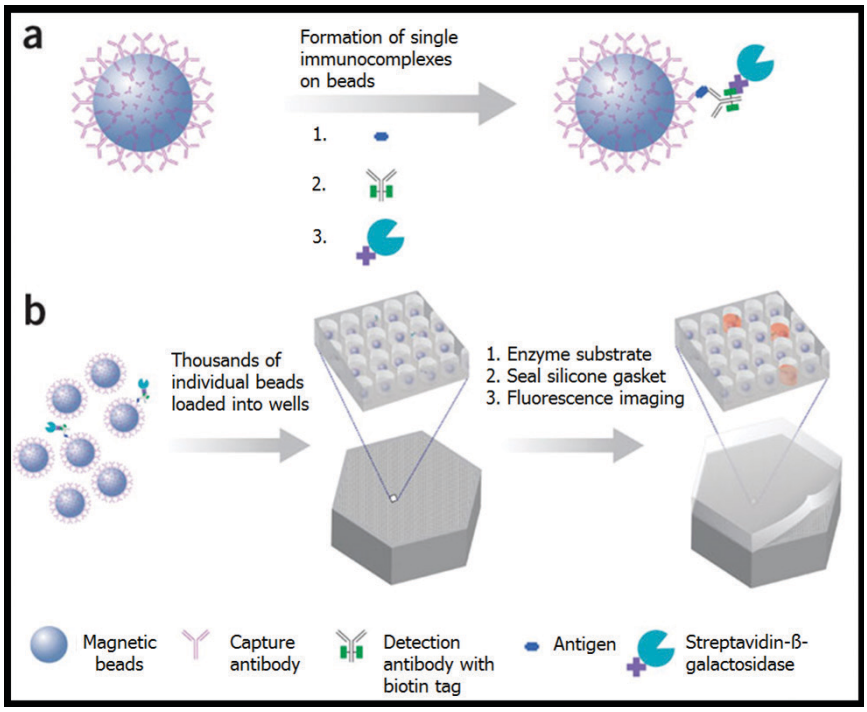
QUANTERIX Simoa

Fully Automated, Ultrasensitive Detection of Analytes

SIMOA™ for single molecule arrays is one of the most sensitive ELISA-based platforms available today. Developed by Quanterix, it allows the detection of femtomolar-level concentrations of individual protein molecules and even has multiplexing capabilities. This process involves the capture of target analytes by beads coupled to a specific antibody, detection by a biotinylated antibody and final revelation with a fluorogenic enzyme substrate. In the SIMOA technology, analytes are concentrated by confining beads followed by fluorophores, into individual femtoliter-volume wells as opposed to the highly diluted analytes seen in classic ELISA. A fluorescent image is then acquired by optics inside the unit.

Protein concentrations are determined by counting the number of wells containing both a bead and fluorescent product relative to the number of wells containing only beads. Concentration is determined digitally rather than by using the total analog signal, similar to a digital ELISA.



a. Single protein molecules are captured and labeled on beads. b. Beads are loaded into femtoliter-volume well arrays for isolation and detection of single molecules by fluorescence imaging.

ABL scientists find the advantages of the Simoa platform include its high sensitivity, complete automation, favorable antibody-analyte ratios plus the single molecule detection method. Rapid binding in the range of >1 bead per minute means that Simoa is highly efficient at the capture of biomarkers. Full automation allows for 66 samples to be analyzed per hour and significantly reduces the variability encountered with other non-automated ultra-sensitive platforms. Simoa also has multiplexing capabilities, in addition to the potential for custom development with the homebrew available option. Speak to an ABL scientist to learn how to get the most reliable data from your low frequency markers by Quanterix.

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