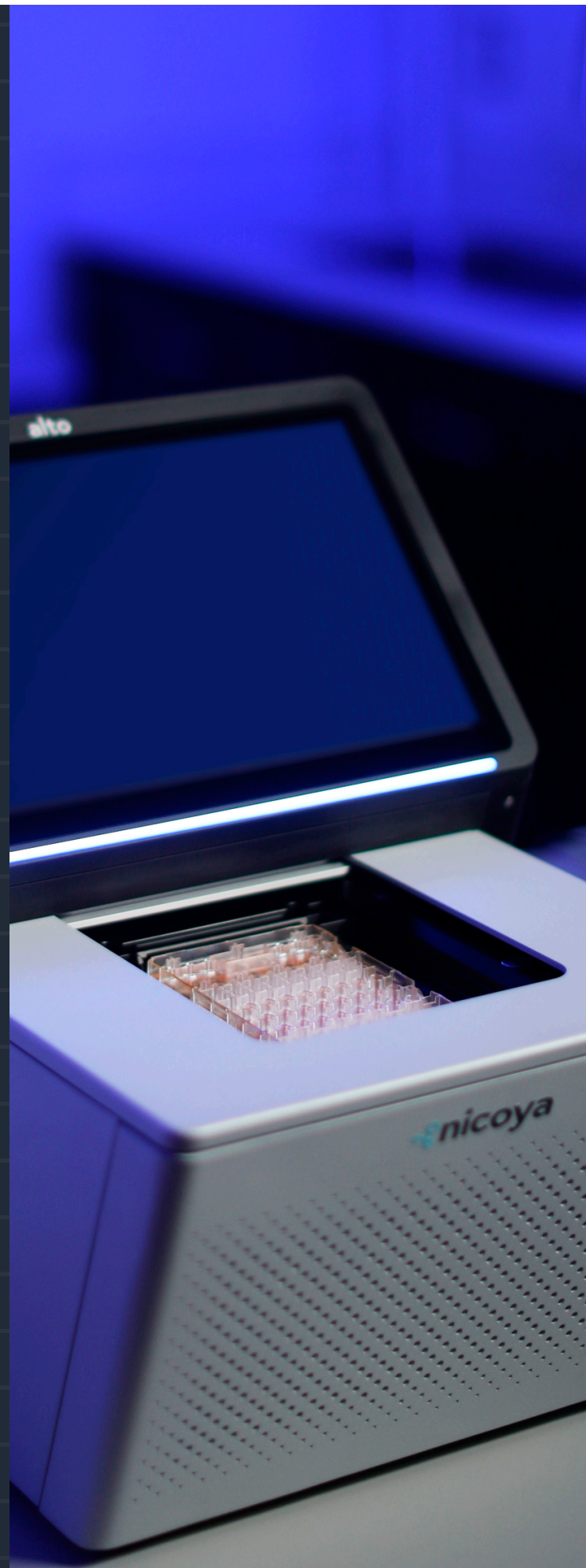


alto™

Accelerate your  
drug discovery  
with digital SPR

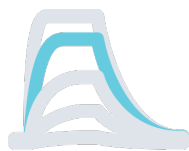
 nicoya



# Make discoveries, not compromises

## The label-free solution for characterizing biologics

As the world's only surface plasmon resonance (SPR) system powered by digital microfluidics, Alto™ revolutionizes real-time interaction analysis by eliminating the need to compromise on quality and time. Go from sample to answer within hours while streamlining even the toughest of biologics applications with Nicoya® Alto's intuitive and automated ecosystem. Designed to take the complexity out of SPR, Alto will empower your team with the data they need to take their discoveries to the next level.



### Maximize data quality

Automate error-prone steps while eliminating sample dispersion and evaporation.



### Save precious sample

Get full kinetic analysis from 2  $\mu$ L of crude or purified sample, 100X less than traditional SPR platforms.



