

Simoa Planar Technology: How the SP-X Achieves Ultra-Sensitivity

The Simoa planar immunoassay technology is a revolutionary new digital biomarker solution, with features that provide researchers an incredibly simple, flexible, robust, and sensitive multiplexing platform.

Proprietary high-precision digital nanofluidic antibody deposition technology

Provides unprecedented surface chemistry optimization, minimizing non-specific binding and resulting in low background noise and excellent assay precision and accuracy.

Unique spot design

Antibodies are deposited into discrete spots in a circular pattern around the perimeter of each round microtiter plate well following the perimeter of the well. Each spot contains the capture antibody for one target analyte, making it possible to perform up to a 10-plex assay in any well, saving sample volume, time and cost without sacrificing assay performance characteristics.

Vortex interaction between analyte molecules and capture antibodies

The Simoa planar approach's unique shaking protocols create an efficient vortex-style interaction, leading to a dramatically higher number of productive collisions between individual target analyte molecules and capture antibodies to form antibody/antigen complexes, providing exquisite assay sensitivity.

Imaging occurs through bottom of translucent wells

The Simoa surface of the planar array plates are manufactured using translucent materials enabling imaging of the array through the bottom of the plate, eliminating the potential for optical signal deformations and for reduced sensitivity of the reading due to the meniscus of the liquid in the well.

Machine learning and proprietary algorithms

Proprietary software provided with the SP-X Imager incorporates machine learning and artificial intelligence algorithms to automatically optimize exposure time and number of images to maximize sensitivity and dynamic range for each experiment.

Visit quanterix.com/SP-X
for more information

QUANTERIX SP-X™ Imaging and Analysis System



ULTRA-SENSITIVE MULTIPLEXED BIOMARKER MEASUREMENT DETECTION

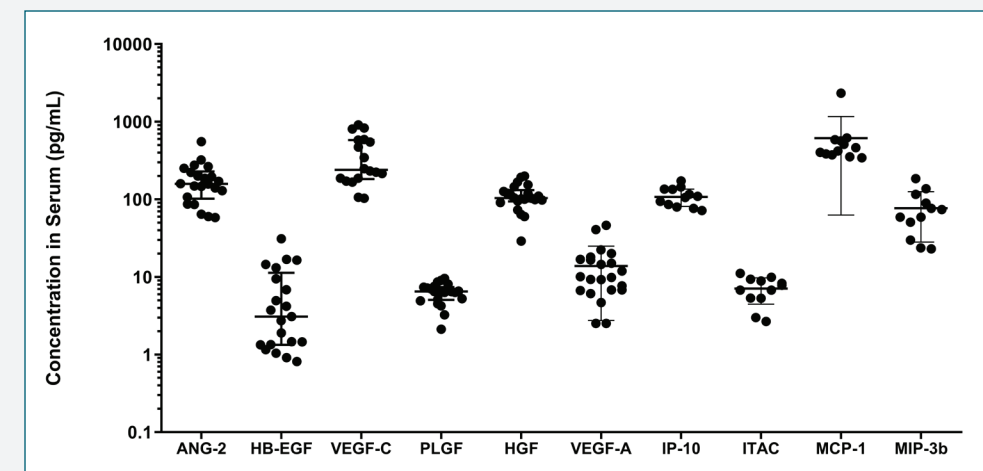
Unleashing the power of next generation Simoa® planar array technology for robust multiplex circulating biomarker detection at the earliest stages of disease progression – even at healthy baseline levels

The Quanterix SP-X™ Imaging and Analysis System is a complete benchtop system that offers true multiplex detection at both acute and baseline levels in serum and plasma. Now oncology and immuno-oncology researchers and others who rely on multiplexing capabilities have an easy-to-use platform to help optimize workflows, speed up their research, and ultimately accelerate drug approvals.

State of the art accuracy, sensitivity, precision, and reproducibility with chemiluminescent Simoa planar arrays

- Combining Simoa ultra-sensitive assay development and optimization with up to 10-plex multiplexing scale and flexibility
- 1000-fold concentration of assay signal and reduction in non-specific background
- Compact benchtop footprint requiring only 11" (28 cm) of space

- Onboard high-resolution camera and custom lens for optimal light collection without user adjustments
- Optimized image analysis with proprietary acquisition algorithms and machine learning maximize dynamic range and S/N
- Touch screen tablet interface
- Imaging time <2.5 minutes per plate
- No maintenance or calibration required



Multiplex measurement of normal healthy baseline levels using the Simoa Human Angiogenesis Panel on the SP-X system

State of the Art Imaging and Data Analysis

Control:

- Intuitive Touch Screen Interface
- Automatic Image Exposure Control
- Proprietary Advanced Multi-Exposure Image Acquisition (> 5 Logs of Dynamic Range)
- USB and Remote PC/Mac Network File Storage Interfaces
- Local Storage for Image Archiving

Camera:

- High-Resolution, Peltier Cooled 16-bit CCD Camera
- 6.8 um x 6.8 um Pixels
- Dark Noise and Flat Field Image Management

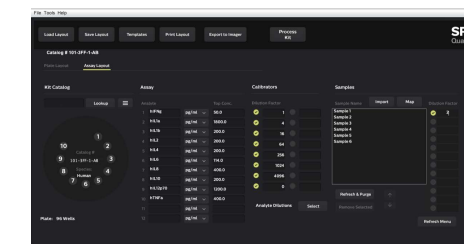
Optics:

- High Efficiency Lens for Optimal Light Collection
- Simultaneous Imaging of Full 96-Well Plate

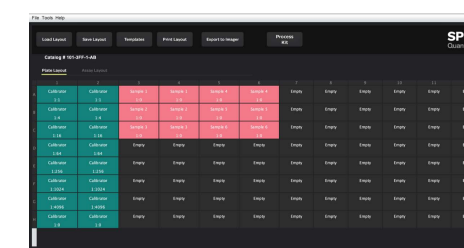
Misc:

- Uses Only 11" of Bench Space
- Barcode Reader Included for Automatic Programming and Sample Tracking

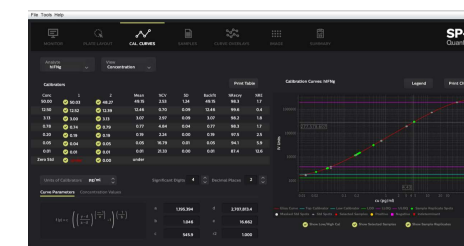
Intuitive User-guided Run Setup and Integrated Data Analysis:



Initiate experiment and define assay layout



Define plate layout



Analyze results and generate report