cSeries Imaging Systems

SUPERIOR PERFORMANCE THROUGH INNOVATIVE DESIGN

c600 | c500 | c400 | c300

azure biosystems

Big performance, small footprint, incomparable value

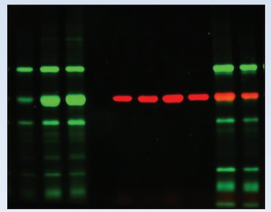
Great science starts with high-quality data, and when it comes to imaging gels, blots, plates, and even intact tissues and small animal models, high-quality data starts with the cSeries.

Leveraging Azure Biosystems's deep expertise in imaging system engineering, the cSeries delivers best-in-class sensitivity, dynamic range, and signal-to-noise ratio in an easy-to-use, compact instrument.

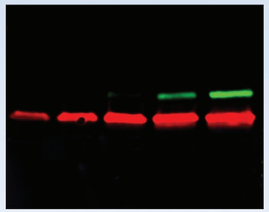
- Get high-quality data from an expertly-engineered system
- Perform a wide range of imaging applications with a single, versatile instrument
- Choose a system for today's needs and upgrade as your detection methodologies change
- Seamlessly integrate the cSeries into your studies with easy-to-use image acquisition and analysis workflows
- Save space with our compact design
- Rest easy with a dedicated team ready to answer questions, troubleshoot, and provide on-site support

IR FLUORESCENCE | VISIBLE FLUORESCENCE | UV FLUORESCENCE | CHEMILUMINESCENCE
VISIBLE IMAGING | BLUE LIGHT EXCITATION

Gels | Blots | Plates | Tissues | Small Animal Models | Plants

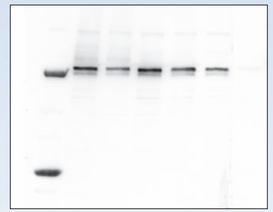


In-gel Fluorescence with GFP and TAMRA

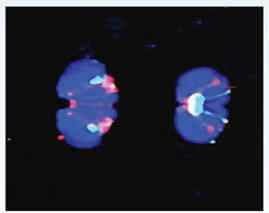


Western Blot with Cy3 and Cy5 Dyes

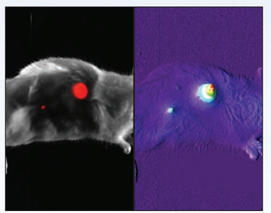
Escherichia coli



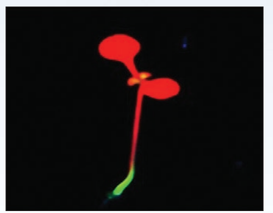
Chemiluminescent Western blot



Mouse brain sections



Mouse with RFP-labeled subcutaneous tumor



Arabidopsis thaliana

Choose Your System

c600

The All-around Application Ace

NIR | RGB | CHEMI

UV | WHITE LIGHT | BLUE LIGHT

c500

The Ultimate IR Imaging System

NIR | CHEMI

UV | WHITE LIGHT | BLUE LIGHT

Upgradable to c600

c400

The Visible Fluorescence Virtuoso

RGB | CHEMI

UV | WHITE LIGHT | BLUE LIGHT

Upgradable to c600

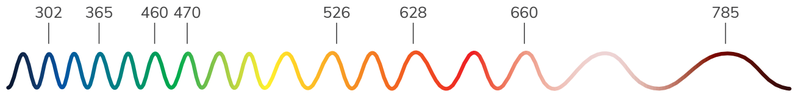
c300

The Darkroom Eliminator

CHEMI

UV | WHITE LIGHT | BLUE LIGHT

Upgradable to c400, c500, and c600



cSeries Excitation Wavelengths

See How We Deliver High-Quality, Multimodal Imaging

RGB LEDs
Colored LEDs provide robust excitation for quantitative visible fluorescence imaging, with excitation at 460, 526, and 628 nm for Cy2/Cy3/Cy5 or similar dyes.

LASERS AT 660 NM AND 785 NM
With a narrower excitation band than LEDs or white light sources, you get NIR imaging with better sensitivity and lower background.

EPI BLUE LED AT 470 NM
Image blue-excited DNA dyes like SYBR® Safe, a feature available on all cSeries models.

EPI WHITE LIGHTS
Uniform overhead illumination for white light imaging.

TRANS WHITE IMAGING
Image visible/white light dyes, such as Coomassie Blue, in gels or other translucent samples.

