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Biacore 8K+ vs Octet R8 vs Carterra LSA: Kinetics Compared

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Executive Summary

This report compares three label-free binding platforms that antibody teams often shortlist together: the **Cytiva Biacore 8K+** (flow-based surface plasmon resonance, SPR), the **Sartorius Octet R8** (dip-and-read biolayer interferometry, BLI) and the **Carterra LSA** (array-based high-throughput SPR). It reflects vendor documents and papers retrieved on 1 to 2 November 2026. No instrument was tested hands-on, and no universal winner emerges. The decision turns on assay fit (titer, kinetic confirmation or large binning panels), review burden and data portability, not on channel counts or headline throughput.

Procurement starts with a naming trap. Cytiva announced the **Biacore 8S and 8S+** as the next generation of the Biacore 8 series in May 2026 (lifesciencesbc.ca), Sartorius markets the **Octet R8e** as its latest BLI system, and Carterra now lists **LSAXT, Ultra and Vega** beside the LSA, with Vega announced as a 48-channel platform in February 2026 (www.news-medical.net). A quote must therefore name the exact model, software edition and licence list. Vendor throughput claims use different units (samples per tray, samples per plate, analytes per 24 hours) and cannot be ranked against each other.

The evidence base is narrower than the marketing. The only direct SPR comparison of two of the platforms (Biacore 8K and LSA, 2020) found that 20 of 23 Fab affinities agreed within 1.5-fold (shura.shu.ac.uk), and the study used the older 8K, skilled users and defined reagents. Independent BLI benchmarks come from earlier Octet generations; one reported that BLI underestimated the affinity of low-picomolar antibodies (pmc.ncbi.nlm.nih.gov). Solution-phase checks are slow and agree only partly with SPR arrays: a 48-antibody comparison reported 54% correspondence (pmc.ncbi.nlm.nih.gov). To our knowledge, no R8-specific independent kinetics benchmark has been published.

Data portability is a gating item. A published Benchling connector reads XLSX exports from Biacore Insight (help.benchling.com), regulation expects validated systems and secure audit trails (www.ecfr.gov), and FDA guidance describes attributable, original and accurate data (ALCOA) (www.fda.gov). A feature list is not a compliance statement.

No public list price exists for any of the three systems. Public traces are service awards, grants and core-facility rates, for example **$23,870** for one year of service on a Biacore SPR system at a federal lab (www.highergov.com) and **$445 per day** for 8K+ time at one university core (lombardi.georgetown.edu). The practical recommendation is a blinded same-panel pilot with acceptance thresholds set by assay owners before data review, followed by a cost model built on **accepted** interactions. In an illustrative model with placeholder inputs, falling from a 95% to a 50% pass fraction roughly doubles cost per accepted interaction (about $22 to $45), more than reviewer time does.

Introduction and Background

Antibody-discovery teams choose a binding platform for three different jobs: quantifying titer (concentration) in crude samples, confirming kinetics (association rate ka, dissociation rate kd and equilibrium constant KD) on selected leads, and sorting large panels into epitope bins. Results then have to land in an electronic lab notebook (ELN) or a registry with their context intact. The same instrument rarely wins all three, and in many labs BLI and SPR are complementary: BLI for fast titer and screening, SPR for kinetic confirmation. BLI dips biosensors into wells whereas SPR passes samples over a surface through flow channels or arrays, which is the root of most practical differences discussed below.

This report focuses on an evaluation framework: treat experimental design and data portability as acceptance gates, and do not assume that software alone substitutes for a complete instrument workflow. Where the report refers to "newer variants", it does so only to prevent mistaken procurement, and the compared models remain the Biacore 8K+, Octet R8 and LSA.

Buyer decision tree

The tree below uses three common decisions in an instrument shortlist.

