

THE WAVE OF THE FUTURE IN KINETICS

creoptix 
sensors

Experience a new level of sensitivity
and flexibility in drug discovery.



Creoptix™ WAVE



Label-free can now be limitation-free.

By combining superior resolution in signal and time with crude-sample robustness normally only achieved with plate-based assays, the Creoptix™ WAVE system is revolutionizing the study of molecular interactions and changing the world of drug discovery.

With its unrivaled flexibility and industry-leading sensitivity, WAVE brings all the benefits of label-free analysis to a whole new world of applications, reaching a new level of data quality.

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EASE OF USE MEETS UNPARALLELED PERFORMANCE.

Engineered around a proprietary waveguide interferometry technology, the WAVE system offers superior data quality across the broadest range of samples for unrivaled flexibility and unsurpassed insight—all made possible by the instrument's three core attributes:

Enhanced Sensitivity

- Most sensitive sensor system on the market
- High resolution even at very low signal levels
- Low noise without artificial data averaging
- Reliable kinetics below 1 pg/mm²
- Avoids mass transport limitation and saves precious reagents by lower immobilization levels required

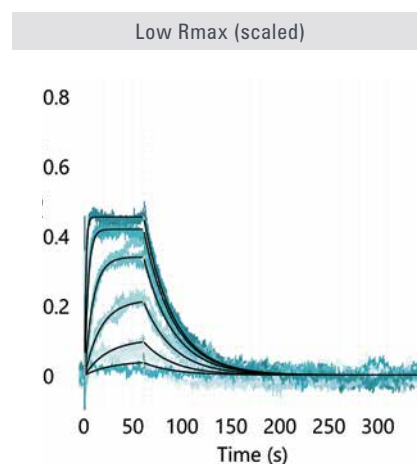
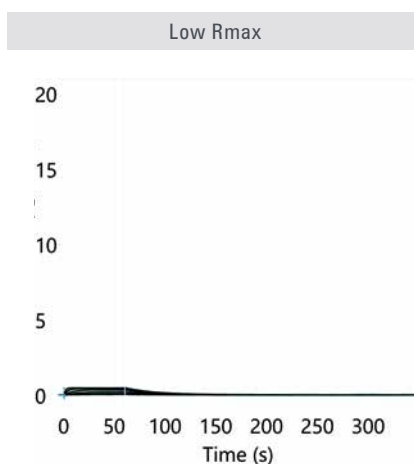
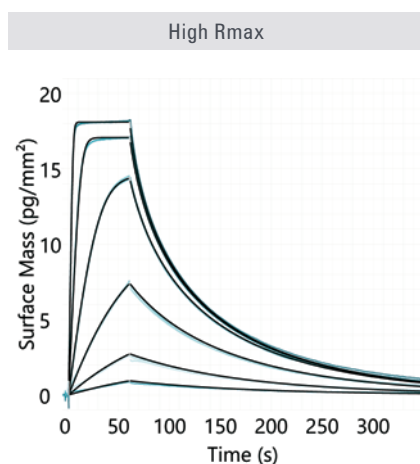
Broadest Kinetic Range

- Ultra-fast transition times of 150 msec
- Reliable determination of off-rates of 5 sec⁻¹ and faster, enabling off-rate screening of weakly binding analytes
- Stable multi-hour dissociation analysis for high-affinity binders

Crude Sample Robustness

- Revolutionary combination of microfluidics and sensor in one disposable cartridge
- Unique, no-clog microfluidics design minimizes downtime
- Compatible with even the toughest samples, including:
 - 100% serum or plasma
 - Crude membrane extracts
 - Virus-like particles (VLPs), viruses, or liposomes

Small molecules can't hide anymore.



