHITE	TRANS WHITE	TRANS WHITE

Upgrades available for chemiluminescence, RGB fluorescence and NIR fluorescence.

LIGHT SOURCES

The flexibility of Azure Imaging Systems comes from the wide variety of light sources and filters to detect fluorescent dyes up to 832nm.



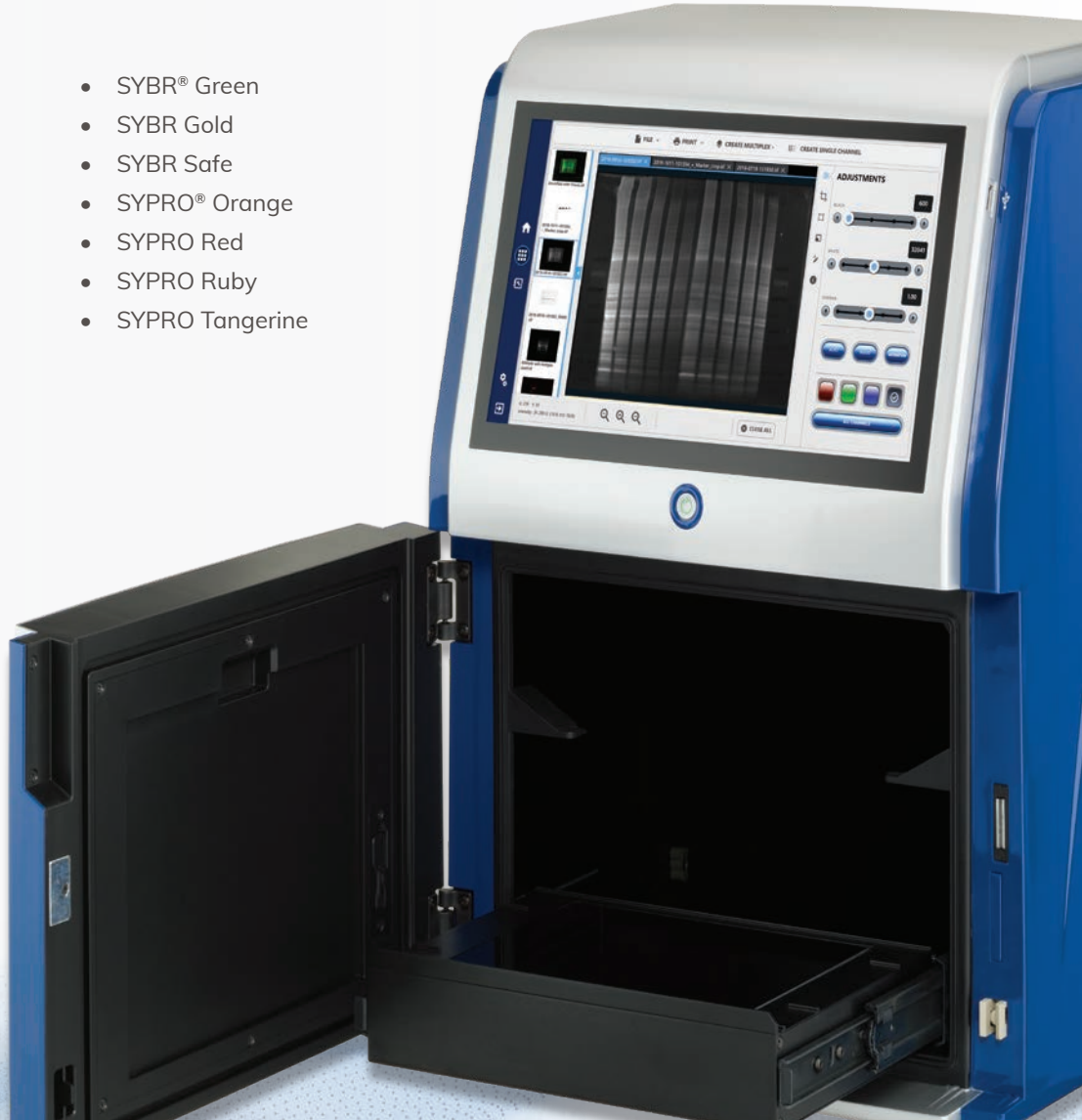
Flexibility for your applications

The Azure Imaging Systems are multichannel, multimodal imagers, with near-infrared, visible light, and UV excitation channels. Detect Cy dyes, Alexa dyes, Safe dyes, Trihalo compound based gels, and more.

