



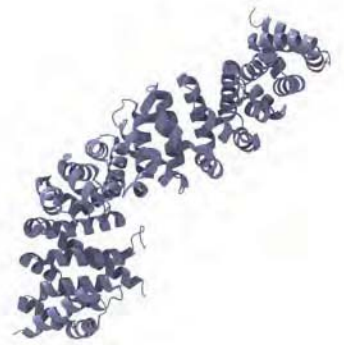
**Multiplex immunoassays are *quick and easy* with the *dotLab mX System!***



***The newly upgraded dotLab<sup>®</sup> mX System from Axela provides researchers a low cost platform that produces highly informative immunoassays in a very short time and with little effort. Using its proprietary diffractive optics technology, it will help serve a growing need for routine multiplex assays in clinical research and protein production.***

# Biomarker Research

On a single instrument, develop new assays for protein biomarkers and then perform them routinely on crude biological samples—quickly and almost effortlessly! With its customizable panels, broad dynamic range and low costs per assay, the dotLab® mX System addresses the need to translate the latest proteomic discoveries from expensive and complicated discovery platforms into routine biomarker tests used in personalized medicine.



## panelPlus™ Sensors

Provides researchers the flexibility to customize their own biomarker panels (Figure 1)

Specially designed for multiplex assays at a low cost per assay

Sensor surface can be regenerated for continuous re-use

## Multiplex Assays

Perform simultaneous assays on multiplex biomarkers in real time

Compatible with crude biological samples

Reduces assay times to as low as a few minutes

## Broad Dynamic Range

Broad dynamic range (picomolar to micromolar concentrations, Figure 2)

Can detect both high and low abundance analytes within a single sample dilution

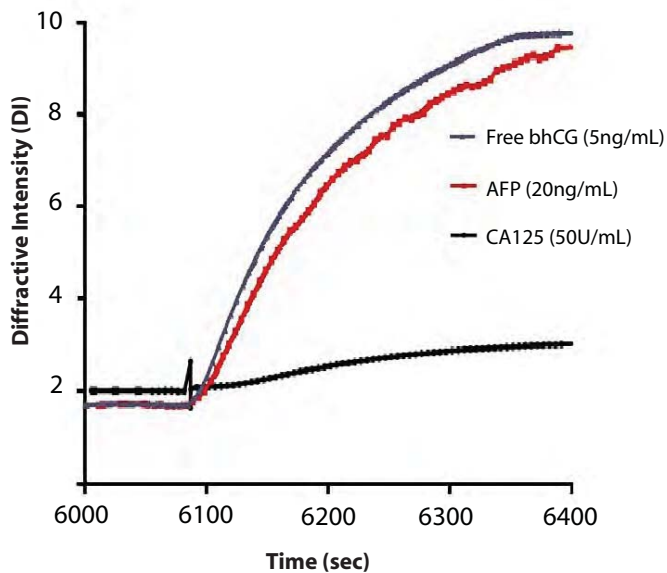


Figure 1 —Triplex assay for ovarian cancer biomarkers on panelPlus™ Sensors.<sup>1</sup>

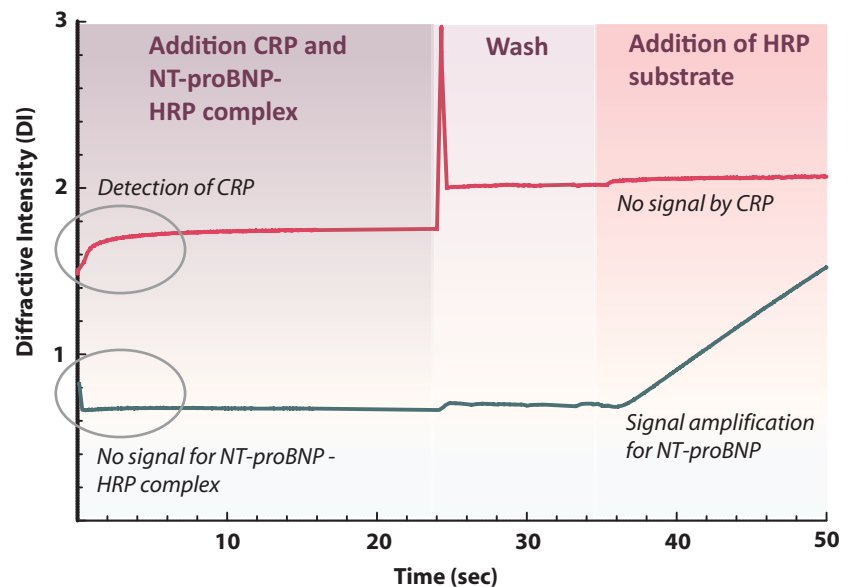


Figure 2—Rapid duplex assay demonstrating a 6-fold dynamic range for cardiac markers CRP (25µg/mL) and NT-proBNP (25pg/ml).<sup>1</sup>