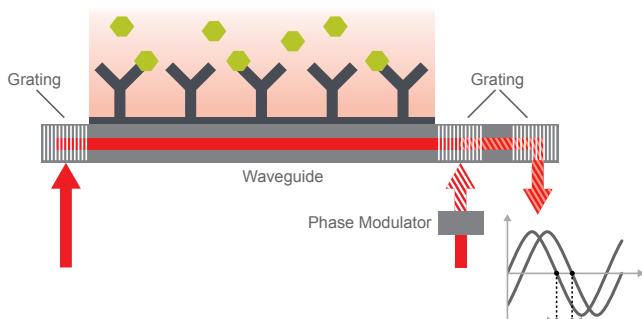
With the industry's fastest kinetics and utmost sensitivity, WAVE offers a whole new level of previously unattainable interaction data.

Ligand: CAII (29 kDa) at two different immobilization levels
Analyte: Acetazolamide (222.25 Da)

EXPANDING THE BOUNDARIES OF DRUG DISCOVERY.

The Creoptix WAVE puts a breakthrough level of kinetics analysis at your fingertips by pushing the boundaries of affinity range and sample compatibility. The system's exceptionally high data quality, flexibility, and fast reporting time facilitate drug discovery and enable new inroads into R&D.

- The patented Grating Coupled Interferometry (GCI) design leverages and enhances the intrinsic benefits of waveguide interferometry to exceed the sensitivity levels of SPR.
- In contrast to SPR, GCI provides an evanescent field that penetrates less into the bulk and extends the light-to-sample interaction length for superior signal-to-noise ratios ($<0.015 \text{ pg/mm}^2$).

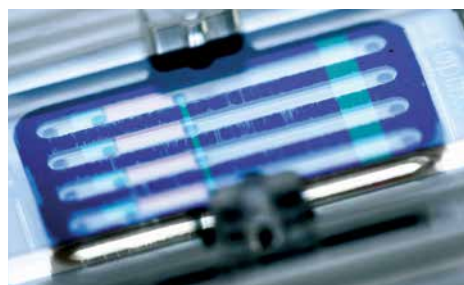


In GCI, refractive index changes on a sensor surface are measured as time-dependent phase-shift signals. The long light-to-sample interaction length of the waveguide provides intrinsically high signal-to-noise levels.

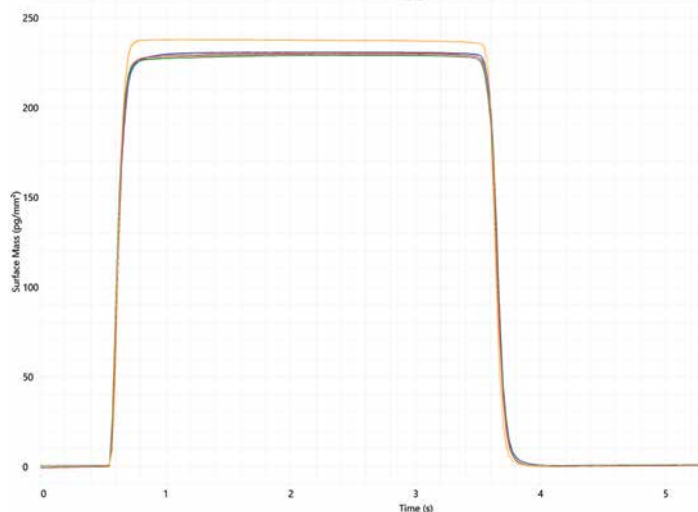


WAVEcore – Small outside. Strong inside.

Sensitivity



- Fast kinetics (150 msec transition time) facilitate reliable analysis of off-rates of 5 sec^{-1} , allowing for accurate determination of kinetics for weak binders.
- Sharp parallel injections are synchronized on all flow channels for accurate referencing.



Parallel injection of 1% DMSO (400 $\mu\text{l}/\text{min}$) on all four flow channels.

