Biacore™ 8S and Biacore 8S+ SPR systems

LABEL-FREE INTERACTION ANALYSIS

Biacore™ 8 series surface plasmon resonance (SPR) systems are automated, robust, high-throughput instruments designed to meet your toughest challenges in screening and characterization (Fig 1). The 16 flow cell systems offer speed, scalability and sensitivity, and reliable performance—now and as drug discovery evolves.

Biacore 8 series SPR systems are available in two configurations, Biacore 8S and Biacore 8S+, designed to reduce hands-on time and accelerate confident decision making in drug discovery, independent of molecular type.

Integrated machine-learning software streamlines data evaluation while flexible workflows ensure the platform remains ready for increasing molecular and experimental complexity.

Biacore 8 series SPR systems enable you to:

- Flex between high-throughput screening and high-quality molecular characterization, in one robust SPR platform eliminating the need for additional capital investment (Fig 2).
- Run hands-off with built-in automation, method queuing, and integrated plate handling of up to twelve 96- or 384-well microplates for 72 h.
- Screen faster with streamlined workflows—run 384 proteins in 15 min.
- Generate accurate kinetics across the full interaction spectrum, from the fastest to the slowest on- and off-rates.
- Analyze fragments, low-abundance analytes, and sensitive targets.
- Gain deeper insights from each sample with triple-parameter screening—concentration, kinetics, and epitope binning—while saving samples in 66% less time.
- Save up to 80% data analysis time with supervised machine learning software, and integrate data seamlessly into your organization's data management system.

Fig 1. Biacore 8S and Biacore 8S+ systems deliver high throughput SPR with the flexibility to switch between screening and characterization, maximizing speed, scalability, and sensitivity while minimizing hands-on time through automation.

Throughput and efficiency

- Parallel analysis across 8 or 16 flow cells.
- Screens 384 proteins in 15 min.
- Estimates protein concentration of 384 proteins in 24 min.

Sensitivity

- No molecular weight limit.
- High-resolution and stability to measure fast on-rates and slow off-rates.
- Detect down to 1 pM concentrations.

Ease of use

- One control and evaluation software for Biacore 8 series and Biacore 1 series systems.
- API for seamless integration and automated data transfer.
- Automated quality control, flags low quality data.
- Supervised machine learning saving 80% in data evaluation time.

Proven automated SPR platform

- Integrated plate handling, no need for external robotics.
- Temperature-controlled sample compartment for up to twelve 96- or 384 microplates.
- Method queuing ability with up to 72 h unattended runs.

Robustness

- Robust microfluidics minimizing mass-transport limitations and rebinding inherent to well-based and dip-and-read formats.
- Crude samples and solvent compatibility analysis.

Global support

- Validation support and full compliance with 21 CFR Part 11.
- Access to experienced application scientists and service engineers.
- Online and classroom courses for more advanced usage.

Fig 2. Key features for robust and reproducible label-free interaction analysis using Biacore 8 series SPR systems.

High-throughput screening applications

Rapid insight-driven hit selection

Biacore 8 series systems facilitate rapid selection of relevant hits using its parallel eight-channel setup with an option to use eight or sixteen flow cells and multiple microplate capacity (Fig 3).

For biologics, 384 samples can be screened for target binding (yes/no) in as little as 15 min, enabling high-throughput assessments of antibodies or other biologic formats.

Off-rate ranking of 384 samples can be done in less than 8 h using all 16 flow cells, saving 50% of the target compared to regular kinetic screenings. In a regular kinetic screening, using eight flow cells, you typically use less ligand amount compared to ***off-rate ranking*** using 16 flow cells.

The system's flexibility also enables tailored experimental setups to specific screening needs.

For small-molecule and fragment libraries, 384 samples can be screened and ranked based on binding response in approximately 4 h, scaling to over 2300 fragments in 24 h. Affinity screening of 48 samples using an eight-point concentration series can be completed in 4 h, allowing follow-up experiments to be initiated the same day (Fig 4).

Supervised machine learning via Biacore Intelligent Analysis™ software significantly reduces manual data curation and quality control, supporting binding level and affinity screening for fragments.

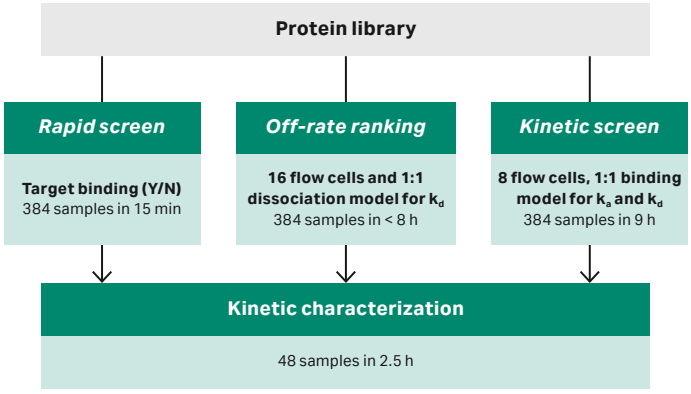


Fig 3. Typical biologic screening workflow in Biacore 8 series systems, using a 384-well plate. Biacore 8S supports up to four 96- or 384-well microplates and Biacore 8S+ up to 12 microplates.

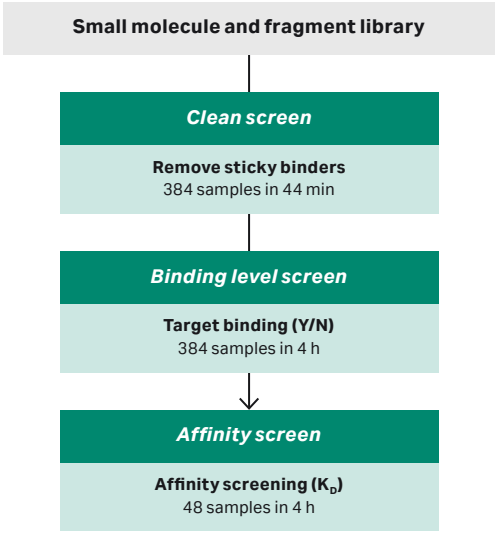


Fig 4. Typical small-molecule/fragment screening workflow enabled by Biacore 8 series systems, based on a 384-well microplate.

Compressed antibody workflow with triple-parameter screening

Selecting the best antibody typically requires multiple time-consuming sequential assays. Biacore triple-parameter screening assay delivers three critical readouts from a single assay run (Fig 5): concentration, kinetics, and epitope binning. The compressed workflow reduces run time by 6 h 25 min for 96 samples while cutting hands-on time with 66% and sample consumption by 50% compared with traditional methods (Fig 6).

