

Biacore T100

Unmatched performance for protein interaction analysis: From basic research to QC

- **Highest quality data in real time**
 - Analyze up to 384 samples per run, automatically
 - Measure kinetic rate constants over the broadest range, from the fastest on-rates to the slowest off-rates
 - Compare buffer effects in a single run
 - Work with low molecular weight compounds
 - Study interactions at physiological temperatures and above

- **Use software wizards for fast assay development, analysis and evaluation of every interaction parameter including kinetics, affinity, concentration, specificity and thermodynamics**

- **Work in GxP-regulated environments using validated software, supporting GxP-regulated working processes and including technical controls for 21 CFR Part 11 compliance**

- **Meet current validation requirements: Validation support includes IQ, OQ and IPQ**

- **Import sample identification from LIMS systems**



Biacore® T100 is a system for comprehensive protein interaction analysis from early research, to drug discovery and development and on to QC. The system is supported by state of the art software for assay development, analysis, data evaluation and interpretation. Software wizards ensure ease of use, although methods may be developed or customized as required. In addition to providing detailed information on kinetics and affinity, software support allows interactions to be thermodynamically characterized.

With an optional GxP package, Biacore T100 can be operated in compliance with current GxP regulations.

Biacore T100 includes a processing unit, a computer with pre-installed control and evaluation software and Windows® operating system. The system is delivered with Instrument and Software Handbooks.

Highest quality data in real time

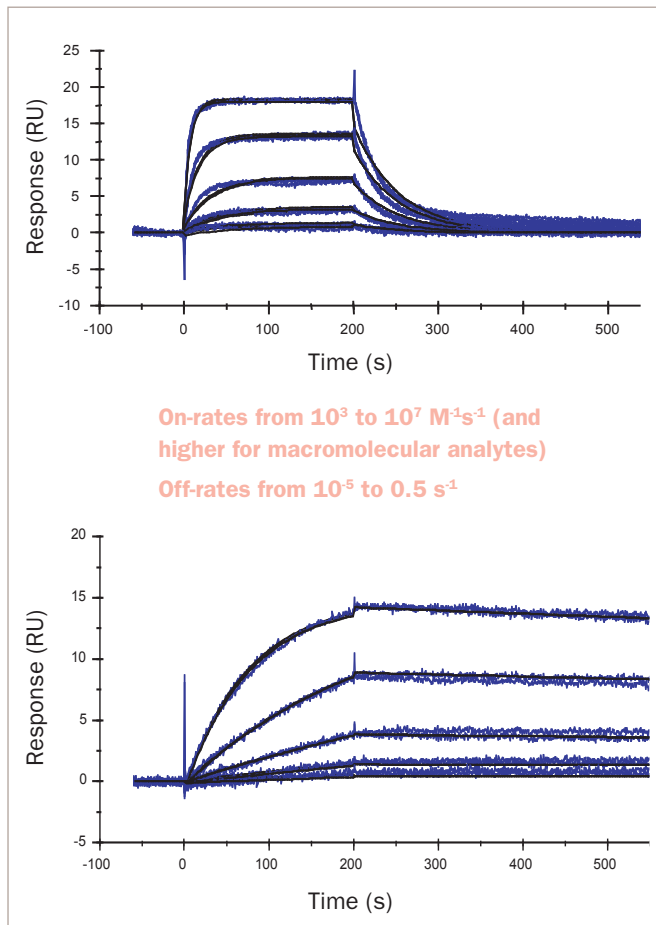
Run up to 384 samples per run



- Supports 96 and 384 well microplates
- 48 hours unattended run time
- Integrated sample control for temperature-sensitive samples, from 4 °C to 45 °C