- **Titer or concentration in crude supernatant:** start from the BLI format. Sartorius states the R8 performs quantitation of up to 96 samples in 30 minutes to 2.5 hours depending on the assay (www.sartorius.com). SPR platforms can quantify too (Cytiva lists a Concentration & Potency extension), but this is not their primary design point.
- **Kinetic confirmation of tens to hundreds of leads:** shortlist all three, then let the pilot decide. The 8K+ and LSA are continuous-flow or flow-printed SPR; an independent four-platform study found continuous-flow SPR better at resolving slow dissociation than a fluidics-free Octet RED384 (pmc.ncbi.nlm.nih.gov).
- **Large antibody binning panel:** array SPR is the design match, since full pairwise binning scales quadratically: ten antibodies need 100 interactions and 100 antibodies need 10,000 (pmc.ncbi.nlm.nih.gov). Carterra states 384 by 384 binning in a single run (carterra-bio.com); Octet Analysis Studio has a binning module (www.sartorius.com); the Biacore epitope binning is an optional extension.
- **Small molecules or fragments:** treat the 2020 comparison's caveat seriously: small-molecule signals of only a few response units are not within the LSA specification (shura.shu.ac.uk).

Experimental design belongs inside the decision. Several authors stress that platform comparisons are meaningful only when SPR best practices are followed (shura.shu.ac.uk), so a purchase should not rest on a headline throughput number.

Scope and evidence labels

Evidence in this report is labelled by type: vendor specification or claim, vendor software documentation, independent or peer-reviewed experiment, public procurement record, and proposed pilot output. Where a vendor page is the only source, it is described as a claim.

Cytiva Biacore 8K+

Capabilities

The user manual (document 29287247, edition AC) covers the Biacore 8K and 8K+ together and describes a basic software package with optional extensions (cdn.cytivalifesciences.com). Each of the **8 channels** has two flow cells; ligand is normally attached in Fc2 while Fc1 serves as the reference (cdn.cytivalifesciences.com). Flow settings apply to all channels in a given cycle, a constraint to remember when planning mixed-condition screens.

Cytiva's datasheet (document code CY11892-02Jun26-DF) states that the 8K+ sample hotel holds up to six trays versus two for the 8K (cdn.cytivalifesciences.com) and quotes unattended capacity of 1536 and 4608 samples for the 8K and 8K+ (cdn.cytivalifesciences.com). It also claims that parallel kinetics screening can identify hits from 384 samples in less than 6 hours (cdn.cytivalifesciences.com). These are vendor claims under Cytiva's conditions.

Adoption and Lifecycle

Public procurement records show the 8K+ in use at a US federal research institute, where a service solicitation required work by a Cytiva factory-trained engineer (www.highergov.com), and a university shared resource lists 8K+ time for internal, external academic and for-profit users (lombardi.georgetown.edu). An NIH shared-instrumentation award of $438,939 in 2021 funded a Biacore 8K for a university biosensor core (api.ai-analytics.org).

Lifecycle caution: in May 2026 Cytiva announced the next generation of the Biacore 8 series (lifesciencesbc.ca). The **Biacore 8S and 8S+** were described as screening 384 proteins in approximately 15 minutes, 16 times faster than the previous generation (a vendor claim) (www.technologynetworks.com), with orders expected in summer 2026 (www.technologynetworks.com). Cytiva's May 2026 selection guide lists 8S+ capacity of up to 12 by 384-well plates and 72 hours unattended (cdn.cytivalifesciences.com). Cytiva has not publicly announced the discontinuation of the 8K or 8K+, so a buyer should ask Cytiva to state the supported status, the service horizon and the software version path for the exact model quoted.

Strengths and Limitations

- **Strength, data quality for small molecules:** the 2020 comparison concluded that a key advantage of the 8K is its exceptionally low noise (shura.shu.ac.uk).

- **Strength, extensible software:** an optional API server gives automated access to run and evaluated data (d3.cytivalifesciences.com), and v6.0 release notes document fit mode (global, local, constant) and initial-value columns in exported result tables (d3.cytivalifesciences.com).
- **Limitation, optional modules:** epitope binning, data integration and GxP (cdn.cytivalifesciences.com) are separate extensions, and the basic package and extensions are licensed separately through a licensing server (d3.cytivalifesciences.com).
- **Limitation, default access model:** in the basic package all folders and objects in the database are accessible to all users (cdn.cytivalifesciences.com); restricted access for routine users and audit trails come with the GxP extension.
- **Limitation, ecosystem fit:** Benchling's published connector parses spreadsheet exports from Biacore Insight (help.benchling.com), but its documentation lists epitope binning and screening campaigns as not marked supported (help.benchling.com).