### Future-proof your lab

Spend 70% less time at the bench - no purification, dilutions, tagging, degassing, cleaning, or manual assay design required.



### Beyond traditional SPR

Empower your team with a label-free platform designed for biologics research.

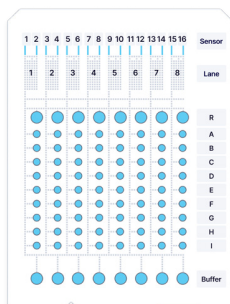
# Beyond traditional SPR

Empower your team with a label-free platform designed for biologics research.



## Universal hardware

A robust benchtop instrument free of fluidic components and easily upgradeable.



## Disposable cartridge

Sensors, fluidics and reagents all integrated in one consumable powered by digital microfluidics.



## Flexible software

Designed for any skill level, with local or cloud access to your data anytime.

## What is digital microfluidics (DMF)?

DMF is a liquid-handling technology capable of accurately controlling and manipulating discrete nanoliter-sized droplets across an array of electrodes. The fluidics are contained within a disposable cartridge, allowing Alto™ to overcome the major limitations associated with increasingly complex fluidic systems present in traditional label-free instruments. The elimination of pumps, valves, tubes and flow cells virtually eradicates maintenance and allows for greater flexibility, accuracy, and performance.

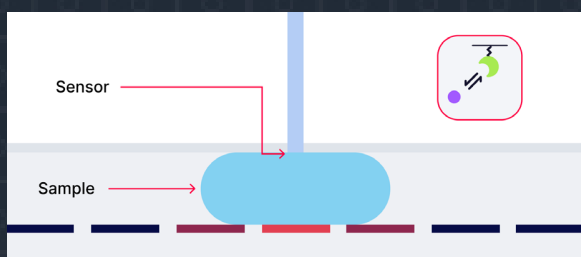


Figure 1: Voltage moves drops across the cartridge in discrete, programmable pathways to deliver, modify, and remove reactants at the sensor surface.

## Run with confidence

Alto's plug-and-play design makes it easy for anyone in your lab to confidently operate SPR. Pre-designed experiments are readily accessible via a touch-screen interface, and flexible cartridge designs enable you

to run hundreds of interactions in a variety of formats. As a "sample in, answer out" instrument, your only task at the bench is to load your cartridge and press play.

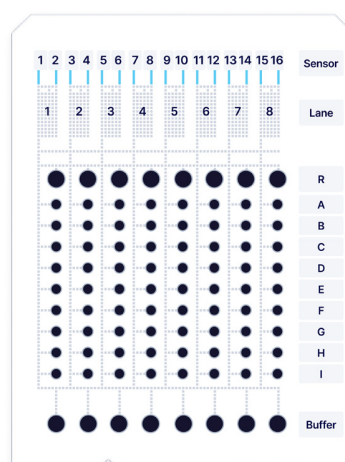


Figure 2: Alto's 16-channel cartridge layout.

# Work from anywhere

Take the guesswork out of SPR with Alto's intuitive analysis software: The Nicosystem™

A first of its kind, the Nicosystem™ provides a one-stop centralized hub for accessing and sharing data, while offering you the flexibility of accessing your experiments on the cloud or locally.

## Design on the go

Map your sample layout, set up your assay, and build your experiment all without needing to be at the bench. Any experiment designed on the Nicosystem™ will be immediately available to run on your instrument once you're back in the lab. And with Alto's application-centric design modules, you will always be in control of when and how your team runs experiments.

## One-click analysis

Eliminate lengthy post-processing with Nicosystem's one-click analysis. A diverse range of models and investigative tools are available to accurately interpret your data and provide high-quality insights. With Nicosystem's seamless end-to-end handling of your experiments, you'll be empowered to scale your workflow and quickly share new discoveries.