DUAL-WAVELENGTH UV AT 302 NM AND 365 NM
Image DNA gels and more with a UV light source compatible with a wide range of dyes, including ethidium bromide, SYBR® green, SYBR gold, SYPRO® orange, fluorescein, RadiantRed®, TexasRed®, and SYPRO Red.

TOUCH-SCREEN CONTROLS
Easily manage data acquisition and analysis with the touch of a finger, driven by Windows OS.

HIGH RESOLUTION CAMERA
Capture fine details of your sample.

DEEP PELTIER COOLING
Experience excellent image quality and reduced noise with low temperature camera cooling (-50°C).

DUAL-FOCUS TECHNOLOGY
Get perfectly-focused images and optimal lane settings without having to touch the camera.

7-POSITION FILTER WHEEL
Perform a wide range of applications with a motorized, multi-position filter wheel.

CHEMI BLOT SHELF
Get better sensitivity by placing chemiluminescent blots closer to the detector. The adjustable shelf can be stored in the door when not in use.

3 USB PORTS
Connect to a drive, a network, or attach a thermal printer.

SAFETY INTERLOCK
The system includes a safety interlock to prevent accidental UV exposure.

LARGE FOV
Image large gels or blots, multiple gels or blots, or even tissues, plates, and small animal models.

c600 | c500 | c400

Dig Deeper: Visible Fluorescence Imaging

With high resolution, high sensitivity, and low background fluorescence imaging, the cSeries enables quantitative Western blotting and a whole lot more. Choose the c400 for visible fluorescence, the c500 for NIR fluorescence, or the c600 for both visible and NIR fluorescence.

MULTIPLEX DETECTION

No need to strip and reprobe your blot or run multiple gels—conserve sample, time, and reagents.

Simultaneously image up to three proteins when you have the flexibility of two NIR channels (at 660 and 785 nm) and three visible channels (at 460, 526, and 628 nm; Figure 1).

> “The system is fast and easy to use. I load the membrane on the tray and choose my imaging method with the touch of a button. I especially like how it records multiple cumulative images, so I never need to re-expose the membrane.”
>
> **Rajkumar | Scientist** | Biotech Company

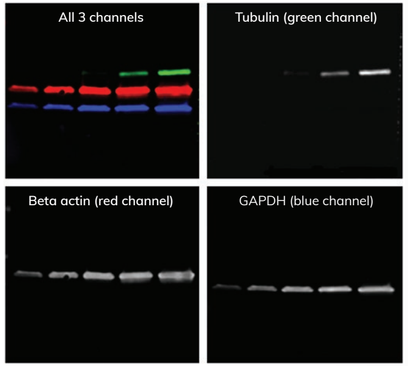


Figure 1. Digital image of 3-color western blot using Azure Biosystems c600 imager. Lanes (from left to right) loaded with 1, 2, 5, 10, 20 µg HeLa cell lysate. Probed for tubulin (top), beta actin (middle) and GAPDH (bottom). The following settings were used: Light sources 6/7/4; Exposure time 1s/13s 204ms/677ms; Filter positions 6/7/4; Aperture 6400; Focus 5000/5250/5000; bin level 1x1.

Easily resolve and quantify co-migrating bands, such as phosphorylated versus non-phosphorylated protein forms (Figure 2).

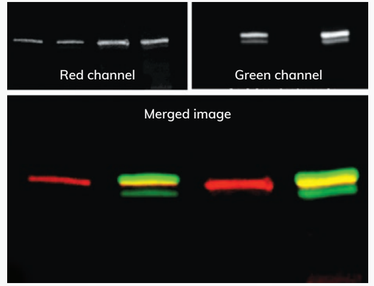
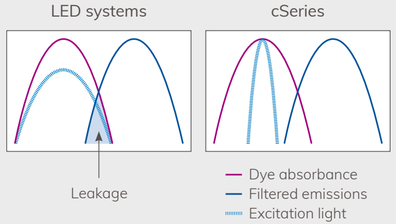


Figure 2. Fluorescent western blot of STAT1 and phospho-STAT1. The blot was probed with anti-phospho-STAT1 and anti-STAT1 followed by fluorescent secondary antibodies, and then imaged on Azure cSeries. Top right is the green channel, using IR-800; top left is the image of the red channel, using IR-700. Bottom image is both channels merged. Lanes are the same as in Figure 1.

DESIGNED TO DELIVER

NIR lasers keep signal high and background low



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

In addition, because lasers deliver an inherently narrower excitation band than LEDs—lasers emit a coherent, collimated beam of light—they avoid the overlap in excitation and emission signals that can occur with LED light sources. This results in ultra-low background signal, enabling faster, more sensitive NIR fluorescence detection.