Kinetics

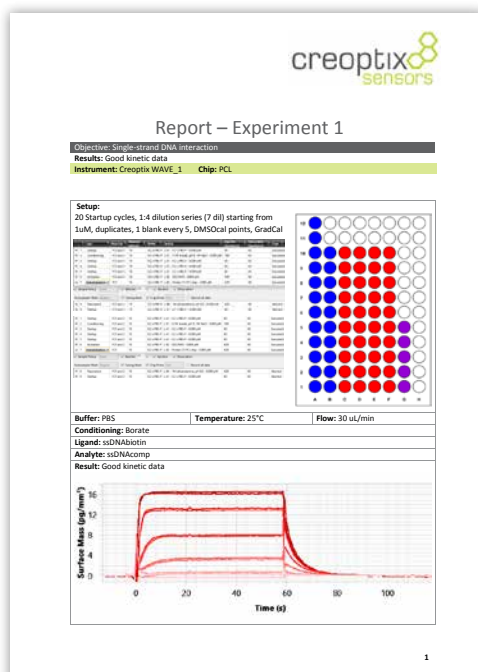


- Unique disposable microfluidics cartridge protects the sensor surface from contamination or damage and can be changed in seconds, eliminating the need to call Field Service for replacement.
- Microvalve-free design:
 - eliminates the clogging problems of other systems, minimizing downtime.
 - allows the study of samples such as membrane proteins without time-consuming sample preparation or purification.
 - enables kinetics in physiologically relevant conditions (e.g. 100% serum or plasma).
 - provides a solution to reliably measure kinetics of large particles (e.g. virus-like particles).
- Variety of chip surfaces available



WAVEsampler – Cooling for up to 768 samples.

- Modern, intuitive interface mirrors your workflow for greater ease and efficiency.
- Powerful and customizable tools offer a never-before-seen level of flexibility, making it easy to:
 - make adjustments and changes on the fly, or even stop and restart experiments mid-stream.
 - quickly set up experiments using built-in wizards or clone or copy established cycles from previous experiments.
 - import and export data to and from Excel and other formats.
 - integrate data into your existing LIMS using open XML-format files (compatible with Genedata Screener).
 - use predefined or arbitrary customized evaluation models for kinetic fit.
 - quickly generate reports and editable Word files through an automated report generator.



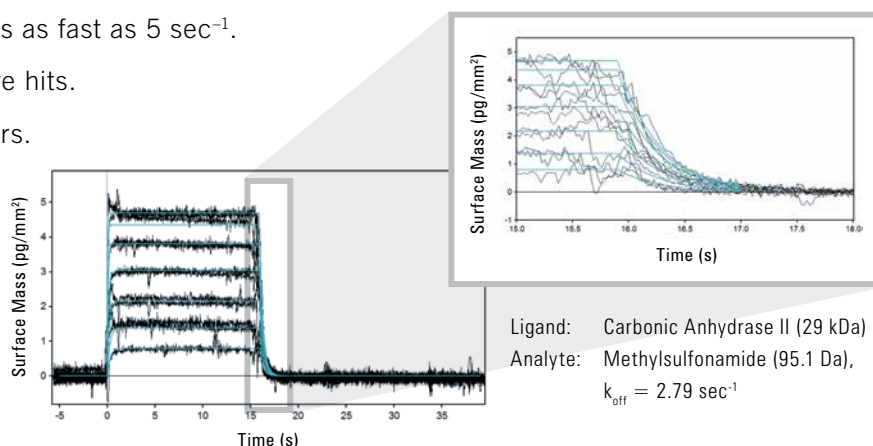
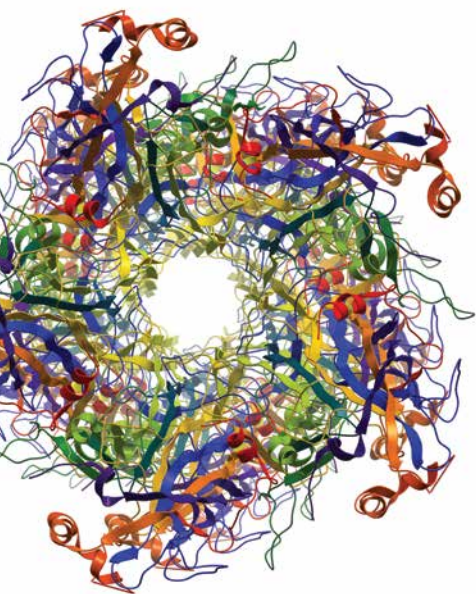
GREATER INNOVATION. BROADER APPLICATION.