Sartorius Octet R8

Capabilities

Sartorius describes the **Octet R8** as an eight-channel system that performs quantitation and kinetic analysis of up to 96 samples in 30 minutes to 2.5 hours, depending on the assay. Its channels can run independently for screening or in tandem, pairing the sample read with a dedicated reference (www.sartorius.com). Specifications list a sample volume of 180 to 220 microlitres per well (www.sartorius.com), and the biosensors are disposable and single-use, with optional reuse by regeneration.

The software story changed with **Octet Software Version 14**, which introduced Octet Hub as a centralized database for methods, experiments, analysis settings and results (www.sartorius.com). Hub provides version history with revert and role-based access, is deployed on premises (www.sartorius.com), and works exclusively with v14 applications (www.sartorius.com).

Adoption and Lifecycle

A federal cancer institute's notice for an Octet R4 maintenance agreement states that Sartorius is the sole provider of service for the Octet line (cancer.gov), which is a procurement fact worth carrying into any three-year service assumption. A university core also lists an Octet RH16 (a 16-channel sibling) at $35 per hour internal and $56 per hour external (www.biotech.cornell.edu), useful as a core-facility rate pattern but not an R8 price.

Sartorius now promotes the **Octet R8e** as its latest BLI system (www.sartorius.com), claiming reliable results with as little as 40 microlitres (www.sartorius.com), 384-well plate compatibility (www.sartorius.com) and 16+ hours of evaporation control (www.sartorius.com). Because the R8 and R8e differ on those documented points, quotes must name the model.

Strengths and Limitations

- **Strength, simple workflow:** Sartorius attributes faster time to results and process economy to the fluidics-free design, a vendor attribution without an accompanying benchmark.

- **Strength, binning in software:** Analysis Studio annotates the binning cycle pattern and builds a traffic-light matrix and BinChart.
- **Strength, fitting breadth:** models include 1:1, 1:2, 2:1 and mass transport with local and global options (www.sartorius.com).
- **Limitation, slow dissociation and high affinity:** an independent study on older BLI hardware found upward drift during dissociation, attributed mainly to evaporation (pmc.ncbi.nlm.nih.gov), and another reported that BLI underestimated low-picomolar affinities (pmc.ncbi.nlm.nih.gov). These findings predate the R8 and should be re-tested rather than assumed.
- **Limitation, role in the workflow:** the same authors conclude BLI is effective for epitope binning and qualitative affinity assessment (pmc.ncbi.nlm.nih.gov).
- **Limitation, compliance is conditional:** Sartorius states that compliance depends on how the system is configured and used (www.sartorius.com), and that validation activities in the v14 package are performed by the end user (www.sartorius.com).

Carterra LSA

Capabilities

Carterra describes the **LSA** as combining flow-printing microfluidics with SPR detection. Its 96-channel printhead can be used up to four times to build a 384-ligand array (carterra-bio.com); a camera images the whole chip so up to 384 real-time interactions are monitored in parallel with local referencing by neighbouring interspots (carterra-bio.com). Stated workflows include capture kinetics of up to 1152 mAbs (carterra-bio.com) and binning of up to 384 by 384 antibodies. Carterra lists about 200 microlitres per immobilization in printhead mode (carterra-bio.com). The vendor says coupled kinetics typically needs about 200 ng of each clone and roughly 100 pmol of antigen (carterra-bio.com).

Fixing an array is not free: in the 2020 study, arraying 384 ligands in four batches of 96 took approximately 2.5 hours with a 5 minute print contact time (shura.shu.ac.uk).