A SNAPSHOT OF COMPATIBLE DYES*

- AzureRed
- AzureSpectra 800
- AzureSpectra 700
- AzureSpectra 650
- AzureSpectra 550
- AzureSpectra 488
- Alexa Fluor® 488
- Alexa Fluor 546
- Alexa Fluor 555
- Alexa Fluor 633
- Alexa Fluor 647
- Alexa Fluor 680
- Chemiluminescence
- Coomassie Blue
- Coomassie Fluor™
- Orange
- Cy®2
- Cy®3
- Cy®5
- Deep Purple™
- DyLight® 488
- DyLight 550
- DyLight 633
- DyLight 650
- DyLight 680
- DyLight 755
- DyLight 800
- ECL Plex™
- Ethidium Bromide
- GelStar®
- IRDye® 650
- IRDye 680LT
- IRDye 680RD
- IRDye 700DX
- IRDye 750
- IRDye 800CW
- IRDye 800RS
- Ponceau
- Qdot® 525
- Qdot 565
- Qdot 585
- Qdot 605
- Qdot 655
- Qdot 705
- Qdot 755
- Revert™
- Silver Stain
- SYBR® Green
- SYBR Gold
- SYBR Safe
- SYPRO® Orange
- SYPRO Red
- SYPRO Ruby
- SYPRO Tangerine

*Other dyes are also possible. Compatible dyes depend on your system configuration.



600 | 500 | 400 | 300 | 280

Chemiluminescent imaging

Just as sensitive as film, but easier and quantitative, our Azure Imaging Systems will revolutionize your chemiluminescent workflows and eliminate your darkroom.

QUANTITATIVE CHEMILUMINESCENT IMAGING

With Azure Imaging systems, the software notifies you when bands are saturated and are not suitable for quantitation.

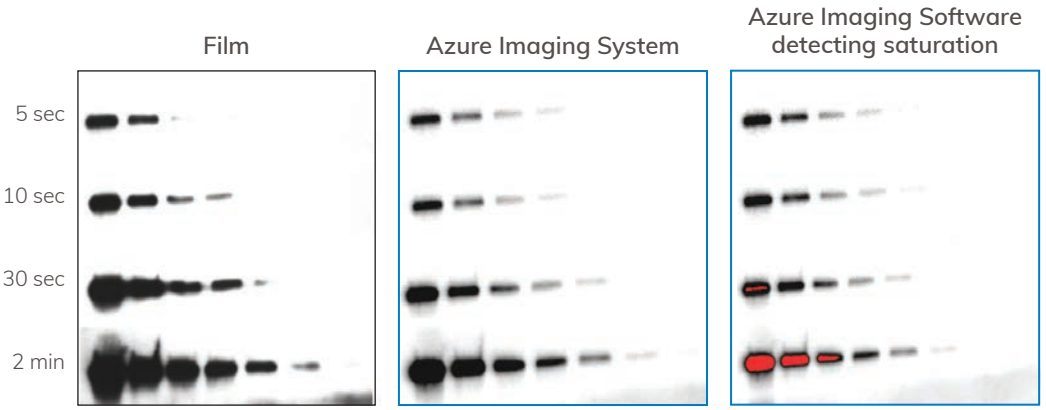


Figure 1. Saturation detection prevents errors in quantitation. The same blot was imaged on both x-ray film and the Azure Imaging System. The Azure system detects when CCD saturation occurs and calculates an auto-exposure time to avoid saturated bands.

HIGH RESOLUTION IMAGING

All of our models provide high resolution imaging perfect for publications. Change the sample to optics distance using adjustable height shelf for enhanced detection. Zoom into the area of interest with ROI imaging to reduce background.