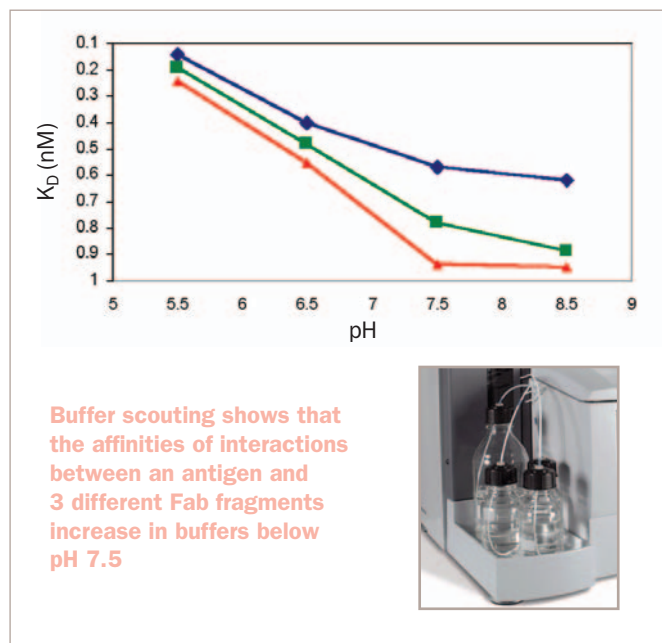
Optimized for highest quality kinetics:
Measure kinetic rate constants over the
broadest range, from the fastest on-rates to
the slowest off-rates

Paired, on-chip flow cell connections for reference
subtraction. 4 flow cells for single, paired or serial runs.



Compare buffer effects in a single run

- Study micro-environmental effects on binding properties in mechanistic and stability studies
- Use buffer scouting for fast assay development; up to 4 different buffers can be tested at one time



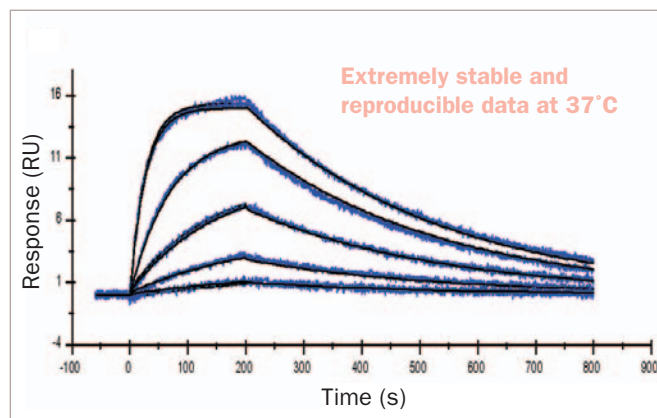
Study interactions at physiological temperatures and above

Temperature controlled flow cell and sample compartment

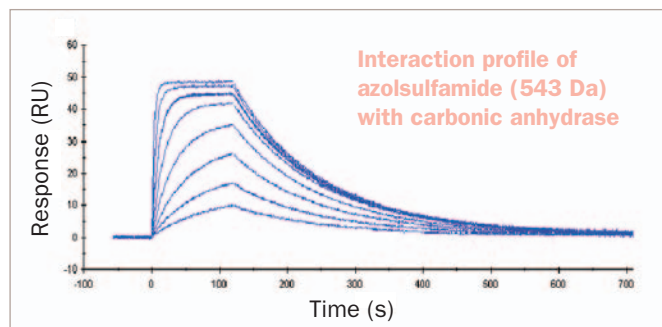
- Allows the analysis of temperature sensitive samples and the study of interactions at temperatures from 4°C to 45°C

Integrated buffer degasser

- Eliminates the appearance of air bubbles in the flow system, allowing analysis of samples at higher temperatures
- Improves robustness when studying interactions at elevated temperatures