Adoption and Lifecycle

The product line has moved. Carterra's overview table lists the LSA beside LSAXT, Ultra and Vega (carterra-bio.com). The comparison table gives the LSA analyte sensitivity as at least 1000 Da versus at least 500 Da for the LSAXT (carterra-bio.com), and Carterra states the LSAXT can measure analytes down to 500 Da (carterra-bio.com). The **Vega** (announced 11 February 2026) is described as a 48-channel platform (www.news-medical.net). Some Kinetics 2.0 features are documented as exclusive to Ultra (carterra-bio.com). A federal notice of intent in 2025 for an LSA XT one-year service contract used a sole-source basis with the vendor (www.governmentcontracts.us).

Strengths and Limitations

- **Strength, panel scale:** an industry collaboration ran all 35 anti-PD-1 antibodies on a single 384-array per chip (pmc.ncbi.nlm.nih.gov) and resolved ten bins by classical sandwich binning (pmc.ncbi.nlm.nih.gov).

- **Strength, linked review:** the binning tool links sensorgrams, heat maps, networks and a dendrogram, and the Kinetics software flags data automatically (carterra-bio.com).
- **Limitation, native models:** Carterra's FAQ lists off-rate only, 1:1 Langmuir and mass transport models (carterra-bio.com), recommends assay optimization to achieve 1:1 binding (carterra-bio.com), and states that advanced models require export to third-party software (carterra-bio.com).
- **Limitation, slow off-rates:** in a 48-antibody comparison with a solution method, 13 of 15 antibodies with solution affinity below 50 pM were at the LSA off-rate floor (pmc.ncbi.nlm.nih.gov).
- **Limitation, small analytes:** the LSA's stated minimum is at least 1000 Da.

Feature Comparison

Table 1 below is a source-linked model, software and licence matrix. Each row carries the edition or retrieval anchor; "retrieved" means 2026-11-01 or 2026-11-02. Cells describe documented features, not compliance outcomes.

Attribute	Biacore 8K+ (Cytiva)	Octet R8 (Sartorius)	Carterra LSA
Detection and fluidics	SPR, 8 channels with 2 flow cells each (cdn.cytivalifesciences.com)	BLI, 8 channels, fluidics-free dip and read	SPR array, 96-channel printhead plus single flow cell
Sample format	96 or 384-well plates; 8K+ sample hotel up to six trays	96-well plate (to be confirmed with the vendor); R8e adds 384-well (www.sartorius.com)	96 or 384-well plates in deck bays (to be confirmed with the vendor)
Vendor throughput claim	4608 samples unattended (8K+)	Up to 96 samples in 30 min to 2.5 h	200 analytes per 24 h table value (carterra-bio.com); up to 1152 captured mAbs
Native kinetic models in documentation	Fit mode global, local or constant exposed in result tables (v6.0 notes) (d3.cytivalifesciences.com)	1:1, 1:2, 2:1, mass transport	Off-rate only, 1:1, mass transport (carterra-bio.com)
Binning	Epitope binning item with self-self subtraction in v6.0	Analysis Studio module	Epitope software, up to 384 by 384 (carterra-bio.com)
Data store	SQL Server database (to be confirmed with the vendor)	Octet Hub (v14), on premises	Kinetics V.2.0.0.5078 manages .sprdata files, merges runs (carterra-bio.com)
Export and integration	JSON/XML via optional Data Integration; application programming interface (API) server	CSV, XLSX, PDF with an API for external calls (www.sartorius.com)	Excel and SQLite export (carterra-bio.com); third-party export for advanced fits

Attribute	Biacore 8K+ (Cytiva)	Octet R8 (Sartorius)	Carterra LSA
Regulated-use package	Optional GxP extension, validation support file	Optional GxP package with 21 CFR Part 11 software and installation, operational and performance qualification (IQ/OQ/PQ) kits	No Part 11 statement published on the Carterra pages reviewed
Newer family variants	Biacore 8S, 8S+ announced May 2026 (www.technologynetworks.com)	Octet R8e	LSAXT, Ultra, Vega (carterra-bio.com)
Public price	Quote only; service and core-rate data points only	Quote only	Quote only

The matrix shows that "included" is the wrong default assumption for software. Cytiva lists binning, data integration and GxP as extensions, Sartorius separates Research and Compliance suites (www.sartorius.com), and Carterra's public product pages do not state access-control or Part 11 capabilities. A procurement team should therefore request a line-item quote per software module and write the purchased module list into the acceptance protocol.