Designed for a wide array of label-free interaction analyses, WAVE's exceptional sensitivity and high resolution even at low signal levels make the system ideal for a variety of applications and sample types that may be difficult or impossible to run on other systems, including:

Fragment-Based Drug Discovery (FBDD)

With its unparalleled sensitivity and fast kinetics, WAVE supports and simplifies fragment-based screening, providing a platform that:

- Delivers high reproducibility and superior reliability, even with large drug targets.
- Reliably resolves weak binders with off-rates as fast as 5 sec^{-1} .
- Enables early-stage selection of true positive hits.
- Screens 384 fragments in less than 15 hours.



Large drug targets

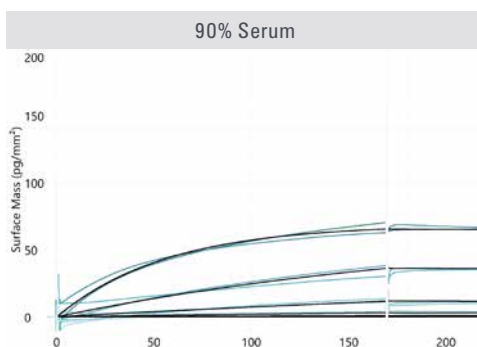
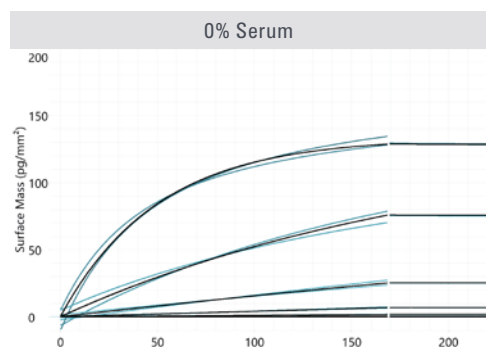
WAVE's high sensitivity enables the study of interactions at very low signal levels. For the first time ever, you can perform:

- Kinetics analyses of molecules with dramatically different size ratios.
- Reliable kinetics at R_{max} below 1 pg/mm^2 .

Supernatants, serums, and plasma

WAVE's revolutionary microfluidics eliminate the clogging issues of other systems, expanding the instrument's analytical capabilities to include:

- Crude and unpurified samples.
- 100% blood serum or plasma.
- Cell extracts
- Cell culture supernatant

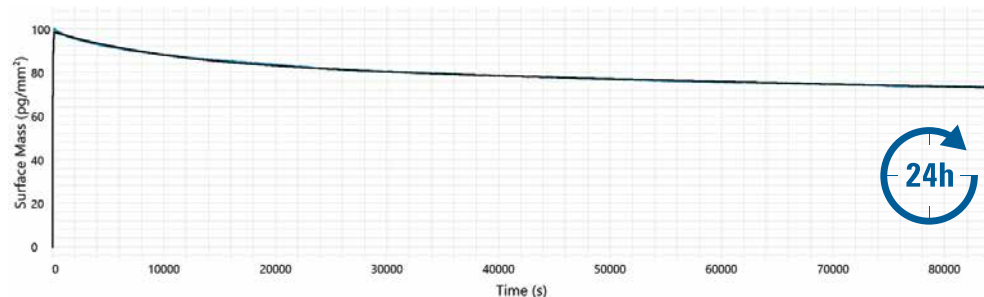
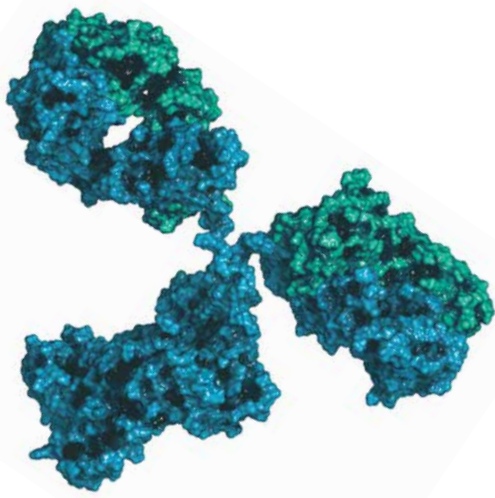