Dig Deeper: Visible Fluorescence Imaging (continued)

ROBUST QUANTITATION

Get sensitive, quantitative NIR detection that's faster than a competitor's system (Figure 3).

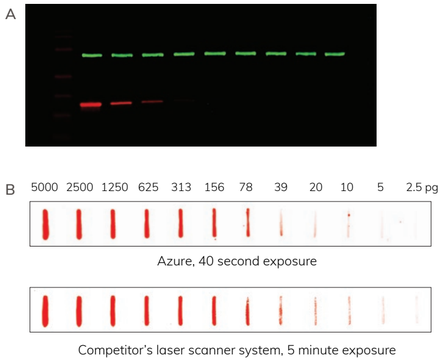


Figure 3. (a) Two color Western blot imaged with IR 700 and IR 800. (b) Azure performs equal to a competitor's laser scanner system, 7.5-times faster. A serial dilution of IR 700 antibody shows that the limit of detection is the same.

WIDEST DYNAMIC RANGE

Through a combination of 16-bit imaging and low background noise (Figure 4), the cSeries offers the widest dynamic range of any comparable CCD-based imaging system on the market. Efficiently acquire more data in a single experiment for faster workflows.

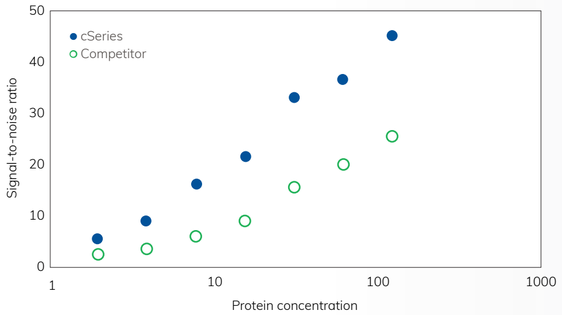


Figure 4. Comparison of the signal-to-noise ratio from blots analyzed with the cSeries and a competitor show that across the range of protein concentrations, the cSeries consistently delivers superior signal-to-noise ratios.

BEYOND THE BLOT

What truly sets the cSeries apart from other comparable systems is the ability to image more than just blots. Sure, in-gel fluorescence (Figure 5) and media plates (Figure 6) are not much of a stretch, but it's the cSeries' unmatched depth-of-field that enables imaging more three-dimensional samples such as mice (Figure 7) and zebrafish (Figure 8).

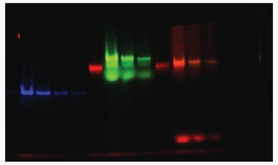


Figure 5. Fluorescent protein native gel.

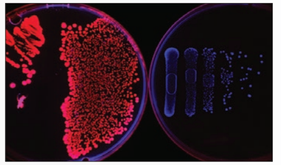


Figure 6. GFP- and mCherry-expressing *E. coli*.

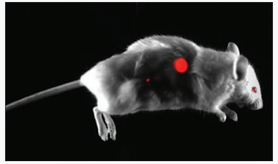


Figure 7. Mouse with RFP-labeled subcutaneous tumor.

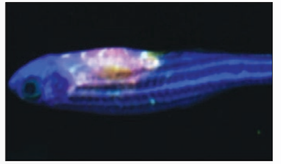
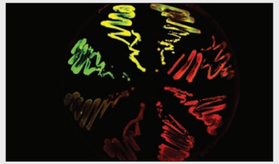


Figure 8. GFP-expressing zebrafish.

DESIGNED TO DELIVER

RGB LEDs maximize flexibility and value



The cSeries's full-color RGB LEDs expand your imaging capabilities to visible fluorescence wavelengths, increasing flexibility and expanding multiplexing options while keeping system-size compact and value high.

If you need even more performance, take a look at our Sapphire™ Biomolecular Imager, which is an all laser imaging system—visit **azurebiosystems.com/sapphire to learn more**

c600 | c500 | c400 | c300

Dig Deeper: Chemiluminescent Imaging

Just as sensitive as film, but easier and more quantitative, our cSeries imaging systems will revolutionize your chemiluminescent workflows and virtually eliminate your darkroom.

THE SAME SENSITIVITY AS FILM...

Using high resolution, F 0.95 fast lens technology, you can capture images with the same sensitivity as film (Figure 9a).