Review, Fitting and Data Portability

Native fitting, reference subtraction and residual review

Reference handling differs by architecture. Biacore reserves Fc1 as the reference. Octet allows flexible sample referencing and biosensor subtraction schemes (www.sartorius.com). Carterra uses local referencing via interspots, and in the 2020 comparison the LSA workflow used interspot and double referencing before 1:1 fits, with spots judged by low, randomly distributed residuals (shura.shu.ac.uk). Double referencing means subtracting both a reference channel and a blank injection (pmc.ncbi.nlm.nih.gov).

Residual review is a documented step on all three. A 2026 SPR protocol states that residuals should be randomly distributed around zero, because systematic deviations indicate a poor fit (pmc.ncbi.nlm.nih.gov); Octet's specification lists residuals of fits among its outputs (www.sartorius.com); Carterra's FAQ defines residual standard deviation, in response units, as the overall agreement between fit and data (carterra-bio.com). For mass transport, the same protocol gives a screening rule that the mass transport constant should be at least 100 times kon for a 1:1 model (pmc.ncbi.nlm.nih.gov), and it warns that very slow dissociation may be slower than an instrument can reliably detect (pmc.ncbi.nlm.nih.gov).

Rejected-curve handling and analyst edits

Define in the protocol how rejected curves are recorded. The Biacore v6.0 notes add an Undo for removed ranges, logged in the audit trail for regulated items (d3.cytivalifesciences.com); the Carterra Kinetics software lets analysts add back an excluded concentration on individual sensorgrams (carterra-bio.com); Carterra summary statistics use a geometric mean to average on and off-rates, which affects any attempt to reproduce an average outside the software (carterra-bio.com). A floor convention also exists: antibodies at the SPR lower off-rate limit are assigned an equivalent floor value, so an exported KD for such antibodies may reflect a convention, not a measured dissociation (pmc.ncbi.nlm.nih.gov).

Licences, access control and validation

- **Cytiva:** extensions are licensed separately and managed by a licensing server; the GxP extension adds restricted access for routine users and audit trails; the datasheet lists user authorization levels, audit trail, version history and electronic signatures as features (cdn.cytivalifesciences.com).
- **Sartorius:** Octet Hub supports Active Directory integration (www.sartorius.com); CFR software offers four user levels; data files are digitally signed and modification invalidates them (www.sartorius.hr); the Hub server requires Windows Server 2019, 2022 or 2025 with 4 dedicated CPU cores and 8 GB RAM minimum (www.sartorius.com).
- **Carterra:** the public product pages describe file formats and exports, not user accounts. Treat access control as a vendor question.

The regulatory text sets the yardstick without naming any product. 21 CFR 11.10 expects validation of systems for accuracy, reliability and consistent intended performance (www.ecfr.gov), secure time-stamped audit trails (www.ecfr.gov), authority checks (www.ecfr.gov) and accurate, complete copies of records in human readable and electronic form (www.ecfr.gov). A feature list is not compliance; Sartorius itself says compliance depends on user management, e-signature and audit trail use (www.sartorius.com).

Raw-to-final data lineage

FDA's data integrity guidance describes complete data as attributable, legible, contemporaneously recorded, original or a true copy, and accurate (ALCOA) (www.fda.gov), defines metadata as the contextual information required to understand data (www.fda.gov), and says a printout or static record does not preserve the dynamic format of a dynamic record (www.fda.gov). In FAIR terms, identifiers should be globally unique and persistent (www.nature.com) and results should carry detailed provenance (www.nature.com), although the FAIR authors say the principles are not a specification (www.nature.com). *Table 2* turns this into a lineage table to be completed per platform during the pilot.

