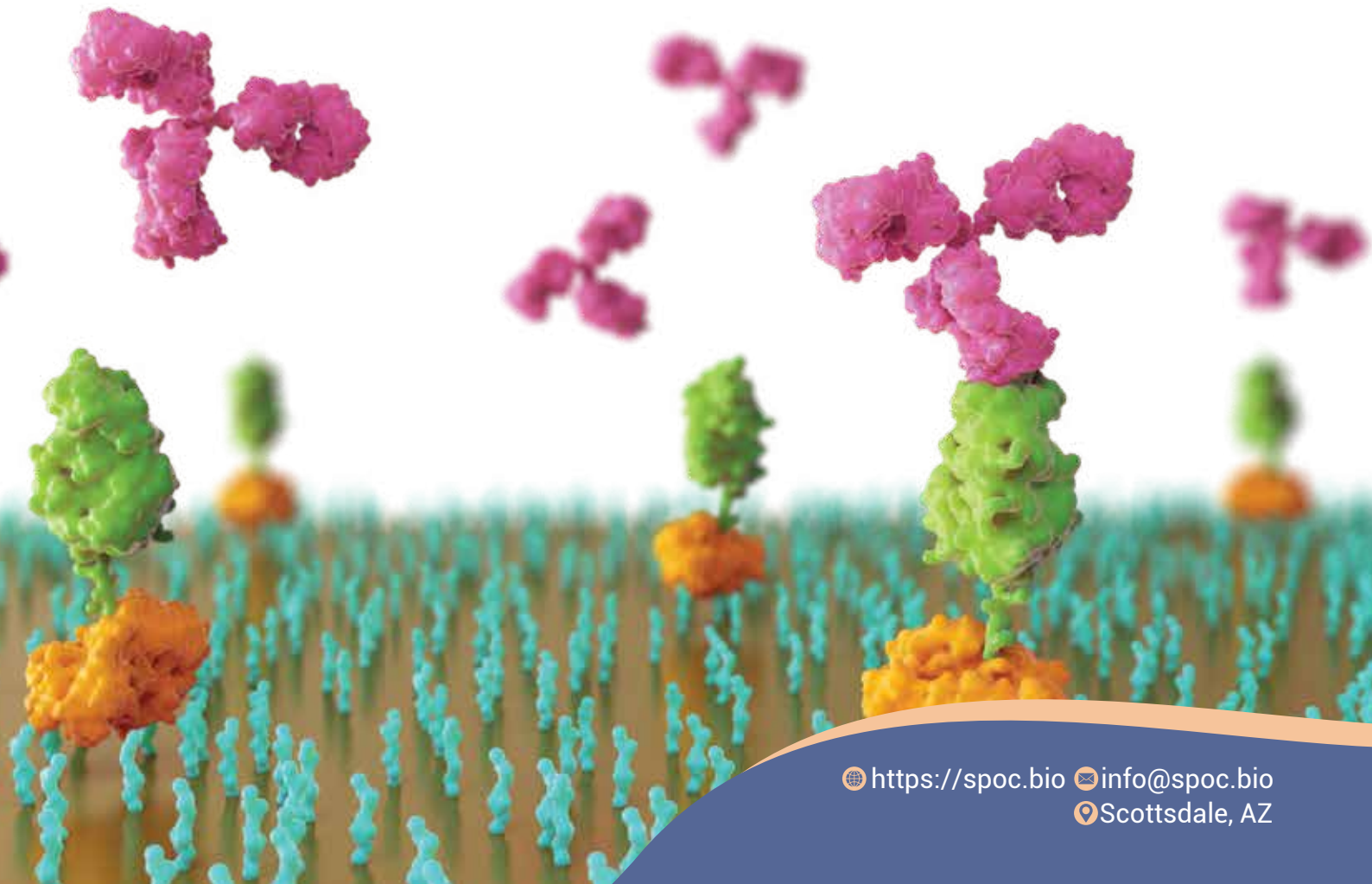


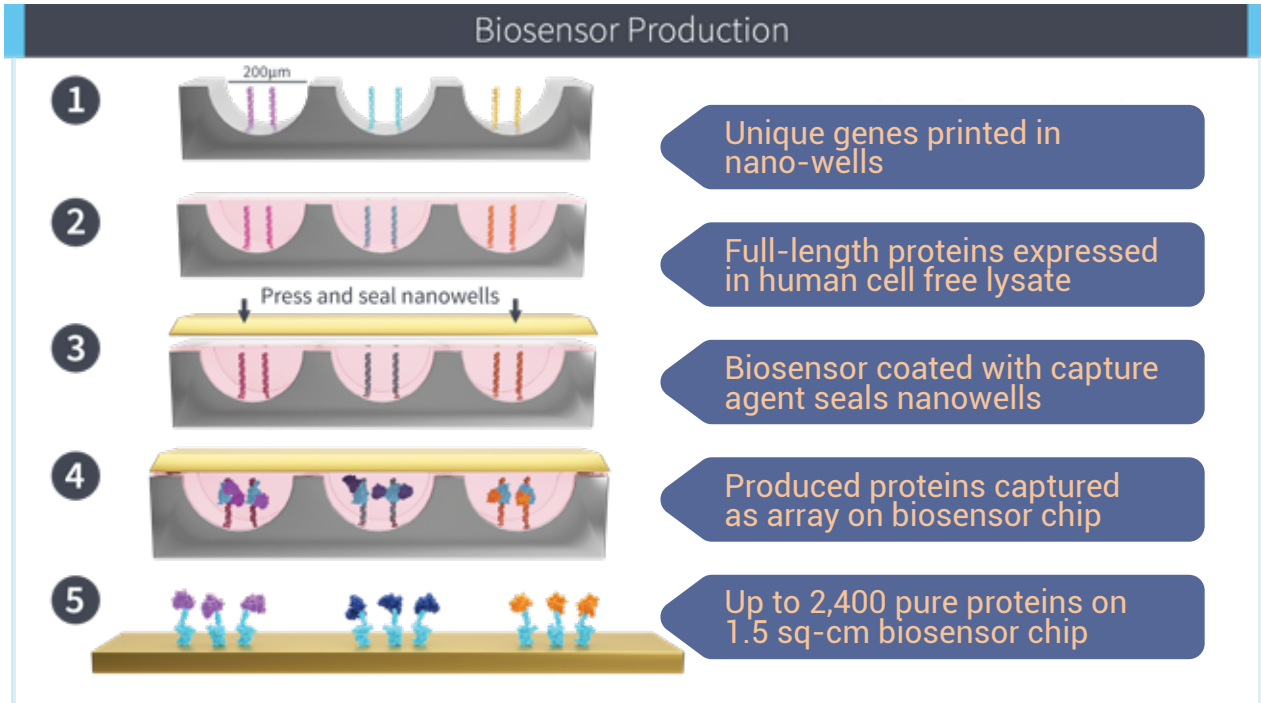
SPOC Proteomics

Sensor-integrated proteome on chip (SPOC[®])

