

# The c280 Imaging System: Affordable Application Versatility

With the cSeries digital imaging family Azure Biosystems has been delivering industry-leading performance, coupled with a user-friendly experience across a wide range of applications. In this application note we present a snapshot of some of the applications that can be performed on the newest member of the cSeries family – the Azure Biosystems c280.

## Introduction

The Azure Biosystems c280 digital imager is an ideal entry point to digital chemiluminescent imaging. However, the benefits do not end there with the c280 which features a dual wavelength 302 nm and 365 nm UV transilluminator for imaging of ethidium bromide (EtBr) DNA gels or stain free gels, EPI Blue LEDs for use with ‘Safe’ DNA dyes such as SYBR Green, and EPI White LEDs for full-color visible light imaging of protein gels and membranes stained with colorimetric dyes such as Coomassie blue, silver stains, Ponceau or amido black.

The user-friendly interface of the c280 makes imaging easy with automatic focusing, light source and filter selection.

## Materials and Methods

### DNA Gels

A serial dilution of Dongsheng Biotech 100bp Ladder Plus was separated by gel electrophoresis, using either gels pre-stained with EtBr or post-stained with SYBR Green. Images were acquired on an Azure Biosystems c280 digital imager using the UV transilluminator (302 nm) or EPI Blue LEDs to illuminate the gels.

### Coomassie Blue Gel

A serial dilution of purified transferrin was separated by gel electrophoresis on a 4-15% Tris-Glycine gel and stained with Coomassie Blue dye before imaging. Images were acquired on an Azure Biosystems c280 digital imager using EPI White LEDs to illuminate the gel.

## Chemiluminescence + Visible Marker Imaging

Purified transferrin was serially diluted from a starting concentration of 500 pg through to 61 fg, and separated by gel electrophoresis along with BioRad Precision Plus Protein Dual Color Standard. After separation proteins were transferred to a low fluorescence PVDF membrane using Azure Transfer Buffer. Blots were blocked, probed with a chicken-anti-transferrin primary antibody, washed and then incubated with a goat-anti-chicken HRP conjugated secondary antibody; all diluted in Azure Chemi Blot Blocking Buffer. Signal was detected using Azure Radiance chemiluminescent substrate. Images were acquired on an Azure Biosystems c280 digital imager using chemiluminescent detection of HRP, coupled with color image acquisition of the ladder.

## Results and Conclusions

In this note a variety of applications were imaged on the Azure Biosystems c280 digital imager. Sample DNA gels are shown in Figure 1 – a gel pre-stained with EtBr was visualized using the UV transilluminator (302 nm) a), a similar gel post-stained with SYBR Green was imaged with Epi Blue LEDs b).

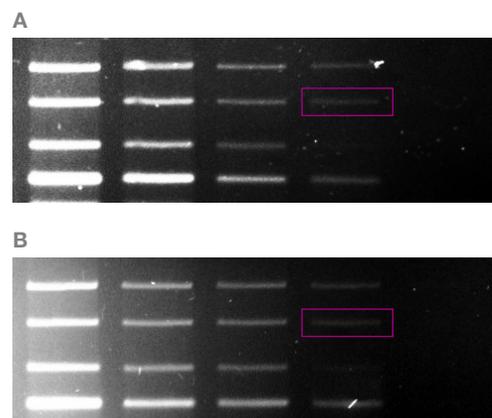


Figure 1. DNA gel imaging using either Ethidium Bromide or safe dyes such as SYBR based dyes. A) EtBr imaged with trans UV302. B) SYBR Green imaged with Epi Blue lights. The boxed band shows detection of 78 pg of 2kb DNA.

Figure 2 shows a representative Coomassie Blue stained protein gel. The high-resolution camera included in the Azure Biosystems c280 digital imager, coupled with the automatic image acquisition protocol produces images with an obvious contrast between sample and background, and sharp definition between bands. The Visible imaging mode acquires color images, allowing for full-color rendition of colorimetric dyes and stains.

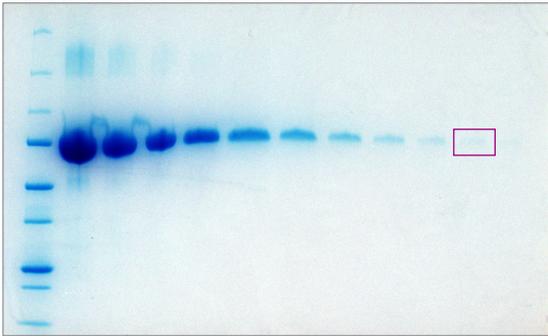


Figure 2. Coomassie Blue stained protein gel. Purified transferrin was serially diluted from 5000 ng to 5 ng, separated on a 4-15% Tris-Gly gel, and stained with Coomassie. The boxed band shows detection of 10 ng of protein.

Finally, Figure 3 shows a composite image generated from a digital chemiluminescent image of a Western blot, overlaid with the visible light image which displays the protein ladder in full color allowing for accurate molecular weight analysis.

To summarize, the Azure Biosystems c280 is a highly versatile imager which can streamline numerous common laboratory techniques. With its economical price, and ease of use, the c280 provides an ideal entry point into digital imaging.

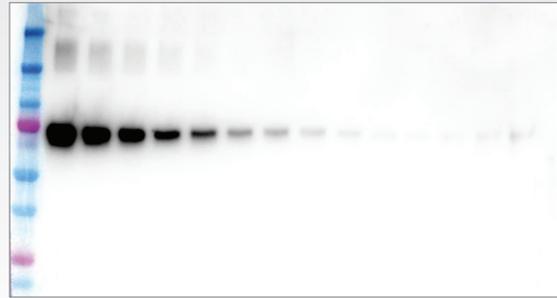


Figure 3. Chemiluminescent – visible light composite imaging. Purified transferrin was serially diluted from 500 pg to 61 fg and detected using chemiluminescent Western blot. c280 can image chemiluminescent signal and visible protein ladder/markers simultaneously.

Protocol	Product	Part number
DNA Gel	Ethidium Bromide	BD, F0110
	SYBR Green	MolecularProbes, S-7567
Protein Gel	4-15% Mini-Protean TGX gel	BioRad, 4561086
	Coomassie Blue Stain	Generon, GEN-QC-STAIN-1L
Western Blot	4-15% Mini-Protean TGX gel	BioRad, 4561086
	PVDF Membrane	Azure, AC2105
	Azure Transfer Buffer	Azure, AC2127
	AzureSpectra Chemi Blot Blocking Buffer	Azure, AC2148
	Primary Antibody	Millipore, AB3487
	Secondary Antibody	Azure, AC2117

Table 1. Material and product numbers.