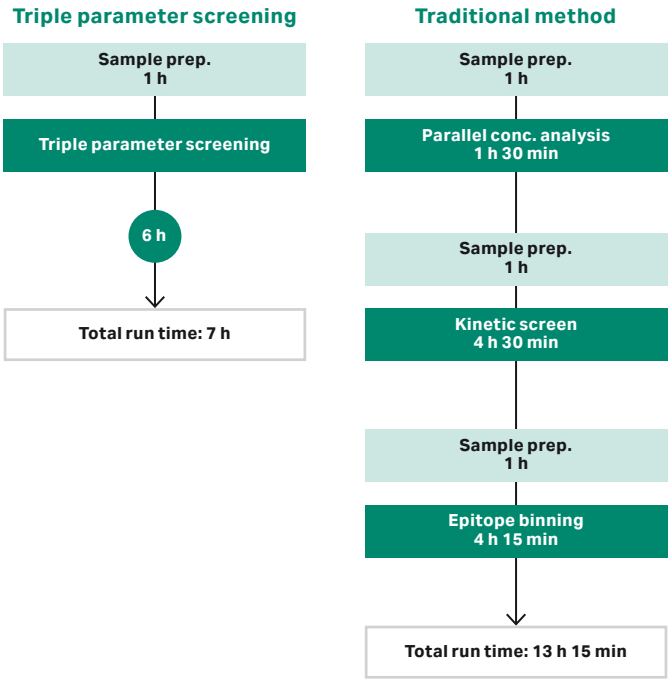


Fig 5. Comparison of total analysis time for 96 samples using triple-parameter screening versus running traditional methods setup.

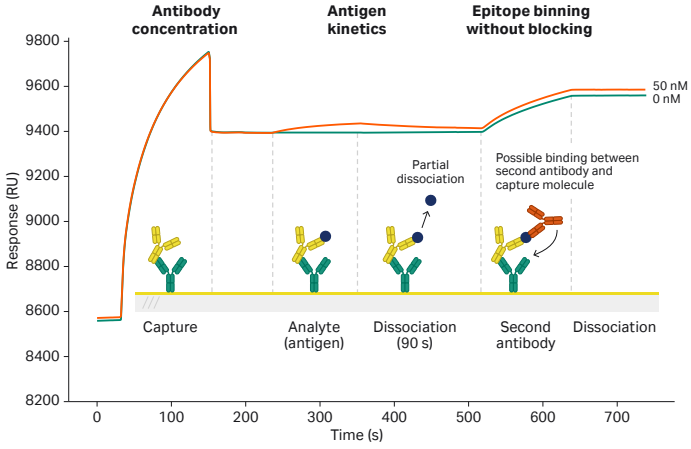


Fig 6. Visual illustration of triple-parameter screening and assay setup. For each second antibody, one cycle without antigen is run to enable blank subtraction. This improves the accuracy of the kinetics estimation and corrects for any binding between the second antibody and the capture molecule that may occur, without any need to block the capture molecules.

High-precision characterization applications

Differentiate binders based on fast on-rates and slow off-rates

The high sensitivity of Biacore 8 series systems enables measurement of exceptionally fast on-rates that allows for differentiation between rapid binders (Fig 7). This is an important feature when studying biological processes limited by bioavailability. The high data collection rate (10 Hz) combined with fast solution transitions allows reliable determination of very fast on-rates, up to 10^7 M^{-1} s^{-1} and fast off-rates, typically up to 0.5 s^{-1}.

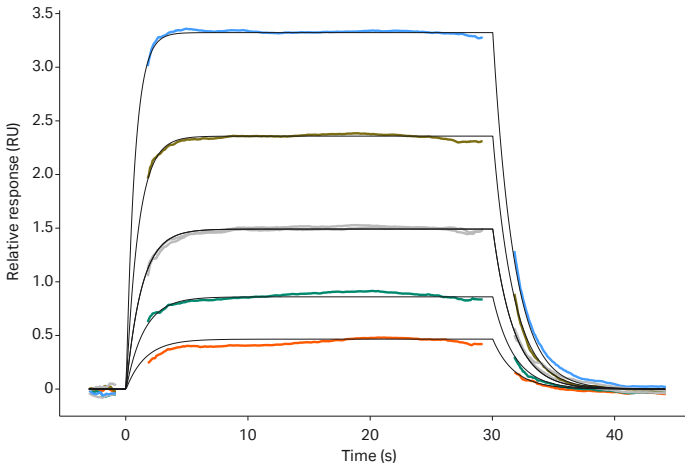


Fig 7. Sensorgram showing sulpiride (12.5–200 µM) binding to carbonic anhydrase II (30 kDa) immobilized on Series S Sensor Chip CM5 with an association rate constant (k_a) of 3.9 × 10^3 $M^{-1}s^{-1}$ and a dissociation rate constant of 0.6 s^{-1} analyzed on Biacore 8S+.

At the other end of the kinetic spectrum, antibody discovery often generates many high-affinity hits in every campaign. Differentiating these stable binders requires high resolution, high sensitivity, and stability over time, placing increased demands on the performance of the analytical system used. The high sensitivity and stability of Biacore 8 series systems result in low baseline noise and drift, providing effective differentiation between stable binders, and allowing reliable determination of very slow off-rates, down to 10^{-6} s^{-1} (Fig 8).

The high accuracy of the kinetic determinations is achievable due to the precisely controlled continuous flow enabled by the microfluidics in Biacore SPR systems. It minimizes mass-transport limitations and reduces rebinding, limitations inherent to well-based or dip-and-read formats.

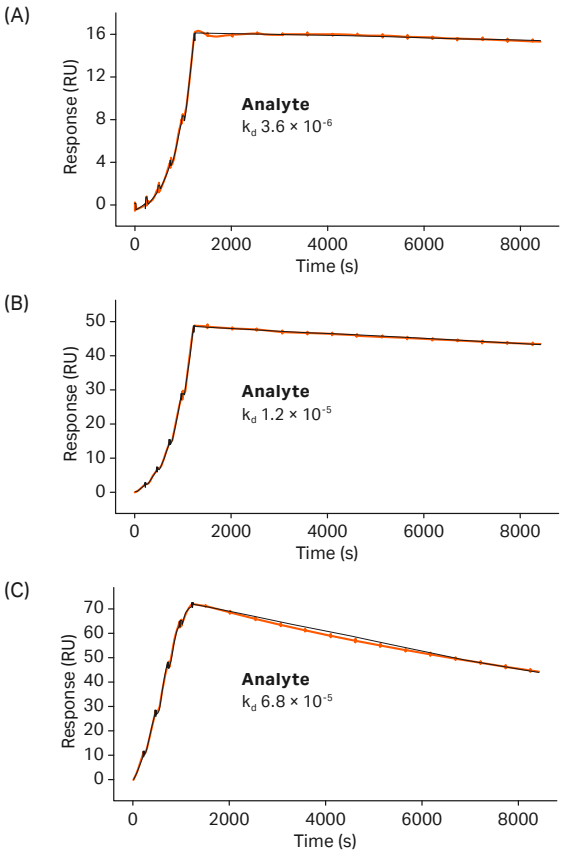


Fig 8. Biacore 8 series systems provide sensitivity and stability that enables the differentiation of tight binders with dissociation rate constants (k_d), down to 10^{-6} s^{-1}.