PROTEIN KINETICS AT SCALE



SPOC is the world's first highly multiplexed proteomic biosensor



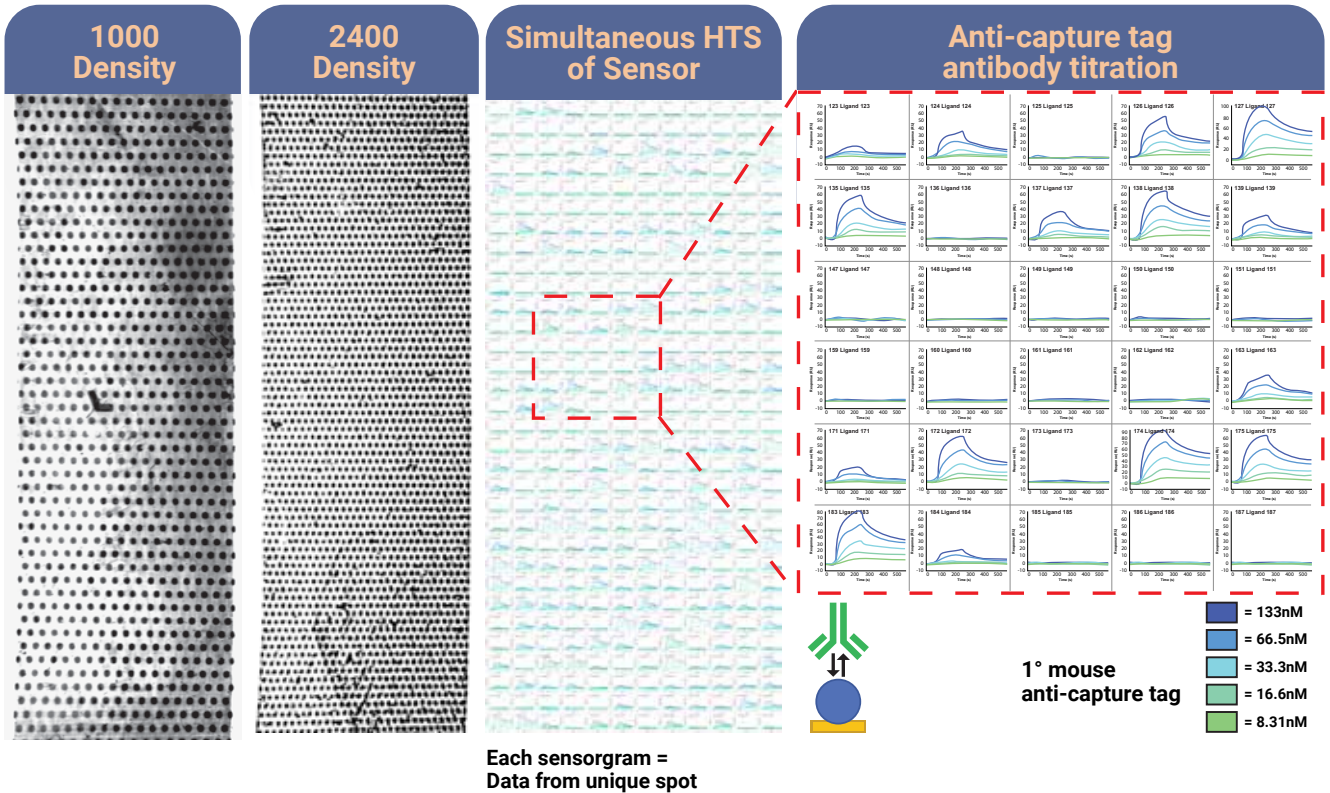
SPOC's proprietary biosensor production method utilizes cell-free human lysate to produce thousands of full-length, folded proteins directly from plasmid DNA nanowell arrays which are simultaneously capture-purified directly onto gold biosensor chips for surface plasmon resonance (SPR) real-time, label-free kinetic analysis. This production method effectively reduces costs 10-100x from traditional recombinant protein workflows.

SPOC is the only proteomics platform to provide qualitative, quantitative, and kinetic data at scale.

Key features:

- Folded, full-length proteins
- Rapidly customizable – only requires DNA sequence of interest
- Automated data collection with Carterra LSA^{XT} for up to 96 samples
- Real-time, label-free data collection with SPR
- Chips can be stored at -20°C for at least 10 days or produced at time of customer need
- Capability to detect biomolecules down to 500 Da
- Up to 2400 proteins per 1.5 cm² SPR biosensor chip
- Quantitative, qualitative, and kinetic data at scale
- Chips are re-usable under specific conditions
- No cumbersome or expensive recombinant protein production/purification required
- Post-translational modifications are present

Automated high-throughput, real-time, label-free kinetic biosensing with SPOC and SPR



SPOC biosensors are available today with up to 1,000 unique proteins per 1.5 cm² chip with data collection for 384 spots simultaneously. Software is in development to enable data collection for all 1,000 spots at once.