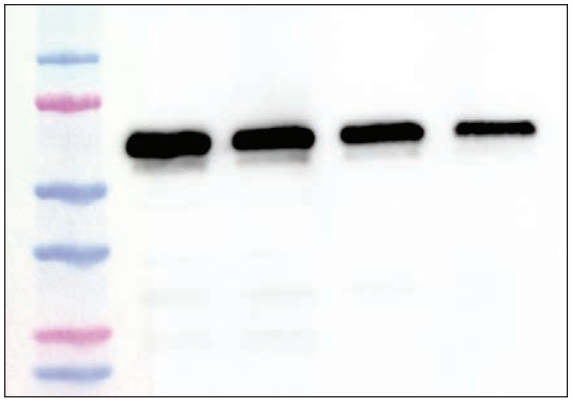


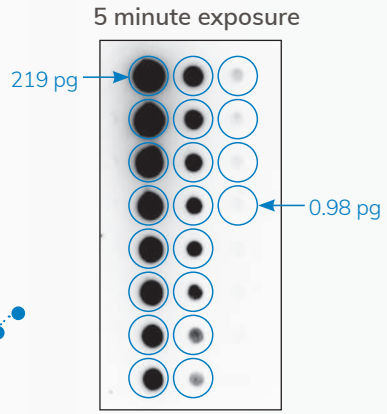
Figure 2. Chemiluminescent Western blot with MW Marker. 2-fold serial dilutions of HeLa lysate were separated by SDS-PAGE and transferred to a nitrocellulose membrane. The blot was blocked with Azure Chemi Blot Blocking Buffer prior to incubation with rabbit anti-hnRNP K primary antibodies. Signal was detected with Radiance ECL substrate.

ACCURATE CHEMILUMINESCENT QUANTITATION

A wide dynamic range is necessary to detect weak bands alongside strong bands. Use multiple binning options, from 1x1 to 8x8 binning modes, to collect more light.

Complete flexibility to control imaging, exposure time, and detection of color markers. The acquisition modes include preview, automatic and manual image capture, multiple and cumulative exposures.

Figure 3. Two-fold serial dilutions of HRP labeled antibody were spotted on nitrocellulose, incubated with Radiance Plus, and imaged in the chemiluminescence channel.



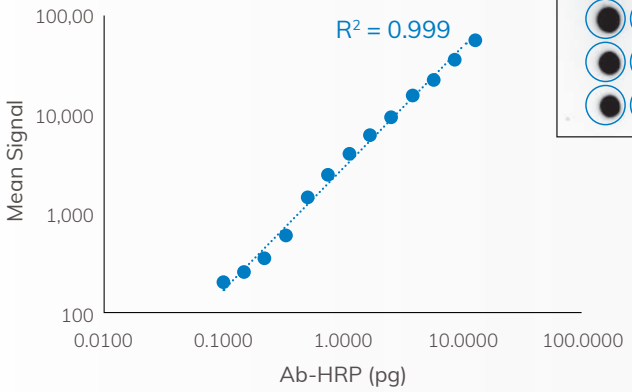


Figure 4. Azure Imaging Systems provide a broad, linear dynamic range to accurately detect strong and weak bands. The accuracy and linearity of the Azure Imaging System and reagents allow you to be confident about differences you see in protein levels.

Upgrade to the **Q module** for efficient total protein normalization for quantitative Western blots

While many researchers use housekeeping proteins to normalize for load when quantifying bands on a Western blot, the past few years has seen a movement towards using total protein staining instead, for more accurate quantitation.[1]

AZURE 300 + Q MODULE = CHEMI IMAGING WITH TPS (TOTAL PROTEIN STAIN)