# Serology & Infectious Diseases

The dotLab® mX System's flow-thru technology enables a fast and efficient way of performing traditional immunoassays for infectious disease research. On a single platform researchers can perform rapid serological tests, including antibody avidity and titer assays, or detect pathogens directly in crude biological samples – from bodily fluids to food and environmental samples – without laborious sample preparation and the need for specialized personnel.



## Rapid & Sensitive Serological Assays

Obtain results in less than 30 minutes

Small sample requirements (3.5 µL of serum)

Perform multiplex assays for infectious disease screening with Axela's panelPlus™ Sensors

## IgG Titer & Avidity Determination

Obtain real time titer and avidity information from a single assay in less than 1 hour

Measure multiple avidities during a single multiplex assay

Suitable for infectious disease, autoimmune and vaccine research

## Pathogen Detection

Rapid and easy to use detection platform for bacteria and viruses (Figure 3)

No sample pre-processing or pre-culturing required

Screen multiple pathogen strains on Axela's panelPlus Sensors

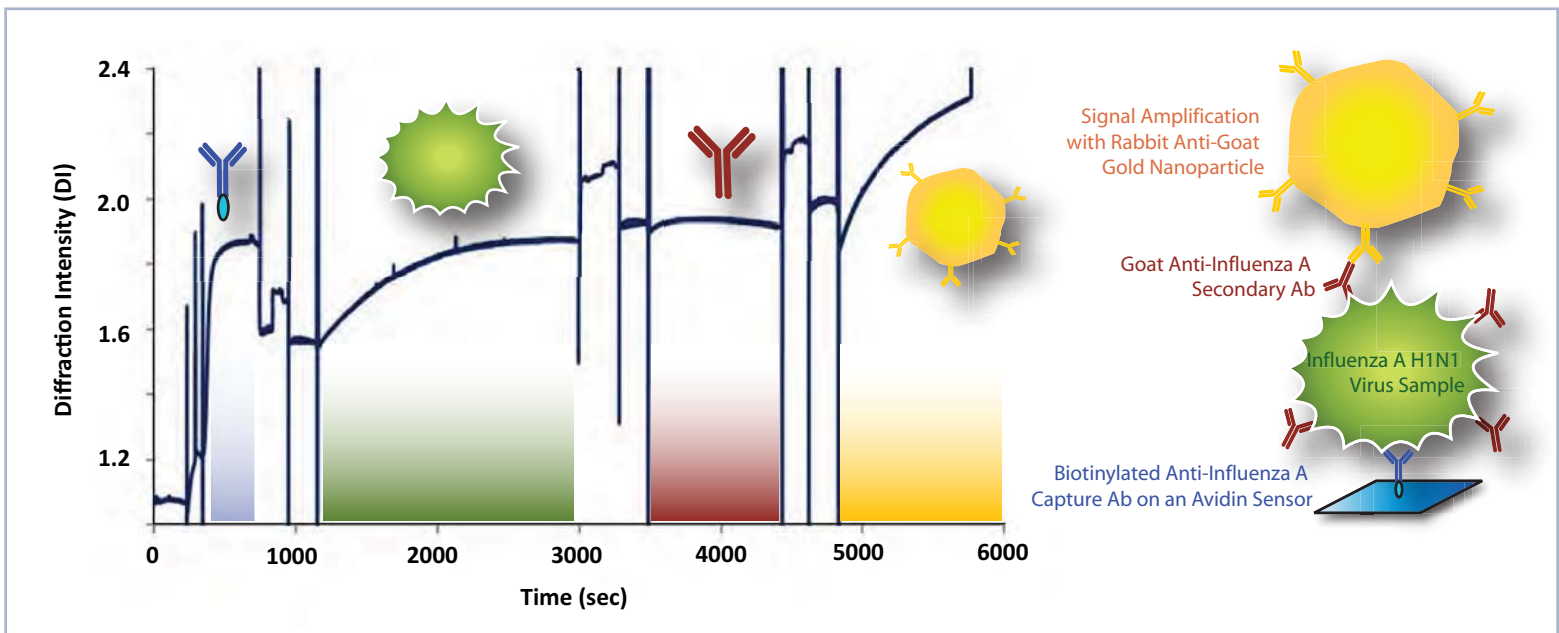
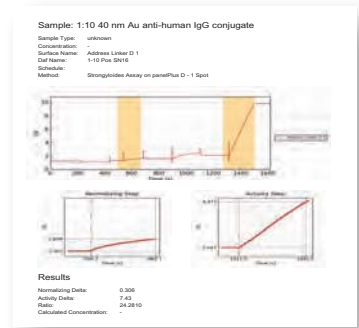