Lineage element	What to capture	Where to look, by documented capability
Sample ID and ligand ID	Registry ID, lot, plate and well, spot or sensor position	Carterra Epitope added Bay and Position information to data tables (carterra-bio.com); confirm equivalent plate-map exports for the other two in the pilot
Surface loading	Capture or immobilization level in response units	Carterra FAQ links the interpretation of Rmax to ligand level
Concentration series	Analyte concentrations and excluded points	Excluded concentrations can be added back in Carterra Kinetics
Reference subtraction	Reference surface or sensor, blank cycles, double referencing	Documented in all three, see above (shura.shu.ac.uk)
Fitted model and mode	1:1, mass transport, two-state; global, local or constant; initial values	Biacore fit mode columns exported via Excel, PDF, PPT or API; Carterra FAQ models
kon, koff, KD	Values with confidence or standard error, floor flags	Floor convention for slow off-rates (pmc.ncbi.nlm.nih.gov)

Lineage element	What to capture	Where to look, by documented capability
Residuals	Residual SD or plot reference	Carterra res sd; Octet residual plots
Analyst edits	Who removed or restored what, with timestamps	Biacore audit-trailed undo in regulated items; Octet audit trail exportable as PDF
Run and version IDs	Instrument serial, software version, database or Hub project	Carterra .sprdata files and merged runs; Octet Hub v14 only

The table is a checklist, not evidence that every cell is exportable. In particular, exporting only PDF or PowerPoint reports would not preserve reprocessable raw data, so the acceptance test should require a machine-readable export of sensorgrams plus fit parameters.

Export formats and integration

Cytiva documents Data Integration as optional export in JSON and XML and an optional API server for third parties. Benchling's connector instead consumes XLSX exports from Biacore Insight, maps them into an Allotrope Simple Model (ASM) binding affinity data model (help.benchling.com), and requires specific sheets such as Properties and Report Point Table (help.benchling.com). The open-source allotropy library converts text or Excel output into ASM JSON but does not convert proprietary or binary formats (github.com). Allotrope's public repository makes recommended-state models public while candidate release models require membership (gitlab.com).

Sartorius lists CSV, XLSX and PDF export with raw and processed data available for downstream analysis (www.sartorius.com) and states that a software API is available, with no public specification on the product page (www.sartorius.com). Carterra documents Excel and SQLite export in Kinetics 2.0 (carterra-bio.com), drops support for legacy .lsadata files (carterra-bio.com), and notes the software is compatible with files from all Carterra instruments. The practical rule: test the exact file that your ELN or registry will ingest, on your own data, before signing.

Performance and Benchmarks

Biacore 8K and LSA, the direct study

The 2020 SLAS Discovery study tasked two laboratories skilled in SPR with a blinded comparison (shura.shu.ac.uk); both used 23 Fabs binding immobilized CD3-epsilon (shura.shu.ac.uk). Twenty of 23 Fabs gave affinities within 1.5-fold across platforms, and the three outliers were weak-affinity Fabs (shura.shu.ac.uk). The authors attribute the mis-estimates to insufficient top analyte concentration, which was a user-influenced parameter and not an instrument limitation (shura.shu.ac.uk), and they saw no significant effect of different chips (CM5 versus HC-30M) at slow on-rates (shura.shu.ac.uk). The abstract concludes near-identical results under those conditions (shura.shu.ac.uk).

Read it with two limits. First, it tested the Biacore **8K**, not the 8K+, and no BLI platform. Second, it also found complementary strengths: low noise on the 8K and one-on-many screening of a small analyte panel over hundreds of ligands on the LSA (shura.shu.ac.uk). A separate industry collaboration on anti-PD-1 antibodies

found near-identical constants on flat chip types (pmc.ncbi.nlm.nih.gov) with affinities spanning single-digit picomolar to nearly 425 nM, which challenged the methods' dynamic range (pmc.ncbi.nlm.nih.gov).