Ligand: Her2
Analyte: Trastuzumab

Antibody Characterization

WAVE's crude sample robustness and stability enables accurate antibody characterization in lead optimization and pharmacology, including:

- Slow off-rate analysis of high-affinity binders
- Detection of anti-drug antibodies (ADA) in the low ng/ml range

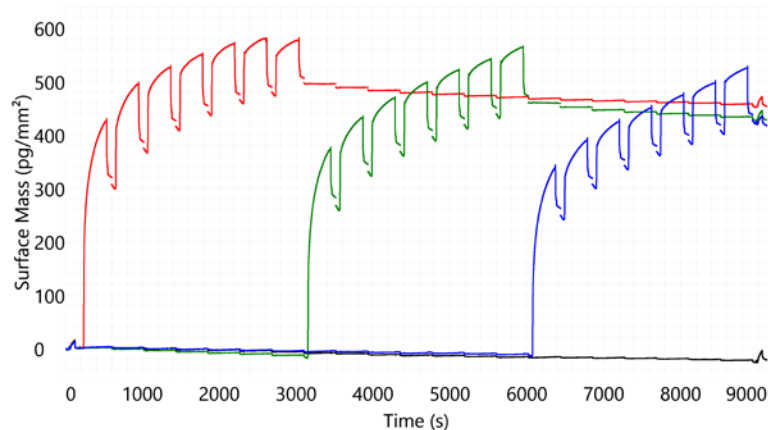
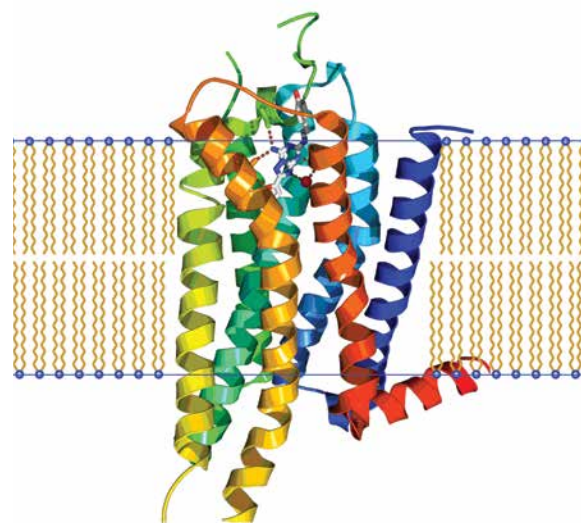


Kinetics analysis with 24h dissociation of an antibody with low pM affinity

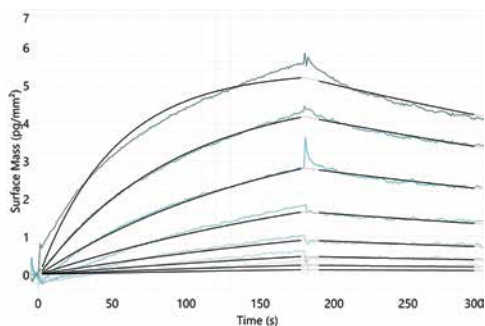
Membrane proteins

Critical to the drug discovery process, membrane proteins can be analyzed on the WAVE system in intact membranes or packed in vesicles or VLPS without up-front purification due to the instrument's robust, clog-free microfluidics. This unique capability gives you:

- A more physiologically relevant environment.
- More native membrane proteins for more reliable results.



