

simOa®



HD-X™

Simoa® Bead-based Immunoassay platform

Quanterix®

# Ultra-Sensitive Biomarker Detection

## Simoa HD-X Analyzer®: a fully automated Simoa bead-based immunoassay platform



### HD-X unique capabilities

- Simple 2-step or 3-step workflow with minimal user intervention
- Built-in touch-screen control and comprehensive data analysis tools
- Broad menu of commercially available kits
- Multiplexed detection without compromising sensitivity or specificity
- Complete automation of assay incubation, wash and data analysis steps

## The Value of the HD-X System

The Simoa HD-X Analyzer® is the latest model of the fully automated Simoa bead-based immunoassay platform. Re-engineered, the platform's ultra-sensitivity and dependability empower researchers with 1000x greater sensitivity than traditional immunoassays.

Leveraging years of experience with the ground-breaking Simoa HD-1 Analyzer®, the HD-X delivers increased productivity, user flexibility, unparalleled sensitivity and best in class assay performance.

Simoa® isolates each bead-immunocomplex to allow for enzyme bound to the capture antibody to produce sufficient fluorescence in each well to be detectable, even when just a single molecule is present.

As a result, the analyzer produces a map of the array—each of which contains more than 200,000 wells—where each well can be digitally analyzed as either “on” (containing a target molecule) or “off”. The proprietary Simoa algorithm then converts the measurement into a concentration which reaches femtomolar levels for most analytes. This revolutionary approach to digitalizing ELISA offers up to 1000-fold improvement in sensitivity over current immunoassay techniques.

## Assay Performance

Metric	Simoa HD-X
Sensitivity	Up to 1000x greater sensitivity than current immunoassays
Dynamic Range	>4 logs
Precision	<10% CVs

## Instrument Performance

Metric	Simoa HD-X
Throughput	Up to 1,152 data points per shift
Workflow	Batch size 1 to 288 measurements per run
Total Assay Time	<2.5 hours per 96-well plate Run Setup
Run Set up Time	<30 minutes
Automation	Full (sample in to data out)
Sample Input	96-well plate or tubes
Sample Volume	1 $\mu$ l * - 100 $\mu$ l
Instrument Footprint	135 x 60 x 160 cm (free-standing)
Multiplex Capability	Up to 6-plex
Assay Flexibility	Open platform with ability to select from menu of validated assay kits or develop custom assays

\*<10  $\mu$ l requires pre-dilution step

## Simoa® HD-X Benefits

**Ultra-sensitivity** – Up to 1000x greater sensitivity than traditional immunoassays

**Automation** – Reproducibility and convenience of sample→answer workflow

**Multiplexing** – Measure up to 4 biomarkers in single sample at fg/ml concentrations

**Flexibility** – Supports both high-throughput and rapid result workflows

**Efficiency** – Precise control of assay conditions allows for use of stored assay calibration values

**Menu** – Fully compatible with a broad range of assays also available on HD $\alpha$ -1 as well as customized homebrew assays

**Regulatory Compliance** – Enables 21CFR Part 11 compliance with streamlined run reports and user management

## Simoa® Immunoassay Kits

Quanterix offers a broad range of complete immunoassay kits as well as a robust homebrew kit.

Please visit [www.quanterix.com](http://www.quanterix.com) for an updated list of all available assays and for detailed specifications.

Contact [sales@quantex.com](mailto:sales@quantex.com) for assays available in prototype format and custom assay development services.

# Introducing the world's most sensitive, fully automated immunoassay platform with multiplexing and custom assay capability

## Instrument features and benefits

### Ultra-Sensitivity

With up to 1000x greater sensitivity than current immunoassays, analyte concentrations can be measured where they previously were not possible. Such a dramatic improvement in sensitivity opens new avenues of research and allows measurements of previously undetectable markers. Users with very low sample volumes can also pre-dilute samples to preserve samples and reduce matrix effects and still achieve greater sensitivity than ever before.

### Automation

Running immunoassays is a time consuming, largely manual technique. Users must either dedicate significant time to running assays or make use of expensive auxiliary automation systems. The Simoa HD-X Analyzer® performs all the steps of the assay, which both drives efficiencies but also provides more consistent, precise results by minimizing the variability of results common in manual approaches.

### Multiplexing

The Simoa HD-X Analyzer® is capable of measuring up to 4 biomarkers in a single assay; providing the cost and sample preservation benefits researchers need without sacrificing sensitivity or precision.

### Value

The Simoa HD-X Analyzer® offers significant value to researchers through its ability to save time, reduce sample volumes, and enable multiplexing. These key features make it an attractive option for those seeking to increase efficiency and throughput in their workflows.

### Precision

Thanks to the digital nature of Simoa® and the consistency obtained through automation, CV's less than 20% and often below 10%.

### Dynamic Range

The proprietary Simoa algorithm uses both digital measurements at low concentrations and analog measurements at higher concentrations, allowing a remarkable dynamic range of >4 logs.

### Homebrew

The Simoa HD-X Analyzer® helps users develop and optimize their own assays, leveraging all the benefits of Simoa on markers for which pre-packaged assay kits do not exist.

Visit [quanterix.com/HD-X](https://www.quanterix.com/HD-X) for more information



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