SPR versus BLI binding kinetics

Independent BLI-versus-SPR evidence is older and hardware-specific. In a comparison on high-affinity anti-PCSK9 antibodies, continuous-flow SPR systems resolved slow dissociation better than the Octet RED384, BLI experiments were restricted to under 12 hours due to evaporation (pmc.ncbi.nlm.nih.gov), and the authors cite lower maintenance for BLI than for fluidic SPR. Publication fees in that paper were paid by the authors' employer, a pharmaceutical company rather than an instrument vendor (pmc.ncbi.nlm.nih.gov). A 2013 mAbs study reported that BLI consistently underestimated low-picomolar affinities, with Octet versus KinExA KD differences from 3 to 60-fold for seven antibodies (pmc.ncbi.nlm.nih.gov), and advised optimizing the loading density of the immobilized partner. None of these studies used the R8, so the honest answer to "Octet R8 kinetics accuracy" is that the R8-specific independent benchmark was not located; the vendor offers a kinetics method development guideline referencing USP chapter 1032 (www.sartorius.com).

Cross-platform checks also matter for binning. BLI response is not linearly dependent on the mass ratio, so blocking thresholds do not transfer across platforms (pmc.ncbi.nlm.nih.gov); cross-blocking is necessary but not sufficient for two antibodies to bind the same epitope (pmc.ncbi.nlm.nih.gov); and antibodies can compete by kinetically altering one another, so sensorgram review matters beyond a heat-map call (pmc.ncbi.nlm.nih.gov). An older 96-antibody comparison found an SPR imaging system consumed almost 100-fold less antibody analyte than a BLI system (pmc.ncbi.nlm.nih.gov), again on earlier hardware.

Solution-phase orthogonal checks

When an SPR array reports floor off-rates, an orthogonal method is the check. In a 48-antibody comparison of the LSA with KinExA, the affinities showed 54% correspondence (pmc.ncbi.nlm.nih.gov) and 26 antibodies fell within 0.5 to 2-fold (pmc.ncbi.nlm.nih.gov). KinExA throughput is much lower than SPR, and the anti-PD-1 solution mixtures were allowed to equilibrate for up to 64 hours, so orthogonal checks have a cost in time.

Data Analysis and Evidence

Public price and cost evidence

The best-supported price statement is negative: no public list price is available for the Biacore 8K+, Octet R8 or LSA. The numbers that are public are context, not instrument prices:

- **Service award:** a prior one-year service award of $23,870 (an aggregator-reported incumbent value, not an official award notice) on a Biacore SPR system at a federal institute, with the new requirement covering an 8K+ (www.highergov.com).
- **Reseller plan:** a government-schedule listing shows a FullCare service plan for the Biacore 8K+ at $47,900 each (www.govsci.com), which is a service plan, not an instrument.
- **Capital grant:** an NIH award of $438,939 funded a Biacore 8K core upgrade in 2021; the figure is a grant amount, not a list price.

- **Core rates:** $445 per day internal, $890 per day external academic and $2,150 per day for-profit for 8K+ time at one university core, with sensor chips and capture kits charged extra (lombardi.georgetown.edu).
- **Carterra:** a one-year LSA XT service contract notice names a Summit Level plan on a sole-source basis; no amount was disclosed.

Treat all of these as inputs to ask about, not as a basis for ranking. Service costs for Octet are subject to the sole-provider statement.

Cost per accepted interaction

The cost-per-accepted-interaction calculation is:

- **Accepted interactions** = attempted interactions x observed pass fraction.
- **Fully loaded cost per accepted interaction** = (annualized instrument + service + software + consumables + preparation + review + reruns + integration) / accepted interactions.

As a hypothetical example, a lab attempts 20,000 interactions per year. Placeholder inputs: $300,000 per year for annualized instrument, service, software and integration combined; $4 per attempt for consumables and preparation; 1.5 minutes of reviewer time per attempted interaction at $90 per hour; and half of rejected interactions rerun at the $4 attempt cost. None of these figures is a vendor price or a platform benchmark. *Table 3* shows the sensitivity of cost per accepted interaction to pass fraction and reviewer time.