Immobilization of crude membrane extracts from three different cell lines.

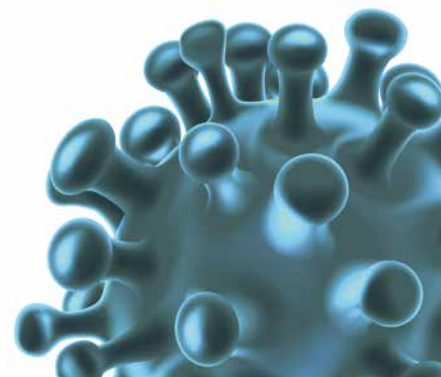


Ligand: CXCR4 - VLP
Analyte: anti-CXCR4 antibody

Viruses, liposomes, and VLPs

Large particles above 100 nm in diameter tend to clog other systems. They can be run reliably and repeatedly on WAVE with no impact on performance or sensitivity. Unique disposable WAVEchips combine sensor technology and robust microfluidics in a fully sealed cartridge that:

- Eliminates the risk of cross-contamination.
- Prevents user exposure to harmful samples.
- Ensures more reliable data by protecting the sensor from inadvertent handling.



RIDE THE WAVE TO YOUR NEXT DISCOVERY.

Better technology yields better results. It allows you to look deeper and explore more widely.

It lets you do things previously impossible, and see things previously invisible.

Avoid the limitations of SPR with a breakthrough system that expands the boundaries of label-free by offering:

- Exceptional sensitivity
- Fast kinetics
- Robust microfluidics

MODELS & SPECIFICATIONS



Creoptix WAVE



Creoptix WAVEdelta

General		
Noise (RMS)	<0.01 pg/mm ² @ 10 Hz	
Drift	<0.3 pg/mm ² /min	
Readout Frequency	1 Hz, 10 Hz or 40 Hz	
Association Const. Range	$k_a = 10^3 - 5 \times 10^7 \text{ M}^{-1} \text{ sec}^{-1}$ (small molecules) $k_a = 10^3 - 3 \times 10^9 \text{ M}^{-1} \text{ sec}^{-1}$ (large molecules)	
Dissociation Const. Range	$k_d = 10^{-5} - 5 \text{ sec}^{-1}$	
Analysis temperature range	15°C – 40°C	4°C – 45°C (max 20°C below ambient)
Molecular Weight Limit	No lower limit	
Fluidics		
Flow Channels / Path	2, parallel	4, parallel
Channel Referencing	2–1 and 1–2	Any combination of the 4 channels
Flow Cells	Sealed, disposable, integrated into disposable WAVEchip	
Flow Rate	1 – 400 µl/min	
Crude Sample Robustness	Yes	
Sample Handling		
Sample Capacity	2x microtiter plates (96 or 384 well, standard or deep well) or vial racks (48 positions of 1.5ml)	
Buffer	1 buffer	Automatic switching between 4 buffers
Degasser	Built-in	
Injection Volume	< 450 µl, 100 µl typical	
Sample Volume Required	Injection volume plus 15-50 µl (application dependent)	
Sample Storage Temperature	Ambient or 4°C – 20°C regulated	
Sample Recovery	Yes	
Automation	120h unattended operation	
Data Treatment		
Information Provided	Kinetic affinity (ka, kd, KD)	
Graphs	Real-time sensorgrams, multiple sensorgram overlays, fit, report point plots	
Data Extraction	Sensorgrams, ka, kd, KD tables, graphs, reports	
Data Analysis	Integrated global fit	
Kinetic Models	Predefined models including 1:1 interaction including mass transport, heterogenous ligand, conformational change, bivalent, plus user configurable models	

For more details or to request an on-site demo, please visit creoptix.com or get in touch using the contact information below.

Where will the WAVE take you?



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