Figure 3 —Direct detection of influenza A H1N1 virus in nasal swab samples on a dot-Avidin Sensor.<sup>1</sup>

# Protein Production & Characterization

Real time monitoring and the ability to sequentially probe an analyte come together on the dotLab<sup>®</sup> mX System to provide scientists valuable information about their proteins from an easy to use platform. Its high sensitivity, broad dynamic range, and user-friendly calibration software also permit it to perform quantitative analysis on a variety of protein samples. And for users in a FDA regulated environment, the dotLab<sup>®</sup> mX System is now 21 CFR Part 11 compliant.



## Protein Characterization

Sequential probing for protein structure characterization (Figure 4)

Suitable for antibody isotype determination and hybridoma screening

## Protein Quantitation

Flexible and easy to use quantitation software

Extended dynamic range for measuring both products and contaminants during protein production

Capable of online processing of single samples (Figure 5)

## Immunoassay Development

Rapidly identifies optimal antibody pairs and cross reactive reagents

Accelerates the optimization of detergent, buffer and salt conditions

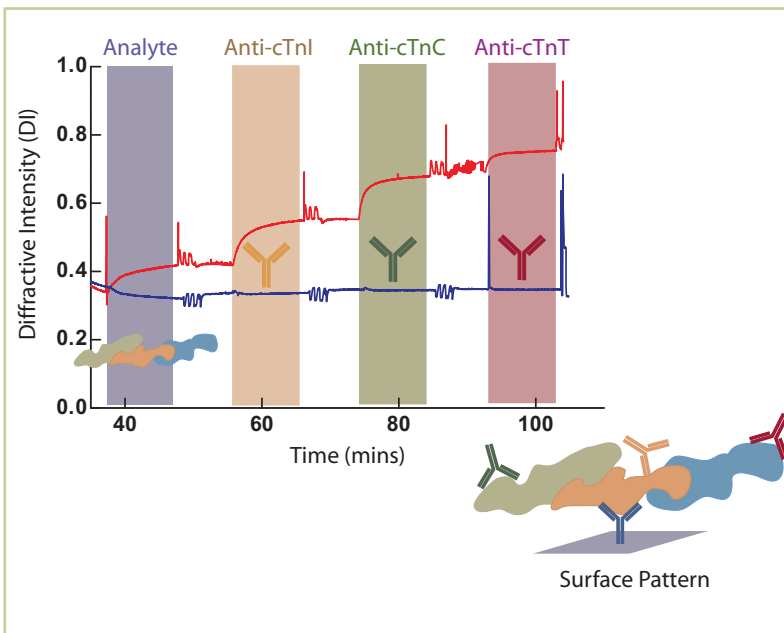


Figure 4 —Characterization of subunit composition of cTn protein complex.<sup>1</sup>