Efficient affinity and kinetic analysis

Regardless of your application, the systems provide efficient approaches to kinetics and affinity analysis. Affinity can be determined either with steady-state affinity analysis or via the ratio of kinetic rate constants. For fragments and other small molecules, affinity results for 48 samples can be delivered in 4 h.

For kinetic evaluation, Biacore 8 series systems can be utilized in several ways to ensure the shortest possible run time regardless of the number of samples (Fig 9). Up to eight samples can be run in parallel, meaning high-quality kinetic parameters can be obtained up to eight-fold faster than with one-needle systems. Single-cycle kinetics (SCK) can be used to simplify analysis involving unstable targets as it can be performed without surface regeneration between concentrations. It also reduces assay run time and is the preferred choice for fast kinetic characterizations of many samples, enabling analysis of 48 samples in less than 2.5 h.

For a single sample, parallel kinetics enables faster determination by utilizing all eight needles to run a concentration series without loss of accuracy. This is a significant time-saver for molecules with long off-rates.

For samples where prior knowledge of affinity is lacking, the 2D kinetics approach can be applied to deliver full kinetic characterization data within 35 min without extensive assay development.

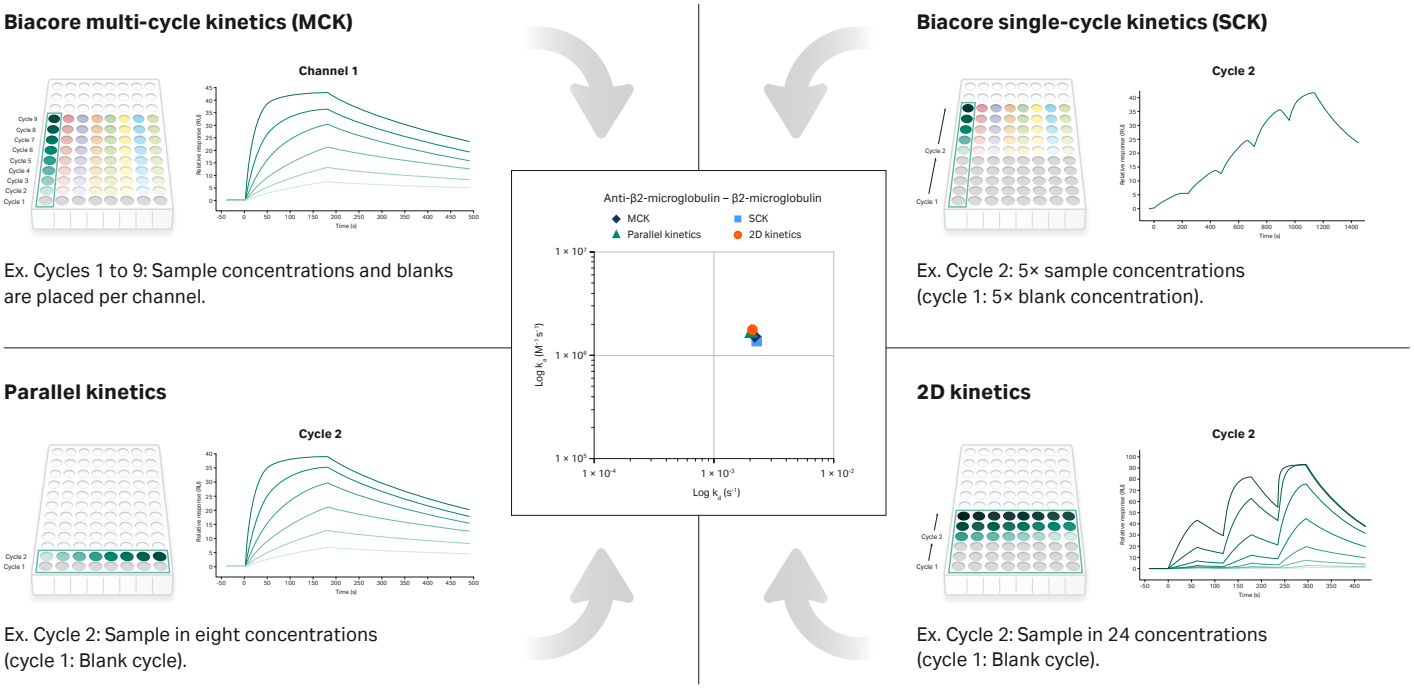


Fig 9. Biacore 8 series systems approaches for kinetic determinations.

Comparability assessment

Biacore SPR technology is a key tool for comparability assessment, providing robust, reliable, and detailed binding kinetic data, when interactions can be described by defined binding models. However, for heterogeneous interactions or those involving secondary binding events, full kinetic analysis is not always feasible or meaningful.

In these cases, ***Sensorgram comparison*** offers a powerful alternative by comparing complete interaction profiles of a test molecule against a reference (Fig 10). This approach generates an easily interpretable similarity score, expressed as a percentage, enabling objective comparison even when kinetic modeling is challenging. ***Sensorgram comparison*** is therefore particularly well-suited for biosimilar development and for complex binding interactions where conventional kinetic analysis is limited.

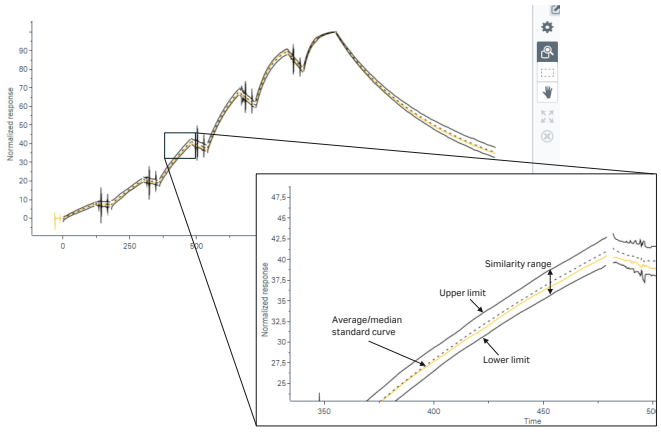


Fig 10. The similarity score (0–100) quantitated how much of the sample curves is within the similarity range. A score of 100 is fully within the limits. Lower scores indicate deviation.

Multiple options for epitope binning studies

Biacore Insight epitope binning extension enables automated identification and control to maintain unique and diverse epitopes that may broaden intellectual property protection. This add-on application-specific extension provides support from run setup to data evaluation (Fig 11), including predefined methods and an automatic sample plate layout tool to shorten your assay development. All three main assay formats for epitope binning analysis are supported: sandwich, tandem, and premix. Capture assay format is supported for sandwich and premix assays.

Running a sandwich assay by capturing an antibody on the surface (rather than direct immobilization) preserves antibody integrity, increases number of antibodies tested per sensor chip, and reduces assay development time, since regeneration is already optimized and usually only requires optimization of a blocking strategy. By using the novel capture strategy without blocking, the assay development can be shortened even further since no blocking strategy is required.