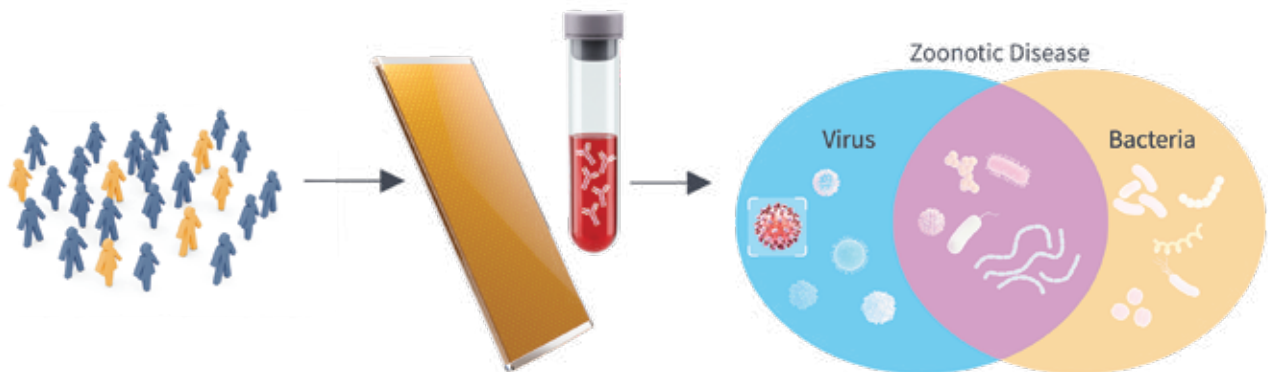
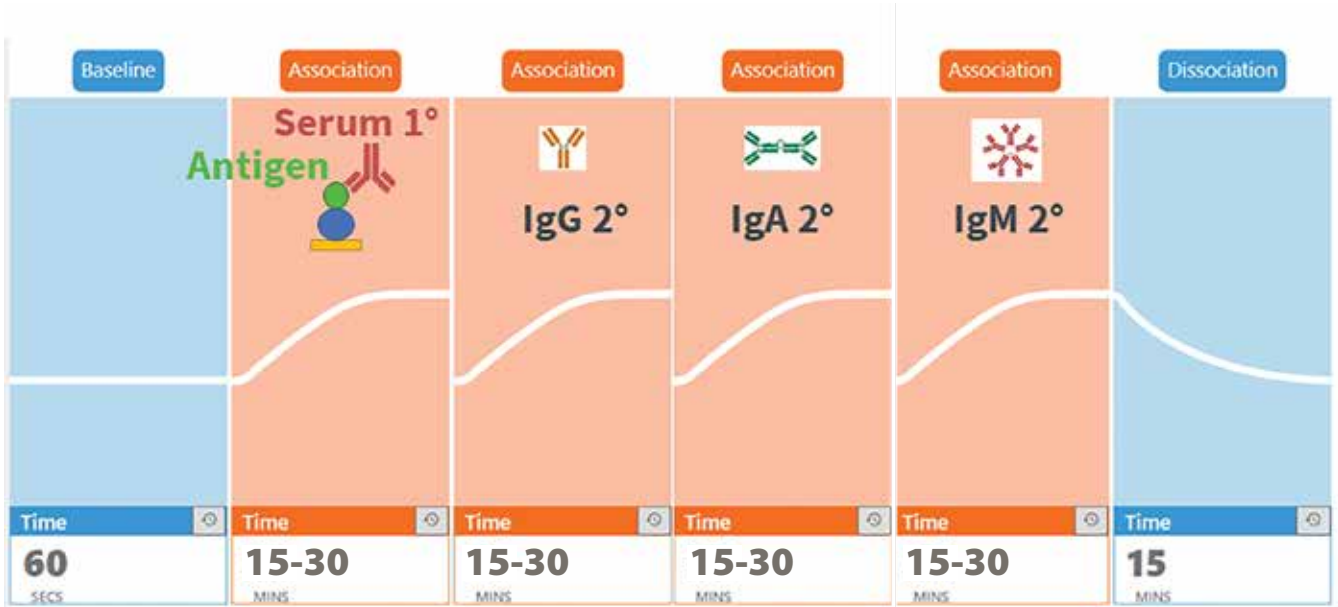
Anticipated launch of up to 2,400 proteins/chip is planned for 2025.