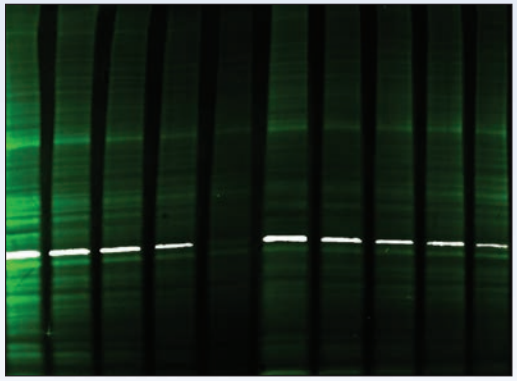


Figure 5. Simultaneous detection of total protein with AzureRed and Chemiluminescent Western. 2-fold serial dilutions of HeLa lysate were separated by SDS-PAGE and transferred to a PVDF membrane. After completion of the semi-dry transfer, the membrane was stained with AzureRed total protein stain. The blot was then blocked with Azure Chemiluminescent Blot Blocking Buffer prior to incubation with mouse anti-GAPDH. The blot was washed 3-times with Azure Blot Washing Buffer then incubated with Azure goat anti-mouse HRP secondary antibody. Chemiluminescent signal was detected with Radiance ECL substrate. After substrate incubation, the blot was imaged to produce an overlay of total protein staining and GAPDH protein. AzureRed is shown in green and GAPDH in gray.

[1] Janes KA. An analysis of critical factors for quantitative immunoblotting. *Sci Signaling*. 2015 Apr 7;8(371):rs2. PMCID: PMC4401487.

600 | 400

Visible fluorescence imaging

With high resolution, high sensitivity, low background fluorescence imaging and up to 4 channel fluorescent detection from RGB to NIR sepctrum, the Azure Imaging System enables quantitative Western blotting and a whole lot more. Choose the Azure 400 for visible fluorescence, the Azure 500 for NIR fluorescence, or the Azure 600 for both visible and NIR fluorescence.

MULTIPLEX DETECTION

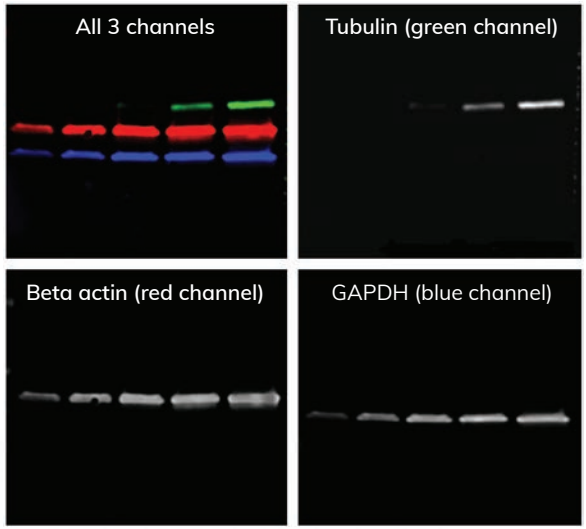


Figure 6. Digital image of 3-color western blot using Azure Biosystems 600 imager. Lanes (from left to right) loaded with 1, 2, 5, 10, 20 µg HeLa cell lysate. Probed for tubulin (top), beta actin (middle) and GAPDH (bottom). The following settings were used: Light sources 6/7/4; Exposure time 1s/13s 204ms/677ms; Filter positions 6/7/4; Aperture 6400; Focus 5000/5250/5000; bin level 1x1.

BEYOND THE BLOT

What truly sets the Azure Imaging System apart from other comparable systems is the ability to image more than just blots. Sure, in-gel fluorescence (Figure 7) and media plates (Figure 8) are not much of a stretch, but it's the Azure Imaging Systems' unmatched depth-of-field that enables imaging more three-dimensional samples such as mice (Figure 9) and zebrafish (Figure 10).

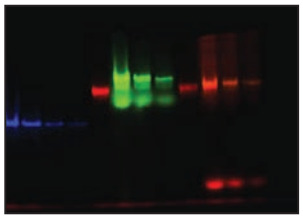


Figure 7. Fluorescent protein in native gel.

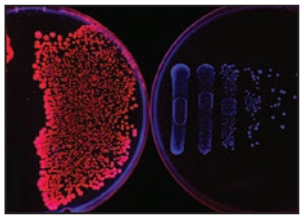


Figure 8. GFP- and mCherry-expressing *E. coli*.