A challenge in epitope binning is that the low affinity of binding between the antigen and the first antibody can lead to the dissociation of the antigen, resulting in the underestimation of the binding level of the second antibody. The ***Dual*** command compensates for this by injecting the antigen and the second antibody solutions in direct sequence with no intermediate washing steps, minimizing the dissociation of antigen before the secondary antibody is injected.

Predefined evaluation methods automatically process epitope binning data generated on Biacore 8 series systems.

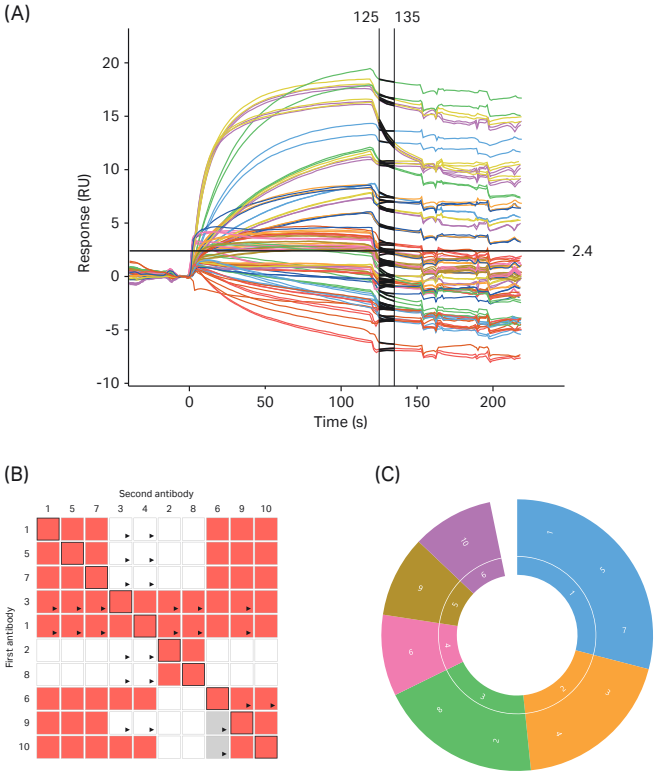


Fig 11. Epitope binning results presented as (A) sensorgram overlay, (B) heat map, and (C) bin chart.

Active concentration analysis

Drug discovery, development, and quality control demand increased efficiency to allow for higher productivity without compromising data quality. Active concentration is a critical quality attribute in multiple stages of these workflows. Biacore 8 series systems are equipped with tools that allow for reproducible and robust concentration determinations of biologically active proteins, in contrast to the total protein amount obtained from a spectrophotometric (A280) determination.

The precision and automation of the systems reduce hands-on time and generate highly reproducible data over a wide dynamic range with a coefficient of variation (CV) typically below 5%.

The novel ***Rapid concentration*** feature combined with eight parallel needles can be used to estimate protein concentration for 384 samples in just 24 min, which is ideal for screening applications. For a more accurate quantitation, 384 samples can be run in a traditional parallel or serial fashion in less than 4 h. The possibility to include control samples allows you to ensure rigorous quality control for your assay.

See Table 1 for typical run times for applications using Biacore 8S and Biacore 8S+ SPR systems, respectively.

Table 1. Typical run times for various applications using Biacore 8S and Biacore 8S+ systems

LMW application	No. of samples	Run time
Clean screen	384	44 min
Binding level screen	384	4 h
Affinity screen	48	4 h

Biologic application	No. of samples	Run time
Rapid screen	384	15 min
Off-rate ranking	384	8 h
Kinetic screen	384	9 h
Kinetic characterization	48	2.5 h
Rapid concentration	384	24 min
Concentration analysis using serial calibration curve	384	4 h
Concentration analysis using parallel calibration curve	384	4 h
Epitope binning	Up to 16 × 16 array	2.5 h
	Up to 16 × 48 array	7 h

Challenging molecules and targets

Analyzing GPCRs and other sensitive targets

The high sensitivity of Biacore 8 series SPR systems enables analysis of rare or sensitive targets, such as G protein-coupled receptors (GPCRs), where only a fraction of the protein might retain its biological activity throughout the analysis. Analysis may be performed directly in crude matrices such as from a membrane preparation (Fig 12).

This avoids unnecessary sample handling that risks negatively affecting the activity level. The high sensitivity also allows for analysis of the smallest organic compounds even for low-affinity interactions (K_D in the millimolar range), which is important for reliable, small-molecule fragment screening.

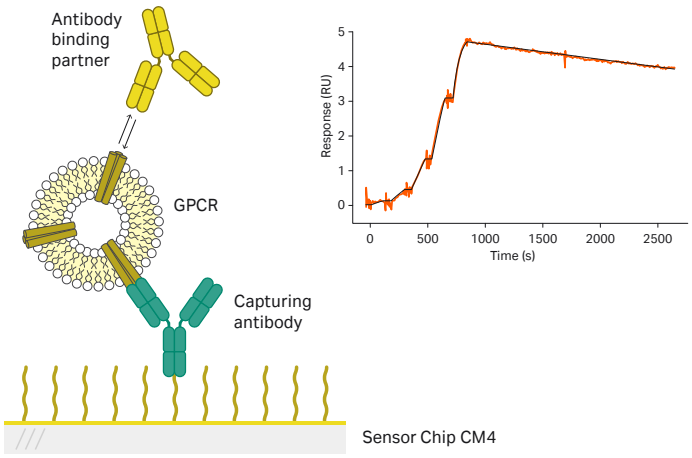
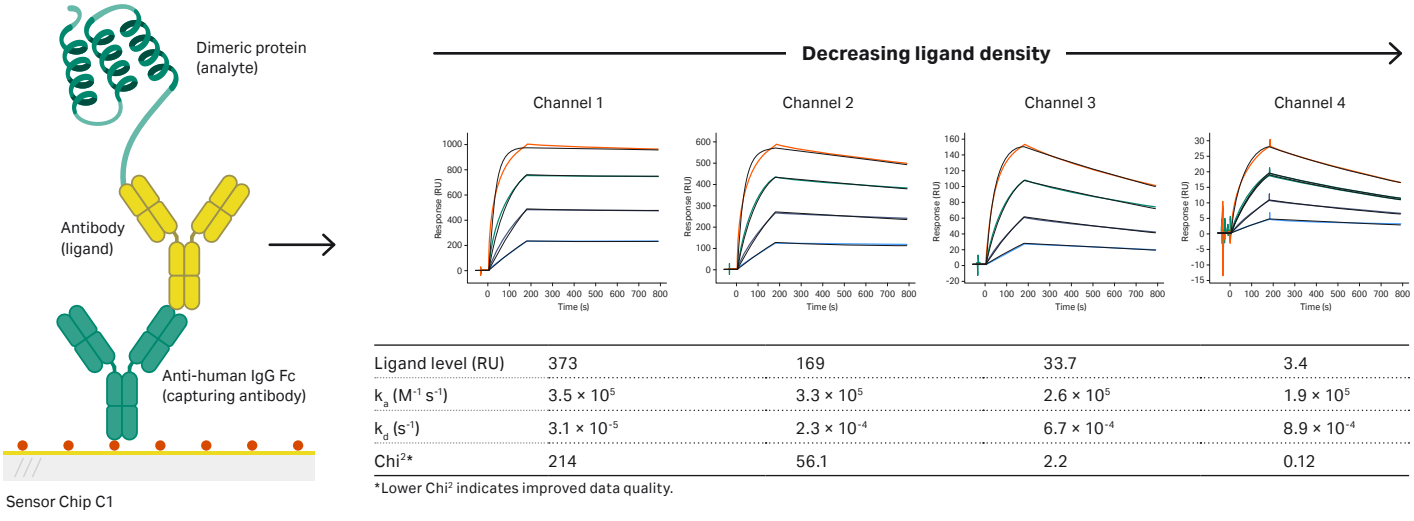