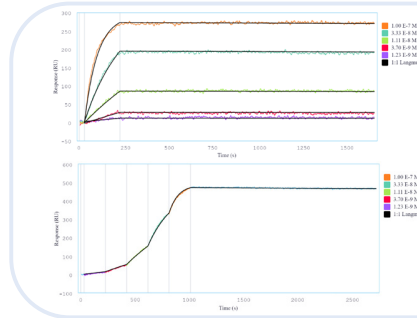
# Built for biologics

Investigate a wide range of applications with a platform built to handle the unique complexities and constraints of biologics.

## Characterize affinity/kinetics

Simultaneously analyze multiple targets in different assay formats, while reducing hands-on time with complete assay automation.

- Screen a wide range of affinities
- Predict drug potency with kinetics
- Determine specificity & selectivity
- Reduce hands-on time by up to 70%
- Flexible assay design



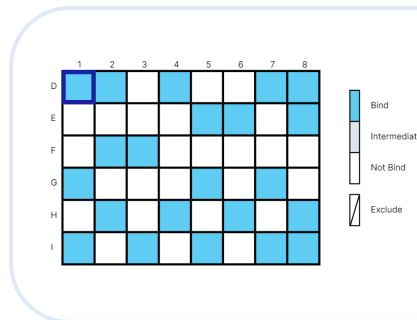
### Kinetic formats

Multi-cycle and single-cycle kinetics of influenza A protein binding to immobilized influenza A antibodies.

## Screen complex media

Quickly determine binding activity and select the most relevant hits with Alto's rapid screening protocol.

- Process up to 96 interactions in one run using microliters of samples
- Screen directly from crude samples via direct or capture method
- Intuitive analysis with sorting and exclusion
- Use minimal sample volumes (2-5  $\mu$ L)



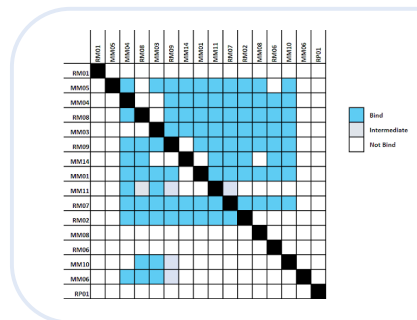
### Blind Ab screening

Heat map generated from antibody screen against H3N2 hemagglutinin (ligand) illustrating which samples contained anti-H3N2 HA Abs (analyte) in direct screening.

## Evaluate epitope diversity

Alto's robust epitope software simplifies competition assays to identify unique binders, and creates exportable visualizations for easy interpretation.

- Rapidly bin up to 16x16 mAbs
- Process 256 interactions in <16 hours
- Comprehensive analysis including automatic data normalization



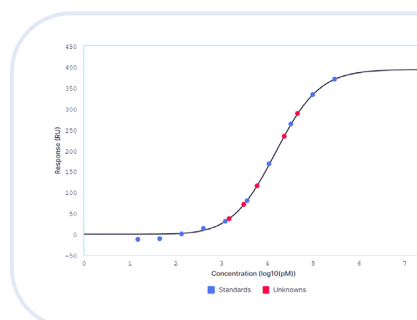
### Influenza A antibodies

Antibodies binding to influenza A nucleoprotein were characterized with a classic sandwich assay. "Bind" indicated a unique epitope targeted by the antibodies in a 16x16 epitope bin.

## Quantify samples

Determine active sample concentrations with high-throughput quantitation.

- Determine up to 40 unknown concentrations
- Automate sample dilutions
- Generate up to 8 standard curves and calibrate with 5PL curve fitting



### mAb quantitation

Monoclonal antibodies in serum specific to the H3N2 hemagglutinin protein were quantified at varying concentrations, generating a calibration curve with 10 different known standards.