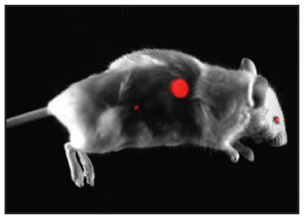


Figure 9. Mouse with RFP-expressing subcutaneous tumor.

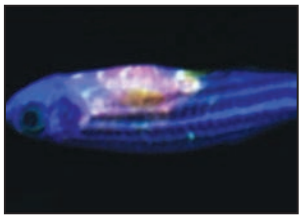
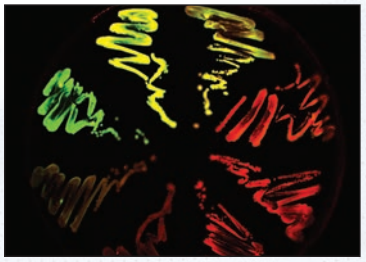


Figure 10. GFP-expressing zebrafish.



FULL-COLOR RGB LEDs

The Azure Imaging System's full-color multiplex RGB LEDs and filters broaden your imaging capabilities to visible fluorescence wavelengths, increasing flexibility and expanding multiplexing options while keeping system-size compact and value high.

600 | 500

Infrared laser excitation for quantitative Western Blot imaging in the NIR

IMPROVE YOUR DATA QUALITY

The Azure Imaging Systems' laser technology offers two near-infrared (NIR) detection channels enabling a user to study more than one protein in an assay, even if those targets overlap in molecular weight. Easily resolve and quantify co-migrating bands, such as phosphorylated versus pan-protein forms. Imaging with NIR dyes offers signal stability and low background.

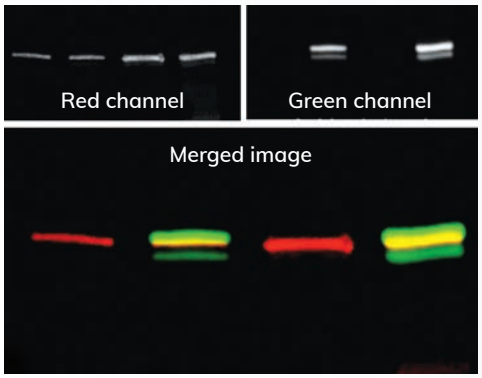


Figure 11. Fluorescent western blot of STAT1 and phospho-STAT1. The blot was probed with anti-phospho-STAT1 and anti-STAT1 followed by fluorescent secondary antibodies, and then imaged on Azure Imaging system. Top right is the green channel, using IR-800; top left is the image of the red channel, using IR-700. Bottom image is both channels merged.

NIR LASERS KEEP SIGNAL HIGH AND BACKGROUND LOW

Our high-performance multiplex NIR lasers and filters deliver robust excitation energy which maximizes emission strength for optimal sensitivity.

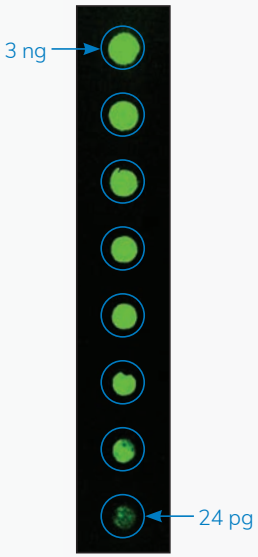


Figure 12. Two-fold serial dilutions of AzureSpectra-800 labeled antibody were spotted on nitrocellulose, and imaged in the 800nm channel for 20 seconds.

Upgrade to the **Q module** for efficient total protein normalization for quantitiative Western blots