Fig 12. The high sensitivity and robustness of Biacore 8 series systems allow the analysis of GPCRs in crude membrane preparations.

Analysis of bivalent analytes

The systems allow for full flexibility in the characterization of bivalent analytes such as antibodies or dimeric proteins. Complications from avidity (combined affinity from multivalent interactions) are minimized by using very low immobilization levels, which renders reliable data (Fig 13). Low immobilization levels generally give fewer secondary interactions and increase the proportion of targets accessible for binding, with some targets even exhibiting surface aggregation at higher densities. Cleaner interaction data not only gives more accurate results but also makes analysis simpler and faster, saving time.



	Channel 1	Channel 2	Channel 3	Channel 4
Ligand level (RU)	373	169	33.7	3.4
k_a (M^{-1} s^{-1})	3.5×10^5	3.3×10^5	2.6×10^5	1.9×10^5
k_d (s^{-1})	3.1×10^{-5}	2.3×10^{-4}	6.7×10^{-4}	8.9×10^{-4}
Chi^2*	214	56.1	2.2	0.12

*Lower Chi^2 indicates improved data quality.

Fig 13. Analysis of a bivalent, dimeric protein with a molecular weight (M_r) of 660 000. The avidity diminishes with the ligand density revealing the true kinetics of the interaction. Data obtained using Biacore 8 series system, courtesy of Schraeml, Biehl, von Proff, Roche Diagnostics GmbH, Centralised and Point of Care Solutions, Penzberg, Germany.

Instrument design, automation, and tools

The platform supports demanding applications and operational efficiency thanks to its underlying microfluidics, flow-cell setup, sample capacity, and temperature control.

Parallel setup enables operational efficiency

The systems feature an eight-channel parallel setup, each channel with a dedicated needle and comprising two serial flow cells. These flow cells can be configured either as a reference and active flow cell (Fig 14) or used as two active flow cells.

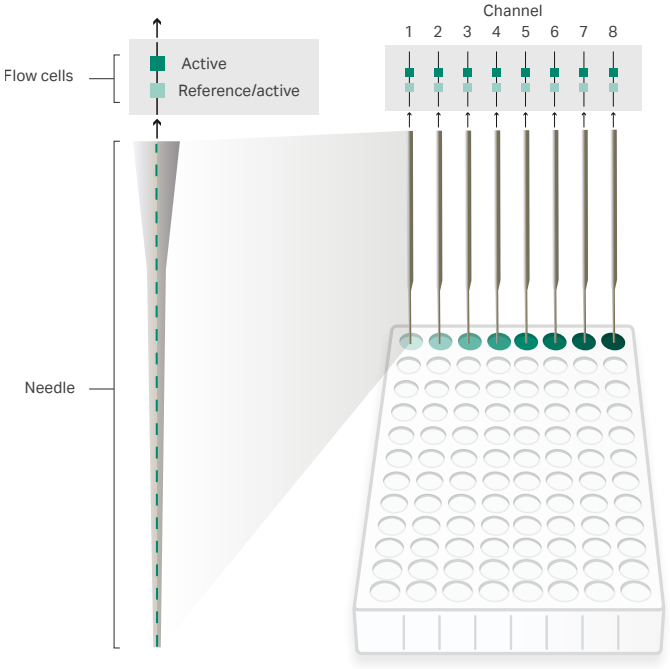


Fig 14. The eight-needle, eight-channel concept with two flow cells per channel simplifies assay setup and operation of Biacore 8 series SPR systems. The two serial flow cells per channel. can be configured either as a reference and active flow cell or as two active flow cells.

While the standard setup uses one active and one reference flow cell, using both as active surfaces reduces analyte consumption by 50% through simultaneous injection over two ligands (or eight ligand pairs in parallel) (Fig 15).

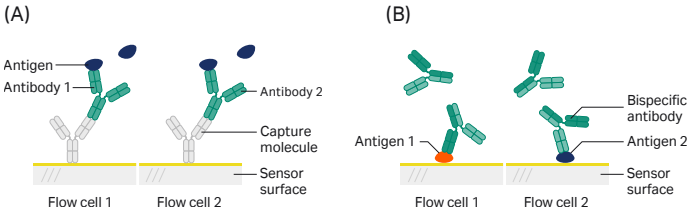


Fig 15. (A) Capture assay format where the first set of antibodies are captured in flow cell 1 (antibody 1–8), followed by capture of the second set of antibodies in flow cell 2 (9–16) followed by the injection of antigen over both flow cells. (B) This assay setup is suitable for example for specificity analysis where antigen 1 is immobilized in flow cell 1 and antigen 2 in flow cell 2, followed by the injection of the antibody for both flow cells.

The capture assay format is well suited for antibody off-rate ranking. Since there is no reference surface, a blank cycle should always be included before each sample cycle to remove possible capture drifts and system- or application-specific disturbances. (Fig 16).

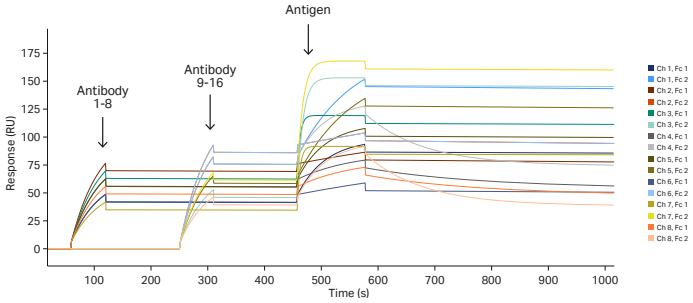


Fig 16. Simulated sensorgrams of antibody ***off-rate ranking*** using Biacore 8 series SPR system.

The eight-channel setup also enables efficient assay development and optimization, increasing the number of conditions tested per unit time by up to eight-fold compared with one-needle systems. With the ***ABA*** command, large matrices of buffer variations can be prepared in microplates and rapidly tested (Fig 17). The ***ABA*** buffer scouting approach allows testing of 96 buffer variations in less than 80 min.

Another powerful application is to combine fragment- and small-molecule binding-level screening with competition screening. The competition screen can be set up in different formats whereof the use of ***ABA*** command is one way.