Study interactions involving low molecular weight compounds

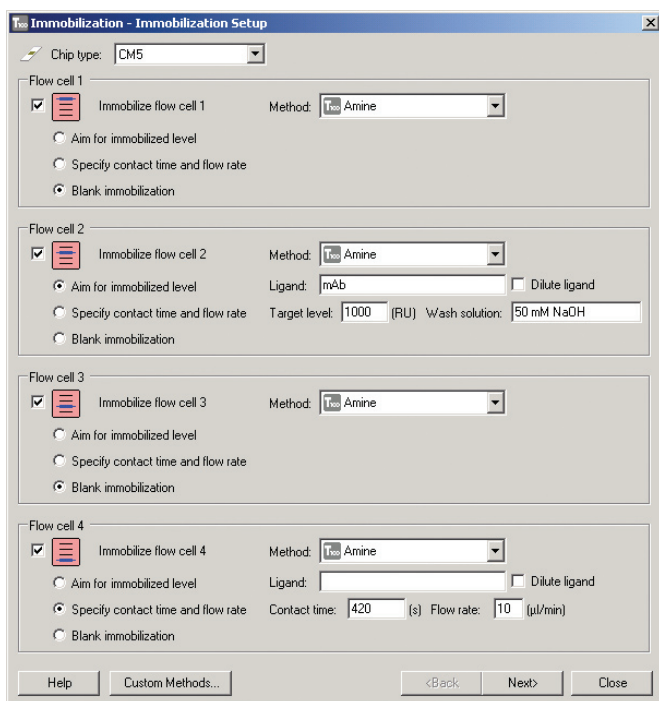


- Investigate interactions involving binding partners with molecular weight as low as 100 Da: Dedicated software supports kinetic evaluation of LMW compound interactions

Software wizards for fast assay development, analysis and evaluation

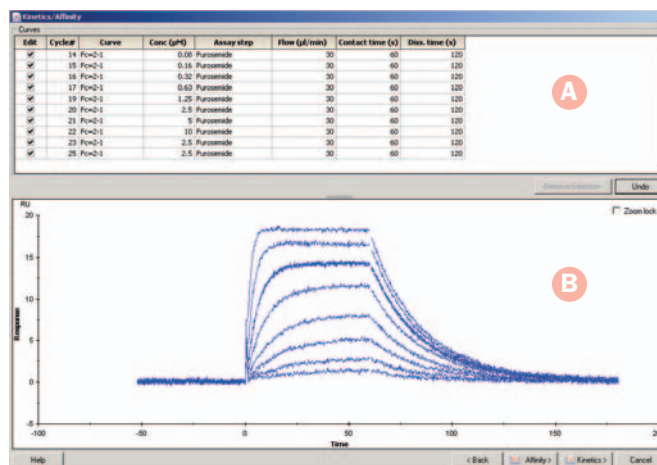
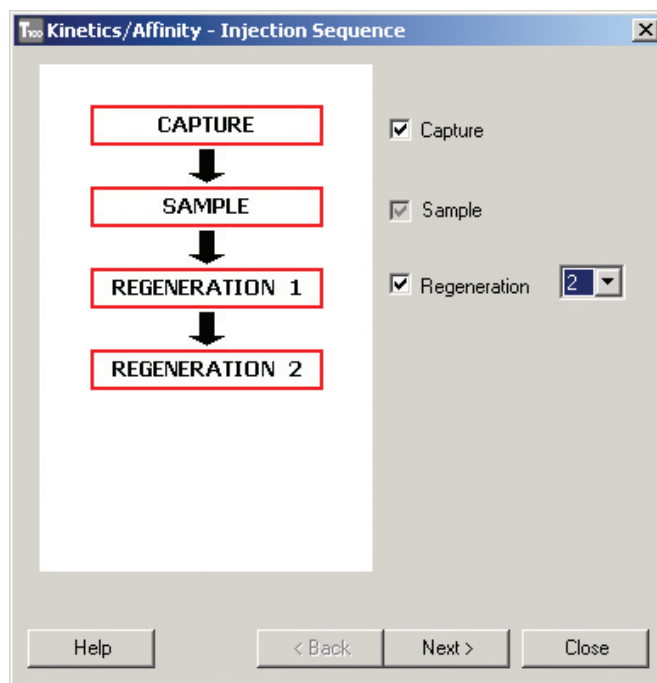
Immobilization support for various chemistries and sensor surfaces

- Use pre-defined methods to immobilize interaction partners via amine, thiol, aldehyde or maleimide chemistries
- Support for customized immobilization methods



Kinetic and affinity analysis

Perform kinetic evaluation of interactions with a few simple clicks.