...WHILE MORE QUANTITATIVE

The broad dynamic range of cSeries instruments results in the ability to accurately quantify proteins over several orders of magnitude (Figure 9b).

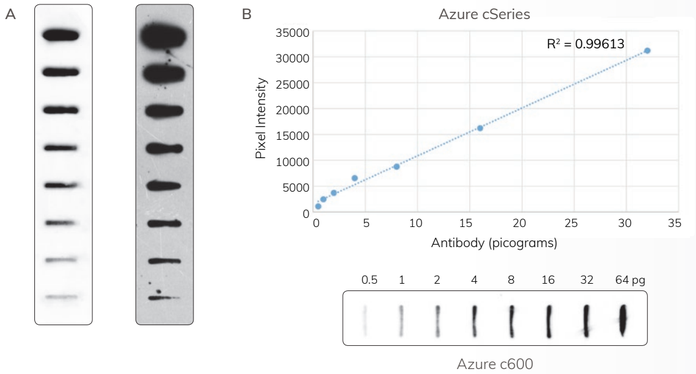


Figure 9. (a) Two slot blots of serially diluted HRP-coupled secondary antibodies were prepared on nitrocellulose. Both blots were treated with a substrate. Left: Imaged on the Azure cSeries for 2 minutes. Right: Imaged on film for 2 minutes. (b) Azure cSeries gives a linear response to a serial dilution of an HRP-coupled antibody.

> “One person in the lab was resistant to switching to digital imaging at first, but has since come around because of the convenience, ease of use, and images that are equal to or better than film.”
>
> Ann | Senior Research Technologist
> Academic Research Institution

CLEARLY SEE OUR CAPABILITIES

At Azure Biosystems, we believe that potential customers should know exactly how well an instrument will perform before making a purchasing decision, which is why we are proud to show real-world quantitative data with each experiment’s limit of detection (LOD) clearly shown (see Figures 3 and 9). Of course, LODs are subject to your experimental setup and may be lower than these examples, so be sure to arrange an instrument demo to see how well the cSeries works for your studies.

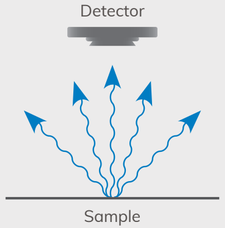
BUY WITH CONFIDENCE

We offer full customer support before and after your purchase, whether you have questions about the instrument or a new experimental approach, such as transitioning from chemiluminescence to visible fluorescence or in-depth training on our AzureSpot software. This includes one-on-one consultations with our sales reps and even on-site workshops—all you have to do is ask!

In addition, our instruments are backed by a one-year warranty, with extended warranty and service packages also available for purchase.

DESIGNED TO DELIVER

Direct detection maximizes sensitivity



With a very short and direct path from the sample to the detector—no bends—no mirrors, the cSeries maximizes light-collection for reliably sensitive imaging.

In addition, the increased sensitivity reduces the need for binning during chemiluminescence imaging, enabling acquisition of images that are both high resolution and high sensitivity.

DESIGNED TO DELIVER

Flexibility maximizes image acquisition

BINNING: OPTIMIZE SENSITIVITY AND RESOLUTION

With a CCD camera, you can combine multiple pixels into a single larger pixel or “super pixel,” to collect more light, a technique known as binning. An unbinned image (also known as a “1X1”), uses the full resolution of the camera during image capture. A binning of 2X2 means that the areas of 4 adjacent pixels are combined into one larger pixel, and so on. On-chip binning enables significant increases in signal without increasing noise, for highly sensitive detection.

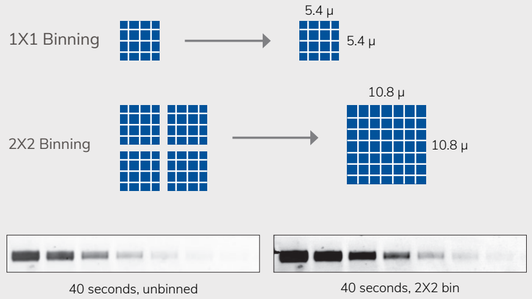


Figure 10. The cSeries’s high resolution and flexible binning capabilities—up to 5 levels of binning—ensures optimal image acquisition for chemiluminescent Western imaging.