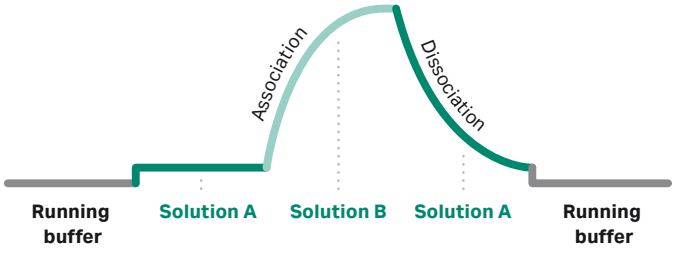


Fig 17. ***ABA*** command allows two different solutions to be injected over the surface in the same cycle in the following order: solution A, solution B, then solution A. This enables buffer scouting to be run directly from one microplate. The ***ABA*** command may also be used in competition assays. In this case from left to right: Solution A = assay buffer + competitor; Solution B = assay buffer + competitor + analyte.

Precision microfluidics for accurate SPR analysis

The precisely controlled continuous flow microfluidics in Biacore 8 series systems, minimize mass transport effects and rebinding, enabling high-accuracy, label-free interaction analysis to:

- Accurately measure kinetics (k_a, k_d, K_D).
- Distinguishing mass-transport effects from true kinetics.
- Study fast on-rates and off-rates.
- Reliably compare data between experiments.
- De-risk artefacts caused by inconsistent flow.

This ensures reproducible and accurate results across days, users, and instruments.

Built-in automation with integrated plate handling

Biacore 8 series systems support the use of 96- and 384-well microplates in standard and deep-well formats of up to 2 mL volume. Both samples and reagents are taken from standard microplates with no need for special vials.

The sample hotel of Biacore 8S instrument accommodates up to four microplates, whereas the sample hotel of Biacore 8S+ instrument accommodates up to twelve microplates (Fig 18), which increases up-times and asset utilization by up to 30% per week. This makes it possible to screen a full-fragment library (with an average size of 2000 compounds) in a single experiment, without manual intervention or the need for external robotics. Plates may be accessed during a run to support queuing of additional runs, for optimized operational efficiency.

The sample hotel is temperature-controlled. Optimal assay performance is obtained by keeping samples at the same temperature as the analysis temperature. To ensure the integrity of samples and reagents in extended runs, the sample hotel can be kept refrigerated.

Biacore 8 series systems are equipped with a buffer selector to switch between up to four different running buffers without the need for manual intervention, allowing for even higher efficiency.

Fig 18. Sample hotel in Biacore 8S+ can hold up to twelve 96- or 384-well microplates and Biacore 8S holds up to four microplates.

Activity queue for optimized unattended runs

Use the ***Activity queue*** feature in Biacore Insight control software to reduce hands-on time. Routine analysis steps—buffer changes, immobilization and analysis methods, temperature adjustments, and cleaning—can be added to the queue to minimize waiting (Fig 19).

An immobilization checkpoint can also be included to automatically verify ligand attachment levels against user-defined acceptance criteria. If levels fall outside the criteria, the queue pauses for user input; if they meet the criteria, the run continues.

Once the ***Activity queue*** is started, you can prepare the remaining samples and reagents while the instrument runs, with the ***Run status*** display helping you plan your time (Fig 20).

For sensitive samples, combining the ***Activity queue*** with the temperature-controlled sample hotel preserves sample integrity and saves time and cost. Assays using fragile ligands can run overnight or over weekends, and sensitive analytes can be loaded into plates and stored at 4°C until analysis.

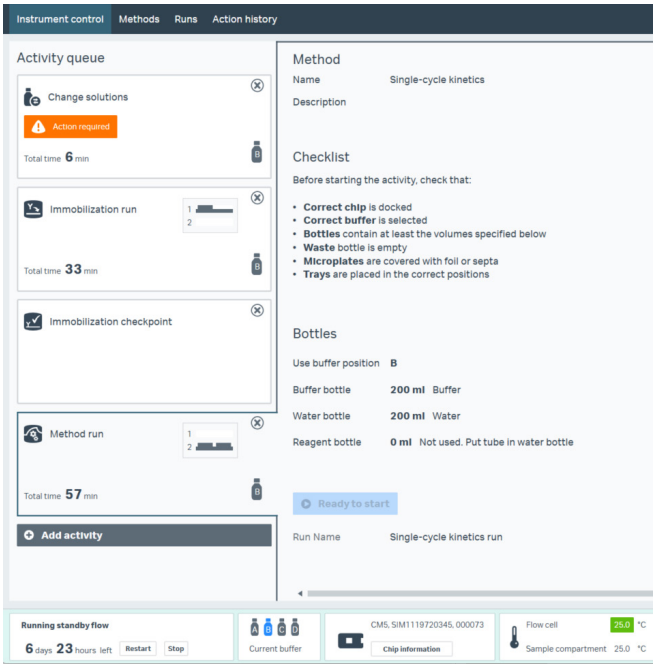


Fig 19. ***Activity queue*** lined up with ***Change solutions***, ***Immobilization run***, ***Immobilization checkpoint*** followed by a Biacore SCK method run.

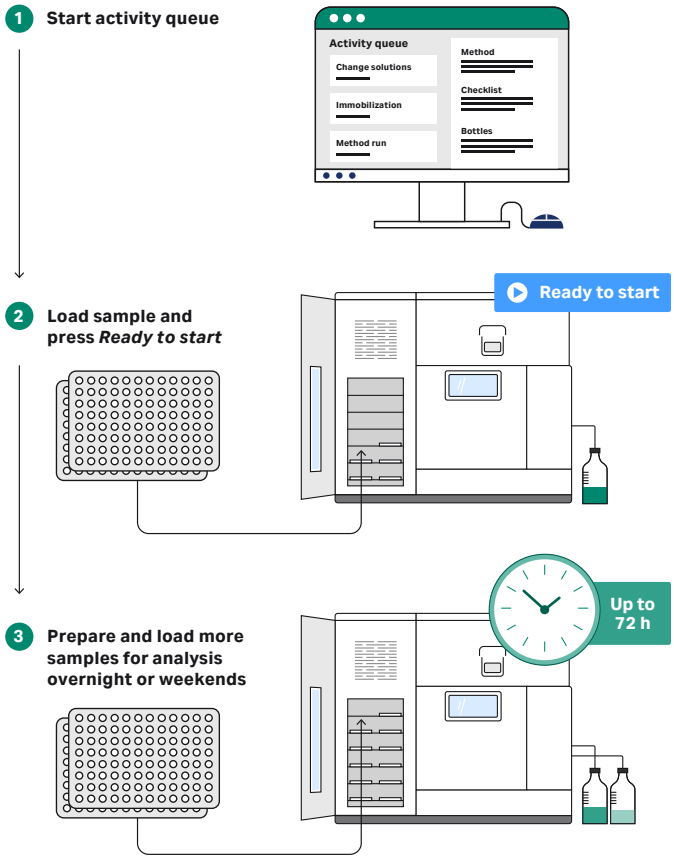


Fig 20. Schematic illustration of steps for a touchless series of methods in an analysis queue.