Real-time sensing enables detection of biomolecular interactions not detectable by endpoint assays, particularly those with high off-rates.



SPOC uses the state-of-the-art Carterra LSA^{4T} SPR system for automated SPR analysis of up to 96 samples.

SPOC can perform antibody isotyping and diagnose in a single assay

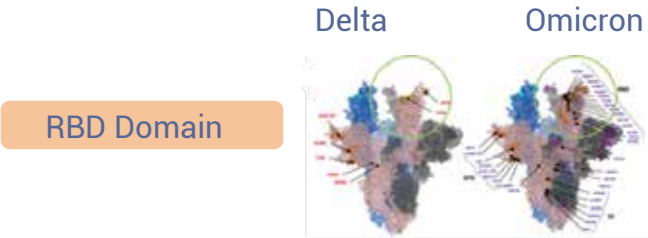
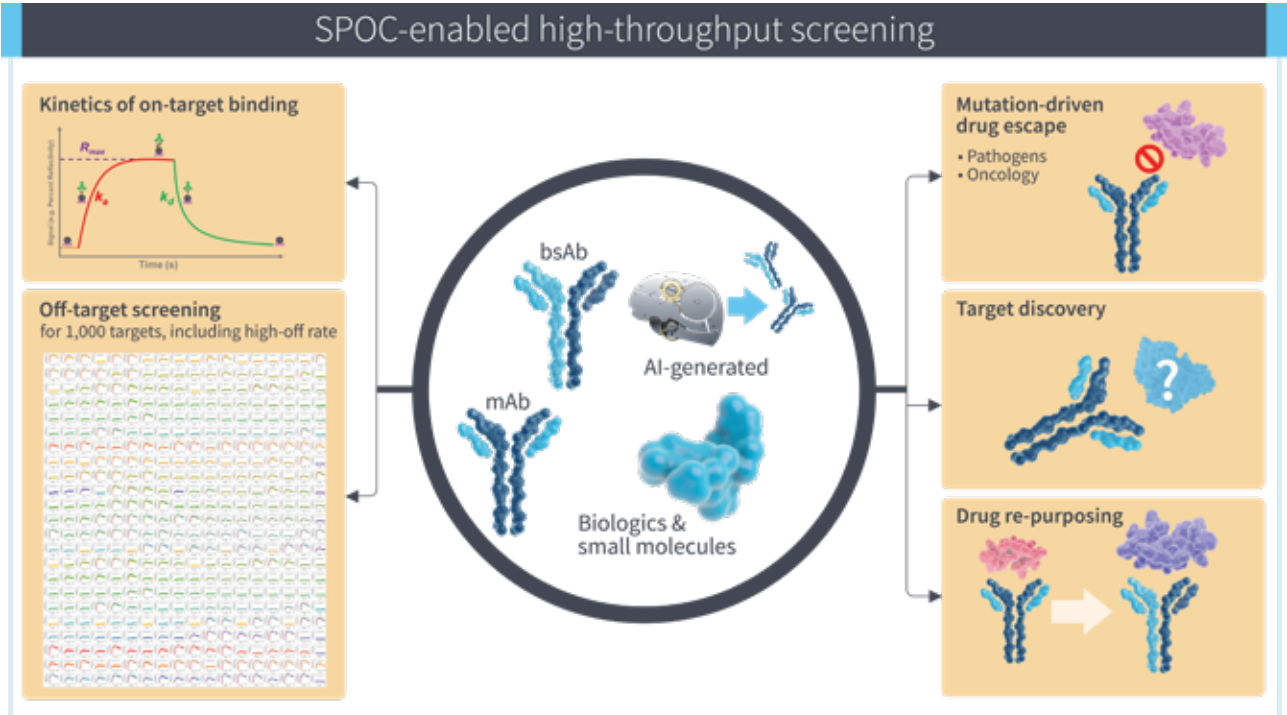