AZURE 500 + Q MODULE = MULTIPLEX IMAGING WITH TPS

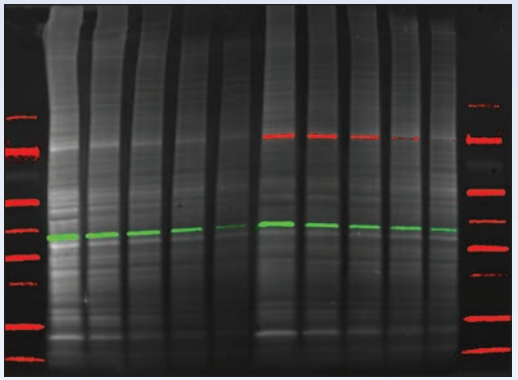
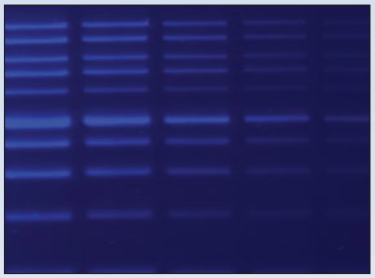


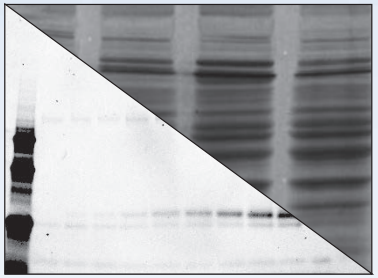
Figure 13. Simultaneous detection of total protein content with AzureRed and two-color NIR Western using AzureSpectra secondary antibodies. 2-fold serial dilutions of HeLa (left) and IFNa-treated HeLa lysate (right) were separated by SDS-PAGE and transferred to a PVDF membrane. After transfer and before blocking, the membrane was stained with AzureRed total protein stain. Then, the membrane was incubated simultaneously with rabbit anti-phospho STAT-3 and mouse anti-GAPDH) primary antibodies. After washing, the blot was incubated simultaneously with AzureSpectra goat anti-rabbit IR700 and AzureSpectra goat anti-mouse IR800 secondary antibodies.



Blue Light Imaging
SYBR® Safe, SYBR® Gold, SYBR® Green

"SAFE" DYE DETECTION

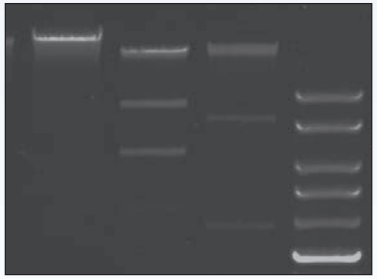
A less toxic alternative to ethidium bromide, less- harmful "Safe" dyes can be imaged with the EPI Blue LEDs standard in all the systems. Epi Blue is recommended as it delivers superior & uniform illumination with reduced background compared to transilluminated blue light.



White Light Imaging
Coomassie Blue, Silver Stain

PROTEIN ANALYSIS

Protein gels stained with Coomassie blue or silver stain can easily be imaged using the white light tray.



UV Imaging
Ethidium Bromide

DNA DETECTION WITH ETHIDIUM BROMIDE

With a dual-wavelength 302 nm and 365 nm UV transilluminator, images of ethidium bromide-stained DNA gels can be captured in a fraction of a second. A safety switch prevents accidental exposure to the light sources when the door is open. For band excision, the imager can be operated with the door open and the UV transilluminator can be pulled out. The switch can be overridden with a custom key.

AzureSpot Analysis Software

Providing tools for the analysis of gels and blots, AzureSpot makes complex analysis a simple process. Designed to be either fully automated or manual, AzureSpot provides the flexibility and accuracy for your data analysis.

WORKFLOWS TO SUIT YOUR ANALYSIS REQUIREMENTS

Automation for High-Throughput Analysis

Start with an automatic analysis, or begin by creating lanes. Each step of the workflow is shown below, enabling fine tuning at each step. For 1D gels, highly developed algorithms accurately detect lanes and bands even on distorted gel images.

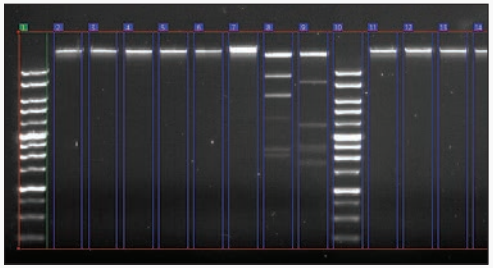
The user then has full control of the visualization tools and data display – outputting only those data fields that are of importance as well as the images of choice.