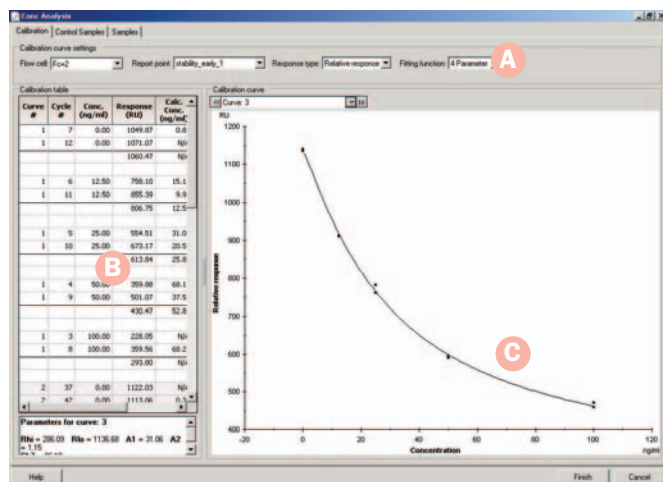


A Data fitted to selected interaction model

B All kinetics parameters displayed within seconds

Concentration

- Measure active concentration, not just total protein, using software-supported direct binding and inhibition assays
- Monitor sensor surface stability via repeated calibration curves, ensuring reliable data from run to run
- Ensure rigorous quality control by inclusion of control samples



- A Linear or four-parameter fitting
- B Concentration and %CV displayed
- C Calibration curve

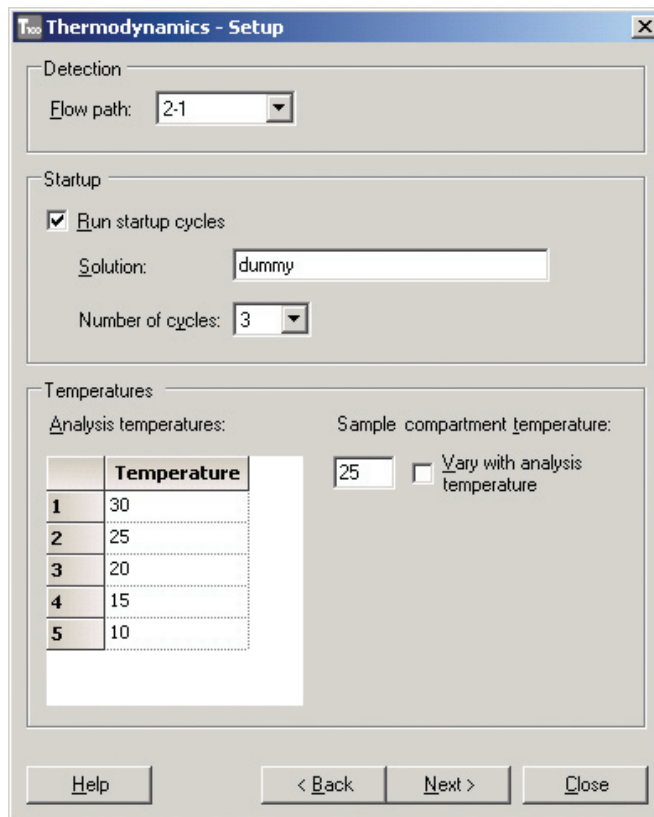
Specificity

- Study up to four interactions simultaneously (three interaction partners and a reference surface)
- Rank binders or obtain simple yes/no answers in applications such as epitope mapping

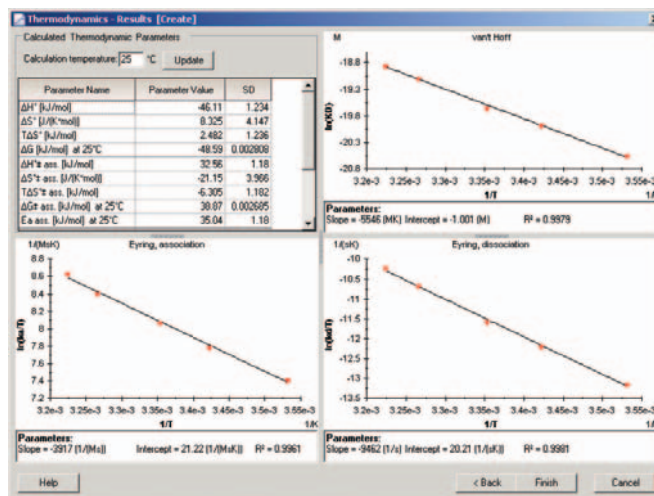
Transition state thermodynamics

- Dedicated evaluation software wizards, in-built buffer degassing and temperature control of Biacore T100 make transition state thermodynamic analysis easier than ever
- Integration of rate constants measured across several temperatures into thermodynamic equations allows thermodynamic characterization of transition state, revealing the forces driving the interaction