Streamlined SPR analysis from run to insights

Instrument design is complemented by a software-assisted workflow using Biacore Insight Software that streamlines analysis setup, run scheduling, and integrates directly with evaluation tools that support data handling, visualization, and reporting.

Instrument control and run setup

Biacore Insight Software offers a streamlined approach to running, analyzing, visualizing, and exporting SPR data from Biacore 8 series and Biacore 1 series instruments. This unified platform for instrument control and data evaluation aims to streamline all steps in your SPR workflows, while ensuring a user-friendly experience and maximum flexibility.

The software offers adaptable, predefined methods preloaded with application-relevant default settings and the possibility to interact with the instrument through the interactive run workspace. Unlike predefined run methods, the interactive run workspace lets you add commands and adapt the run in real time based on previous results.

Optional software extensions provide tailored solutions for key applications, to enhance functionality and further reduce your time to results:

- Biacore Insight extended screening—accelerate discovery with precision and efficiency.
- Biacore Insight concentration and potency—confidently determine active concentration and potency.
- Biacore Insight epitope binning—flexible and streamlined epitope characterization.
- Biacore Insight data integration—seamlessly integrate your SPR data for actionable insights.
- Biacore Insight GxP—ensure compliance and quality in your SPR work.
- Biacore Intelligent Analysis software—speed up your evaluation workflows with machine learning.

Data evaluation, visualization, and data handling

Biacore Insight Software facilitates quick and efficient evaluations with just a few clicks. The versatile tools for data selection and visualization scale seamlessly with the size of your experiment, ensuring fast and reliable results (Fig 21). The interface can be customized to suit your preferred way of working. Integrated help, tooltips, and guidelines accommodate users at any experience level, use case, or stage of research. The software automatically applies quality control (QC) to flag poorly behaving samples, providing confidence that only reliable, high-quality data are analyzed.

After evaluation, flexible export features provide the means to export selected or complete datasets for continued processing, result reporting, or storage. Data can be transferred to Microsoft PowerPoint (Fig 22), and the presentation can be easily modified using the extensive toolsets and layouts available. Additional export options are enabled by Biacore Insight data integration extension, allowing manual export in the machine-readable JSON format, as well as access to API for fully integrated and automated data transfer to your organization's data management systems.

For more details, please refer to the data file for Biacore Insight Software.

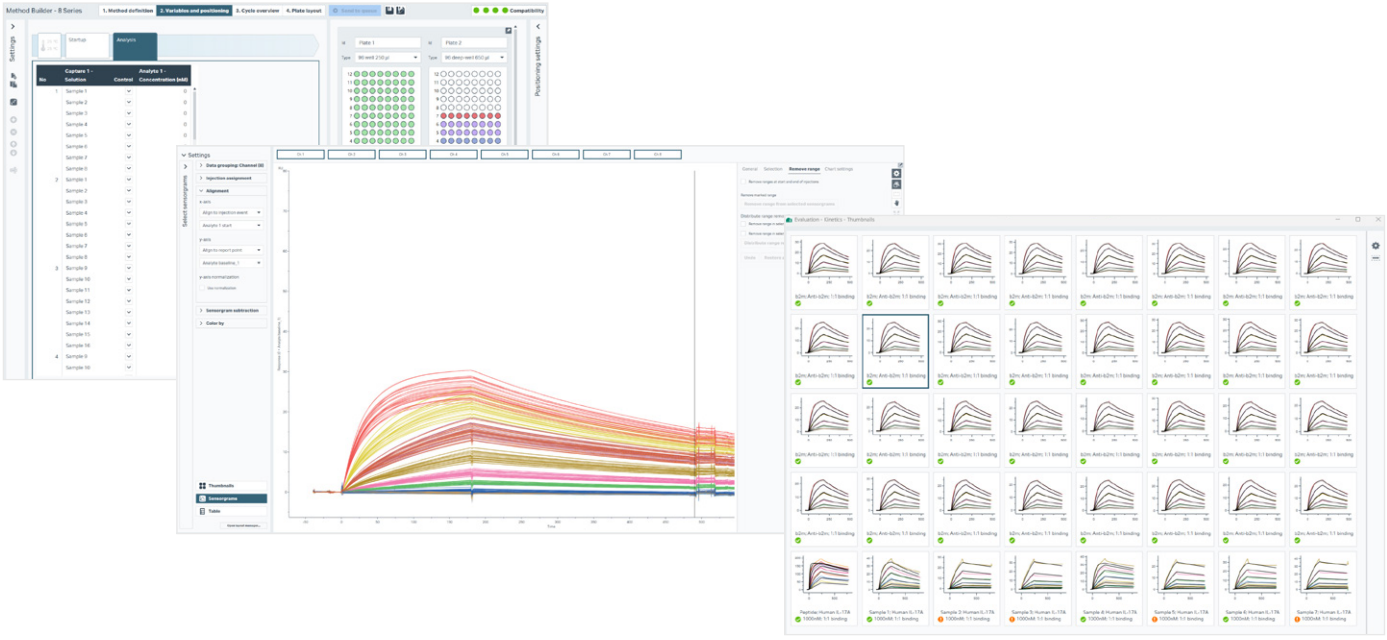


Fig 21. Intuitive user interface for quick assay setup and data evaluation. Automated kinetic data processing and analysis, with referencing, zeroing, cropping, blank subtraction, and kinetic model fitting—all executed in a single operation for up to 12 × 384 samples per unattended run.

Fig 22. The flexible result export feature in Biacore Insight evaluation software lets you export selected or comprehensive data for continued data processing, result reporting, or storage in a shared database. You can export data in Microsoft Excel, PDF, and Microsoft PowerPoint or JSON format. Fully integrated and automated data transfer to external data management systems can also be accomplished through the access to API. In this example you can see a streamlined analysis of a kinetics experiment as a presentation in slide format.

Working in regulated environments

Cytiva has a comprehensive offering to support the use of Biacore systems for interaction analysis in a regulated environment. The optional products and services that can be used in combination with Biacore 8 series and Biacore 1 series systems are:

- **Biacore Insight GxP extension**—a software extension that enables operation in compliance with current GxP regulations and is specifically designed with a high level of built-in support for 21 CFR Part 11 compliance. Features include ***Data integrity***, ***User authorization levels***, ***Audit trail***, and ***Version history***. ***Electronic signatures*** are used for review and approval of regulated procedures and evaluated results.
- **Validation support file**—a system assessment report, conformance certificates, and Biacore Insight GxP Handbook with recommendations for system setup considering 21 CFR Part 11 compliance.
- **Change control notification**—a subscription service allowing users to be notified of system changes, giving increased process robustness in regulated environments.
- **Cytiva's qualification service**—ensures that systems are kept in a qualified state throughout their lifetime.