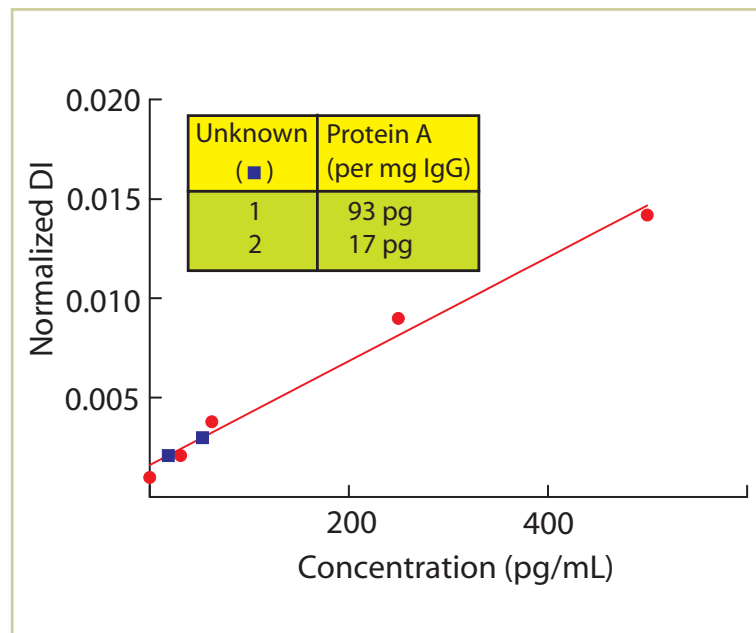
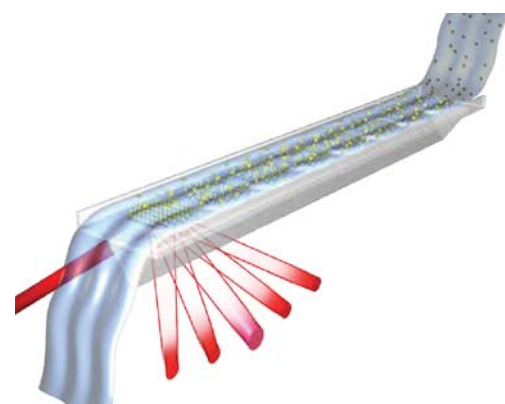


Figure 5 —Residual protein A assay in the pg/mL range during antibody purification .

# Diffraction Optics Technology

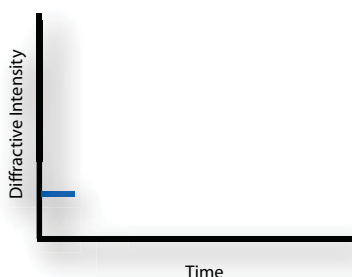
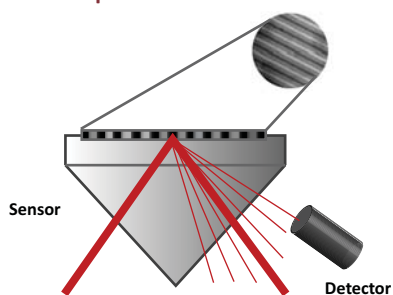
Diffraction optics technology, or “dot®”, brings together two well-understood technologies: grating-based light diffraction and immobilized capture surfaces. This combination produces a sensitive and very simple technique for the detection of molecular binding and dissociation events without the use of fluorescent labels.

Capture molecules, such as antibodies, are immobilized on an ordered pattern of lines that form a diffraction grating on the surface of the prism shaped dotLab® Sensor (Figure 6). The sensor surface forms the base of a low volume flow cell. A series of discrete diffraction beams is generated when the patterned molecules are illuminated with a laser. Binding of biomolecules, such as an antigen, to the patterned capture molecules increases the height of the surface pattern, producing an increased phase shift in the reflected beams, which in turn increases the diffraction signal intensity that is detected in real time by a photodiode detector below the sensor. Dissociation of the interacting species with a competitive reagent conversely leads to a measurable decrease in signal.

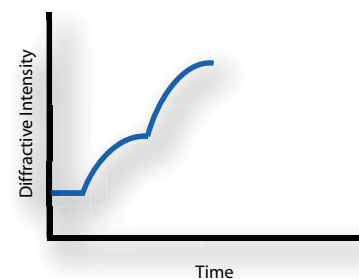
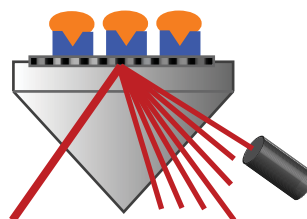


Since the illumination occurs through an integrated optical prism, the laser beam does not pass through the bulk solution in the flow channel. This significantly reduces the effects of sample refractive index and color on signal intensity which allows for the direct analysis of crude biological samples. The self-referencing property of the sensor also allows for the use of vigorous mixing or changes in reagent flow during an assay without signal disruption.