# At a glance

## Specifications

<b>Fluidics</b>	
Channels	16
Fluidics Technology	Digital microfluidics
<b>Sample Handling</b>	
Sample Capacity	Up to 48 (240 interactions)
Sample Volume	2 $\mu$ L per well
Referencing	1:1
Automation	Automated dilutions (3x) Robotics compatible*
Unattended Run Time	24+ h
Crude Sample	Yes
Fluidic Maintenance	None
<b>Performance</b>	
Association Range	Up to $10^9$ 1/M*s
Dissociation Range	$10^{-5}$ - 1.0 1/s
Affinity Range	pM - mM
<b>General</b>	
Assay Types	Kinetics & Affinity Quantitation Screening Epitope Characterization
Temperature Control	Analysis: Off, 25°C Sample storage: Off, Chilled, 25°C
Mode	Cloud, Local
Weight	51 lbs
Dimensions	1.5H x 1W x 1.5D ft
GxP Compatibility	Please inquire for your specific needs

\*Please inquire for your specific needs

## Applications

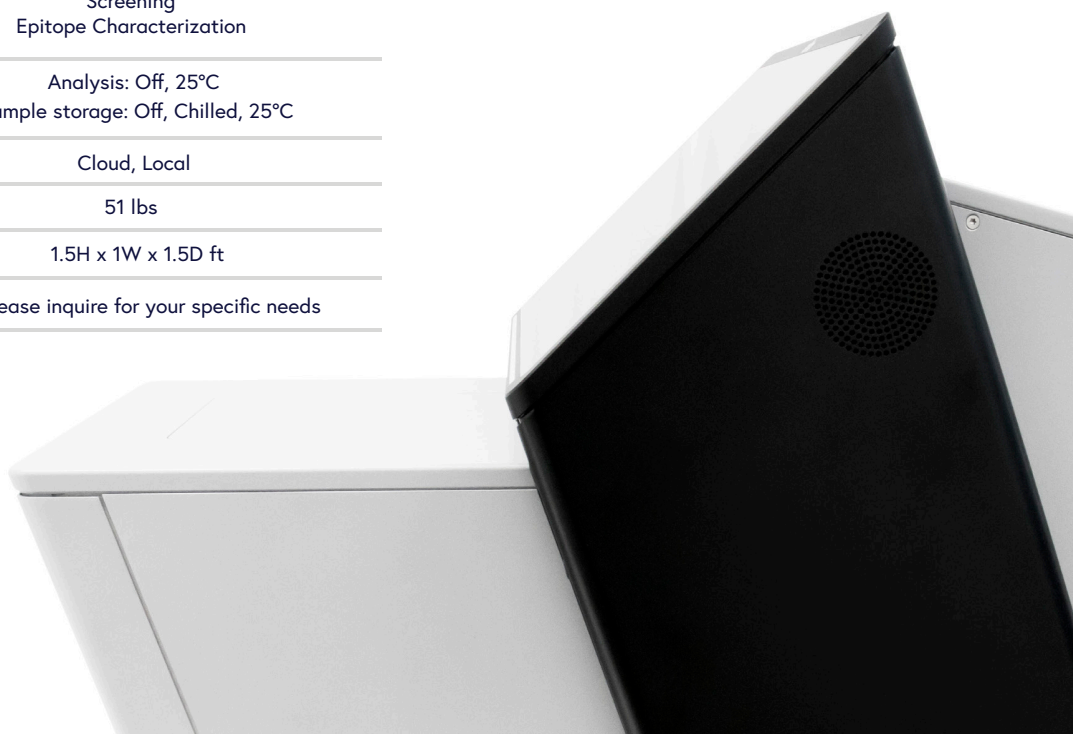
- Kinetics/affinity characterization
- Kinetics/affinity screening
- Quantitation
- Epitope mapping/binning

## Compatible with

- Proteins/peptides
- Antibodies
- Nucleic acids
- Crude samples
- Viruses
- Small molecule  
(application dependent)

## Surface chemistries

- Carboxyl
- Streptavidin (kit)
- Protein A (kit)
- Anti-His (kit)



# Notes



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improve human life



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