For more details, please see the data file for Biacore Insight GxP extension and qualification services.

Biacore consumables: Reproducible data with minimum time and effort

Biacore 8 series systems operate using the extensive range of Biacore Series S sensor chips, which offer support for analysis of a wide range of interactions.

A variety of capture kits offer several options for capturing the most common antibodies and tags to significantly reduce the time and effort you need to spend on developing your assay.

The range of Biacore consumables also includes coupling kits, with selected reagents for stable, covalent attachment of the ligand to the surface. Convenient, ready-made buffers and solutions developed and verified to work in Biacore systems are also available to further enhance analysis efficiency.

Predefined methods with application-relevant, default settings are available in the Biacore Insight control software for all major assays. Experiments using predefined methods and Biacore consumables can be started in minutes.

For more details, see Biacore consumables selection guide.

Community, training, and global support

As an owner of a Biacore system, you are connected to a world of knowledge and experience in interaction analysis. A Biacore system comes with professional local application support from highly skilled, experienced application scientists. Our scientists can help you to get the most out of your Biacore system in all applications.

To learn more about assay setup and data interpretation, Cytiva offers a wide range of self-training tools, classroom trainings, handbooks, and lab protocols.

Thousands of Biacore systems are installed globally and over 60 000 scientific articles are published in peer-reviewed journals (see selected reference list).

All Biacore users are invited to share their experiences and learn more at regional user days, developments in protein interaction analysis (DiPIA) conferences, and on LinkedIn, through the Biacore SPR community.

From installation to end of life, our equipment service solutions are designed to ensure your Cytiva equipment delivers maximum performance and value throughout its life cycle, so you can stay on schedule. Whether you have in-house support teams or plan to rely (fully or partially) on Cytiva, we offer flexible service options to meet your specific needs. Our engineers are certified, regularly recertified, and focused solely on servicing Cytiva equipment, providing hassle-free installation, repair and maintenance.

Find out more about our service solutions at cytiva.com/equipment-services

Systems specifications

Technical specifications and characteristics	
Detection technology	SPR biosensor
Information provided	Kinetic and affinity data (k_a, k_d, K_D), specificity, selectivity, screening data, epitope binning, concentration, comparability, and relative potency data.
Data presentation	Monitoring of real-time sensorgrams or evaluation data for result tables, result plots, heat map, and bin chart.
Analysis time per cycle	Typically, 1 to 15 min.
Automation	60 h unattended run time for Biacore 8S.
	72 h unattended run time for Biacore 8S+.
Sample type	Small-molecule drug candidates to high molecular weight proteins (also DNA, RNA, polysaccharides, lipids, cells, and viruses) in various sample environments (e.g., in DMSO-containing buffers, plasma, and serum).
Required sample volume	Injection volume plus 20 to 50 µL (application-dependent).
Injection volume	1 to 200 µL
Flow rate range	1 to 100 µL/min
Flow cell volume	40 nL
Flow cell height	70 µm
Data collection rate	1 or 10 Hz
Sample/reagent capacity	4 × 96- or 384-well microplates, normal, and deep-well (Biacore 8S).
	12 × 96- or 384-well microplates, normal, and deep-well (Biacore 8S+).
Typical run times	Clean screen (384-well plate): 44 min
	Binding-level screen (384-well plate): < 4.5 h
	Affinity screen (48 samples): 4 h
	Rapid screen (384-well plate): 15 min
	Kinetic screen, single concentration (384-well plate): 9 h
	Kinetic characterization (48 samples): 2.5 h
	Rapid concentration (384-well plate): 24 min
	Epitope binning, 16 × 16 array (16 cycles): 2.5 h
Analysis temperature range	4°C to 40°C (maximum 20°C below ambient temperature)
Sample storage	4°C to 40°C (maximum 18°C below ambient temperature)
Sample refractive index range	1.33 to 1.39
In-line reference subtraction	Automatic
Number of flow cells	16 in 8 channels
Buffer selector and degasser	Up to four buffers can be used.
Dimensions (W × H × D)	902 × 875 × 616 mm
Net weight total	131 kg (Biacore 8S) 142 kg (Biacore 8S+)
Mains requirements	Processing unit: Autorange voltage 100 to 240 V~, frequency 50/60 Hz
Power consumption	Processing unit: max. 400 VA (Biacore 8S) max. 600 VA (Biacore 8S+)

Minimum computer requirements
64-Bit Windows 11 Enterprise or Professional Edition (English)
CPU with at least four cores, 2 GHz or faster
At least 16 GB internal memory
At least 200 GB free hard disk space
Screen resolution at least 1920 × 1080
One USB2 port available for instrument connection

SQL database server requirements
Biacore Insight Software includes SQL Server Express 2022 for local database setup only. A separate networked SQL database is required for full functionality. Performance improvements are seen with SQL Server Standard, SQL Server Enterprise, or SQL Data Warehouse version 2022 (available separately from Microsoft).

Note: The server needs to be supplied by the end user. Contact your local representative for the latest information regarding on-site requirements.

Typical working ranges	
Association rate constant (k_a)	Proteins: up to 10^9 M^{-1} s^{-1} LMW molecules: up to 10^7 M^{-1} s^{-1}
Dissociation rate constant (k_d)	10^{-6} to 0.5 s^{-1}
Sample concentration	≥ 1 pM
Molecular weight detection	No lower limit for organic molecules.
Baseline noise	Typically < 0.01 RU (RMS)
Baseline drift	Typically < 0.3 RU/min
Blank subtracted drift	< ±0.03 RU/min
Immobilized interactant consumption	Typically 0.03 to 3 µg/flow cell

Compliance	
Compliant with	CE, cETLus, EAC, FCC, ICES-001, KC, RCM
Safety	IEC/EN/UL/CSA-C22.2 61010-1, IEC/EN/UL/CSA-C22.2 61010-2-081, EN ISO 12100
Electromagnetic compatibility (EMC)	EN/IEC 61326-1, FCC Part 15 B, ICES-001
Environmental	EN IEC 63000, China RoHS

Ordering information

Product	Product code
Biacore 8S Includes: Biacore 8S instrument only	29799102
Biacore 8S system Includes: Biacore 8S instrument (29799102) Table with wheels (29717908) Waste container (29308541) 2 licenses for Biacore Insight Software (29310602) 2 licenses for Biacore Insight extended screening extension (29310610) 2 licenses for Biacore Insight concentration and potency extension (29332204)	31194630
Biacore 8S+ Includes: Biacore 8S+ instrument only	29799103
Biacore 8S+ system Includes: Biacore 8S+ instrument (29799103) Table with wheels (29717908) Waste container (29308541) 2 licenses for Biacore Insight Software (29310602) 2 licenses for Biacore Insight extended screening extension (29310610) 2 licenses for Biacore Insight concentration and potency extension (29332204)	31194632
Biacore Insight Software extensions	Various licenses[1]

[1] See cytiva.com/biacore for details of the various e-licenses available.

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For local office contact information, visit cytiva.com/contact

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