- Equilibrium thermodynamic parameters, ΔH and ΔS , are in close agreement with those obtained using isothermal titration calorimetry



1. Run kinetics at varying temperatures



2. Automatic generation of Eyring and van't Hoff plots from kinetic data for calculation of thermodynamic parameters

Work in GxP-regulated environments

Biacore T100 GxP Package *(optional)*

For those working in GLP/GMP/GCP environments, the addition of a Biacore T100 GxP Package will ensure the highest level of GxP support and 21CFR Part 11 compliance.

Features include:

- ID/password control
- Multiple access levels
- Protection of electronic records with secure file folder (data can be automatically exported in XML formats)
- Audit trail (operator-independent, computer-generated and time stamped)
- Publishing (locking) of wizards/methods for routine use in both control and evaluation software

Validation support for Biacore T100

Validation support for Biacore T100 includes the 21 CFR Part 11 assessment report, recommendations of OS configuration for 21 CFR Part 11 compliance, software conformance certificate, hardware conformance certificate and GxP Services including equipment qualification. Supplementary documentation and services e.g. ESCROW agreement and on-site audit of Biacore AB are available upon request.

Equipment qualification and training

Equipment qualification and training are performed by GMP-trained, qualified Biacore personnel when the system is installed in its selected operating environment. Our equipment qualification services meet worldwide regulatory expectations and include IQ/OQ (installation qualification/operational qualification), IPQ (initial performance qualification) and preventive maintenance (PM) GxP.

Technical information and specifications

Detection technology	Surface Plasmon Resonance (SPR) biosensor
Information provided	Kinetic and affinity data (K_D , k_a , k_d), specificity, concentration and thermodynamics data
Data presentation	Result tables, result plots and real time monitoring of sensorgrams
Analysis time per cycle	Typically 2-15 min
Automation	48 hours unattended operation
Sample type	Low MW 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, serum
Required sample volume	Injection volume + 20-50 μ l (application dependent)
Injection volume	2-350 μ l
Flow rate range	From 1-100 μ l/min
Flow cell volume	0.06 μ l
Flow cell height	40 μ m
Sample/reagent capacity	1 x 96, or 384 well microplate + up to 33 reagent vials
Analysis temperature range	4-45 °C (maximum 20 degrees below ambient temperature)
Sample cooling	4-45 °C (maximum 15 degrees below ambient temperature)
Sample refractive index range	1.33-1.39
Buffer selector	Automatic switching between 4 buffers
In-line reference subtraction	Automatic
Typical working ranges	
Kinetics:	
Association rate constant (k_a)	$10^3 - 10^7$ M ⁻¹ s ⁻¹ (and higher for macromolecular analytes)
Dissociation rate constant (k_d)	$10^{-5} - 0.5$ s ⁻¹
Sample concentration	$10^3 - 10^{-11}$ M
Molecular weight detection	>100 Da
Number of flow cells	4
Baseline noise	Typically <0.1 RU (RMS)
Baseline drift	Typically <0.3 RU/min
Instrument	
Dimensions	600 x 615 x 690 mm
Net weight	Total: 60 kg
Mains requirements	Processing Unit and System Controller: Aurorange 100-240 V ac (\pm 10 %), 50-60 Hz, Class 1 equipment (protective earthing)
Power consumption	Processing Unit: max 6.3 A (at 100 V ac) System Controller: max 7.2 A (at 100 V ac)
Data handling and storage	
PC operating systems	Microsoft® Windows® 2000 or Windows® XP (Professional)
Interfacing	Possibilities for import of sample data and export of results, e.g. to and from LIMS
Compliance	
Safety standard	EU:EN61010-1(2001), EN61010-1-081 (2002) North America: UL61010A-1 CAN/ CSA-C22.2 No.1010.1
EMC	EN 61326-1 (1997), Amendment A1 (1998) and Amendment A2 (2001)
GxP	Technical controls for 21 CFR Part 11(ER) compliance Validation support incl. Equipment Qualification