Fully-Automated or Semi-Automated Option

TOOLS FOR:

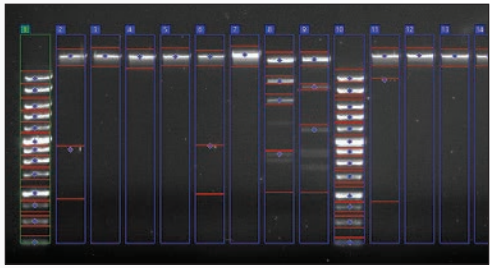
- 2D DENSITOMETRY
- AUTOMATIC LANE AND BAND DETECTION
- MOLECULAR WEIGHT ANALYSIS
- QUANTITY CALIBRATION
- ANNOTATION
- MULTIPLEX ANALYSIS
- DENDROGRAM
- COLONY COUNTING
- ARRAY
- SIGNAL NORMALIZATION

1



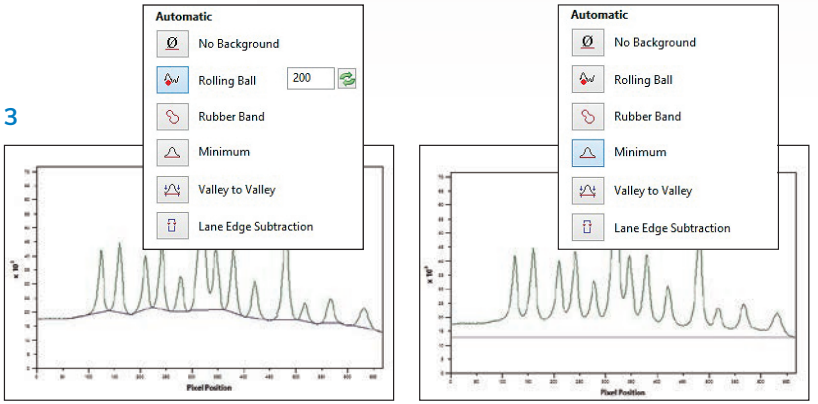
Lay a lane grid over your sample.

2



Set threshold values, then detect your bands.

3



Correct for background, choose from a wide variety of options.






Specifications	600	500	400	300	280	200
Camera	9.1 MP 16-bit, 65,536 grayscale	9.1 MP 16-bit, 65,536 grayscale	9.1 MP 16-bit, 65,536 grayscale	9.1 MP 16-bit, 65,536 grayscale	6.1 MP 16-bit, 65,536 grayscale	5.4 MP 16-bit, 65,536 grayscale
Peltier Cooling	-50°C regulated cooling	-50°C regulated cooling	-50°C regulated cooling	-50°C regulated cooling	-50°C regulated cooling	N/A
7 Position Filter Wheel	✓	✓	✓	✓	✓	✓
Trans UV302 and 365nm	✓	✓	✓	✓	✓	✓
Color Imaging/Visible Imaging	✓	✓	✓	✓	✓	✓
Trans-white imaging	✓	✓	✓	✓	✓	✓
Chemiluminescence	✓	✓	✓	✓	✓	—
Visible/RGB Fluorescent Imaging	✓	—	✓	—	—	—
NIR Fluorescence Imaging	✓	✓	—	—	—	—
Epi Blue Light Imaging	✓	✓	✓	✓	✓	✓
Q module option	—	✓	—	✓	—	—
UV Safety Override Switch	✓	✓	✓	✓	✓	✓
Field of View	20.5 x 16.5 cm	20.5 x 16.5 cm	20.5 x 16.5 cm	20.5 x 16.5 cm	20.4 x 16.6 cm	20 x 15 cm
Footprint (W x H x D)	42 x 56 x 33 cm	42 x 56 x 33 cm	42 x 56 x 33 cm	42 x 56 x 33 cm	42 x 56 x 33 cm	42 x 56 x 33 cm

azure biosystems

6747 Sierra Court, Suites A-B • Dublin, CA 94568 USA
Phone: 925.307.7127 • Fax: 925.905.1816
info@azurebiosystems.com • www.azurebiosystems.com