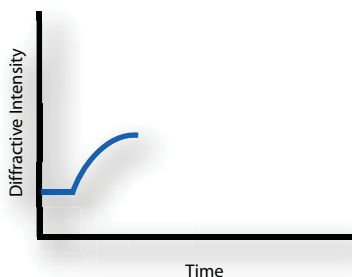
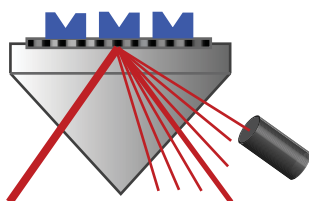
## 1. Capture Surface



## 3. Target Molecules



## 2. Capture Molecules



## 4. Competitive Dissociation

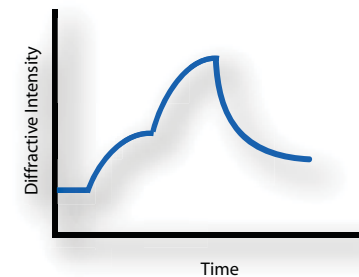
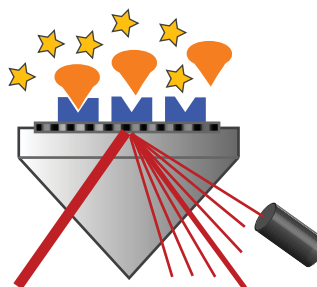


Figure 6 - Illustration of the diffraction optics technology on the dotLab Sensor

Real time • Multiplex • Customizable Panels • Crude Samples  
Broad Dynamic Range • Easy to Use • Low Cost • Rapid

# Products & Consumables

## dotLab mX System

dotLab System mX, dual pump M-002747-002

## dot® Covalent Products

dot-Covalent Sensor BM-000179

Amine Activation Kit BM-000134

dot-Covalent Starter Kit BM-000180

dot-Covalent Sensor (4 Pack) BM-000202

Amine Activation Kit (4 Pack) BM-000203

Goat Anti-Mouse IgG, 0.1 mL BM-000086

Coupling (Acetate) Buffer (10x), 100 mL BM-000065

Deactivating (Ethanamine) Buffer, 1.8 mL BM-000082

## dot® Avidin Products

dot-Avidin Sensor (12 pack) BM-000026

Bt-RAM-Fc (1 mg/mL) in PBS, 0.1 mL BM-000014

Bt-Protein G (1 mg/mL) in HBS, 0.05 mL BM-000015

Bt-GAM-Fc (1 mg/mL) in PBS, 0.1 mL BM-000016

Bt-GAM-Fc, 0.5 mg freeze dried powder BM-000094

Bt-GAR-Fc, 0.5 mg freeze dried powder BM-000096

Bt-GAH-Fc, 0.5 mg freeze dried powder BM-000098

Bt-RAG-Fc, 0.5 mg freeze dried powder BM-000100

Bt-Protein A, 0.5 mg BM-000107

Bt-Protein G, 0.5 mg BM-000116

## dot® Ready Products

PBS Buffer (10X), 100 mL BM-000022

HBS Buffer (10X), 100 mL BM-000021

Tween 20 (10% w/v in H<sub>2</sub>O), 20 mL BM-000023

BSA in PBS (10 mg/mL), 10 mL BM-000017

BSA in HBS (10 mg/mL), 10 mL BM-000018

Rabbit IgG (1 mg/mL) in HBS, 0.1 mL BM-000020

Mouse IgG (1 mg/mL) in PBS, 0.1 mL BM-000019

## panelPlus Sensors (12 pack)

panelPlus 1-Plex Sensor - A BM-000280

panelPlus 1-Plex Sensor - B BM-000223

panelPlus 1-Plex Sensor - C BM-000224

panelPlus 3-Plex Sensor - ABC BM-000409

## panelPlus Address Kits

Address A BM-000277

Address B BM-000211

Address C BM-000212



## Summary

Real time observations of molecular binding and dissociation reactions

Customizable multiplex panels

Analyte detection over a broad dynamic range

Suitable for crude biological samples

Small sample consumption

Ideal for rapid immunoassays and routine tests

User friendly and intuitive software

Available 21 CFR Part 11 Compliance support

Visit our website for your local distributor or contact us directly

<sup>1</sup> For more details download our literature from [www.axela.com](http://www.axela.com)

**dotLab**<sup>®</sup>  
mX SYSTEM

**axela**<sup>x</sup>

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