Through automated, sequential sample injections, SPOC can identify antigen-specific antibodies in patient serum and subsequently determine antibody isotype with <math><50\ \mu\text{L}</math> of serum.

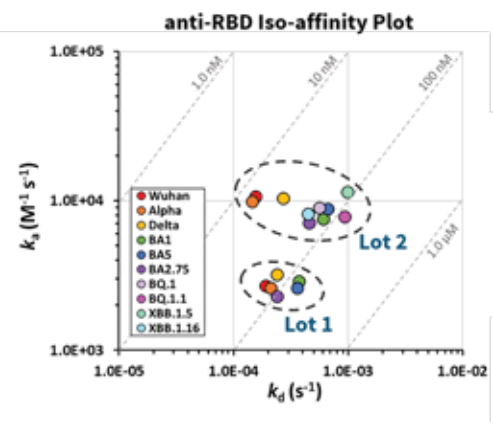
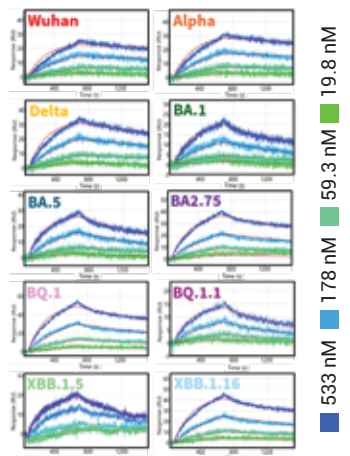
High-throughput seroscreening against up to 1000 pathogen proteins simultaneously in a single SPOC assay can assist with more rapid diagnosis, particularly in cases of diseases with overlapping symptoms. Antibody isotyping for IgG(1-4), IgA, and IgM can provide detailed insights, such as assist with time stamping the infection, distinguishing active disease from prior immune memory, and vaccine efficacy evaluation.

A prototype SPOC chip is available with antigens from 11 respiratory pathogens and their subtypes/variants. Contact info@spoc.bio for more details.

SPOC can assist drug discovery by determining differential kinetics for mAb therapeutics



Variant	KD ± SD (nM)
Wuhan	14.5 ± 0.7
Alpha	15 ± 1.4
Delta	26 ± 5.7
BA.1	81.5 ± 30.4
BA.5	75 ± 12.7
BA.2.75	64.5 ± 14.8
BQ.1	61 ± 14.1
BQ.1.1	~120
XBB.1.16	54.5 ± 0.7
XBB.1.5	~85.0











SPOC kinetic affinity measurements can distinguish between monoclonal antibodies (mAbs) targeting the same protein to assist with lead candidate identification.





SPOC differentiates binding kinetics between each variant and detects lot to lot variation in binding kinetics, which can be used as quality control to verify how commercial antibody manufacturing variations may influence antibody performance.

Contact us for more info!

If you do research in any of the below areas, we'd love to chat with you to see how SPOC can assist your efforts!

-  AI-designed drug validation
-  Vaccine efficacy monitoring
-  Biomarker discovery
-  Off-target binding of drugs
-  Drug discovery
-  Host-pathogen interactions
-  Antibody Cross-Reactivity Screening
-  Protein-protein interactions

Contact us

-  <https://spoc.bio>
-  SPOC Proteomics
-  info@spoc.bio
-  @SPOCbio



Click here or scan to read our pre-print on bioRxiv

Limited beta testing opportunities are available now – contact info@spoc.bio for more details.