Powerful AzureSpot Analysis Software

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

- Automatic lane creation
- Band detection
- Background subtraction
- Molecular size/pI calibration
- Quantity calibration
- Colony counting
- Array analysis (for 96-well plates and microarrays)
- Annotation for comments and highlighting the image

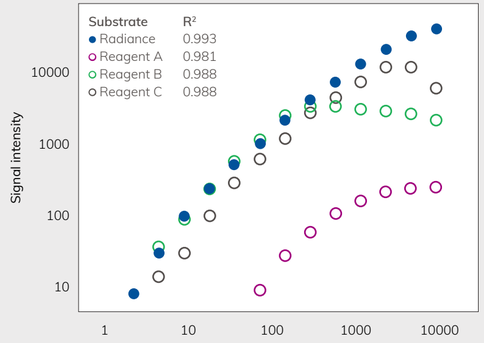
DESIGNED TO DELIVER

Reagents optimized for quantitation

CHEMILUMINESCENCE

All reagents are not created equal. Azure’s Radiance chemiluminescent Western blot substrate is clearly better optimized for quantitation than the alternatives, with high sensitivity and a wider linear range than other chemiluminescent reagents.

We also offer Radiance PLUS for applications where you need even greater sensitivity.



FLUORESCENCE

We also offer fluorescently-labeled secondary antibodies that deliver unparalleled sensitivity and performance for immunoblotting applications when used in conjunction with Azure’s Western blotting systems. Choose from AzureSpectra 550-, 650-, 700- and 800-labeled antibodies in the following formats:

- Goat-anti-rabbit
- Goat-anti-mouse
- Goat-anti-human
- Goat-anti-chicken
- Goat-anti-rat
- Goat-anti-guinea pig
- Donkey-anti-goat

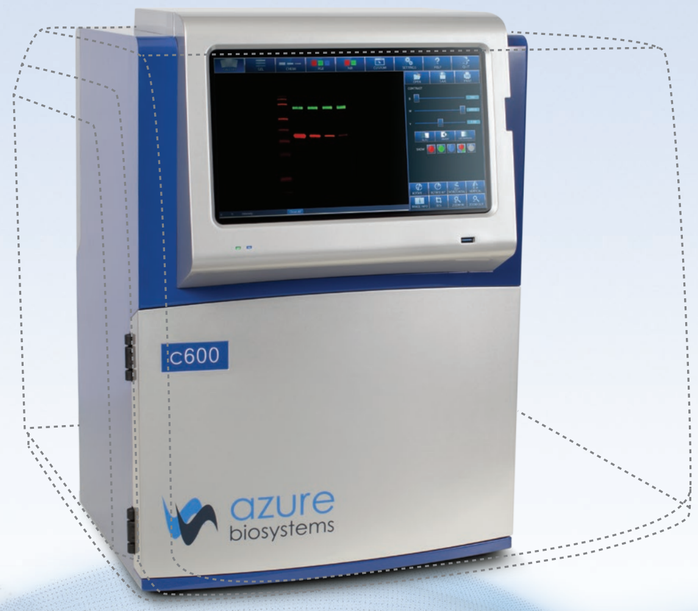
A SNAPSHOT OF COMPATIBLE DYES*

- 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
- Qdot® 525
- Qdot 565
- Qdot 585
- Qdot 605
- Qdot 655
- Qdot 705
- Qdot 755
- 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.

Space-saving Design

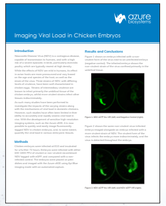
– – – – Footprint of competitor's instrument



Specifications	c600	c500	c400	c300
Camera	8.3 MP	8.3 MP	8.3 MP	8.3 MP
Cooling	-50°C regulated cooling	-50°C regulated cooling	-50°C regulated cooling	-50°C regulated cooling
7 Position Filter Wheel	✓	✓	✓	✓
UV 302/365 nm	✓	✓	✓	✓
EPI Blue LED	✓	✓	✓	✓
Chemiluminescence	✓	✓	✓	✓
Visible Fluorescence Imaging	✓		✓	
NIR Fluorescence Imaging	✓	✓		
Field of View	20 x 15 cm	20 x 15 cm	20 x 15 cm	20 x 15 cm
Footprint (W x H x D)	38 x 55 x 36 cm	38 x 55 x 36 cm	38 x 55 x 36 cm	38 x 55 x 36 cm

HIGHLIGHTED APPLICATION NOTES

Visit **azurebiosystems.com/learn/application-notes** for a complete listing of application notes.



Imaging Viral Load in Chicken Embryos

Western Blot Normalization

DNA Dye Detection Limits using Azure cSeries Imagers

Wet or Dry? Which Type of Transfer is Best for Your Protein

azure biosystems

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