Pass fraction	Accepted interactions per year	0.5 min review per attempt	1.5 min review per attempt	3.0 min review per attempt
95%	19,000	$20.89	$22.47	$24.84
85%	17,000	$23.59	$25.35	$28.00
70%	14,000	$29.07	$31.21	$34.43
50%	10,000	$41.50	$44.50	$49.00

In this illustration the pass fraction dominates: moving from 95% to 50% raises cost per accepted interaction by about 98% at 1.5 minutes of review, whereas moving review time from 0.5 to 3.0 minutes at 85% passes raises it by about 19%. Fixed costs are about $17.65 of the $25.35 at 85% passes. Channel count does not appear anywhere in the formula, which is the point: useful throughput is accepted interactions, and a platform with more channels but a lower pass fraction on your molecules can cost more per accepted result.

Same-panel pilot with predefined acceptance criteria

Use one panel on all three candidate systems, run by operators who know the platform, with blinded review. The assay owners, not the vendors, should set thresholds before any data are opened. The form below carries no invented benchmark values.

- **Panel:** include weak, mid and tight binders, a negative control set, replicate pairs, and at least some antibodies with known solution-phase KD.

- **Design freedom:** document ligand level, analyte range and dissociation time per platform, since the 2020 study showed user choices drive outcomes.
- **Precision threshold:** assay owner sets maximum fold or coefficient of variation between replicates, written before review.
- **Concordance threshold:** assay owner sets acceptable fold difference versus the reference method per affinity band, including a rule for floor off-rates.
- **Blinded review:** reviewers see fits without platform labels; record accept, reject and reason.
- **Rejection log:** count rejects by cause (poor fit, mass transport, surface loss, carryover).
- **Reviewer time:** log minutes per interaction to feed the cost model.
- **Portability test:** export raw sensorgrams, fit parameters and identifiers into the target ELN or registry and reconstruct three results independently.
- **Version capture:** record software and firmware versions on every run.

Implications and Future Directions

Three shifts matter for the next procurement cycle. First, vendors have recently moved their families forward: the Biacore 8S and 8S+ with Insight v7.0 and Sensorgram comparison, which converts interaction profiles into a similarity score (www.technologynetworks.com); the Octet R8e; and the Carterra Vega with a 48-channel format and a claim of more than 20,000 small-molecule interactions per day (www.news-medical.net). Buyers who specify a model without a configuration may receive an unexpected variant, and an evaluation done on an older model may not transfer.

Second, data portability has become an architectural question. The ASM route requires text or Excel exports, so file-based export from an instrument is a gating item, and the Benchling documentation shows that connector coverage differs by analysis type. Informatics teams should record which ASM release and which export template were used.

Third, regulated use is a configuration and validation exercise. Octet validation activities are performed by the end user, Cytiva offers a validation support file (cdn.cytivalifesciences.com), and the regulation expects validated systems, authority checks and audit trails. This is work for assay owners, quality and informatics together, not a feature to be assumed.

Evidence gaps and vendor questions

Known gaps: no independent head-to-head including the Octet R8, the 8K+ and the LSA; no R8-specific independent kinetics benchmark; no public price for any of the three; no Part 11 or access-control statement on Carterra's public product pages; no public Octet export schema in the user guide. Ask each vendor:

- **Edition:** which software, firmware and database versions are in the quote, and what is the supported lifecycle for the quoted model after the newer family variants?
- **Modules:** a line-item list of licences (binning, integration, GxP) with seat or server terms.
- **Export schema:** a sample export of raw sensorgrams, fit parameters, model metadata and sample identifiers, with schema documentation.
- **API versus file:** is the integration a documented API or file export, and what are the version dependencies?

- **Audit and access:** how are analyst edits and rejected curves recorded, and can the record be exported?
- **Consumption:** assay volume and consumable use for the pilot design.
- **Validation:** what the vendor provides for installation and performance qualification, and what the buyer must execute.

Frequently Asked Questions (FAQs)

Biacore 8K+ vs Carterra LSA: which gives closer kinetics?

The direct 2020 study of the Biacore 8K and LSA found 20 of 23 Fab affinities within 1.5-fold; it was conducted with skilled users, and does not extend automatically to the 8K+ or to other analytes.

Octet R8 vs Biacore 8K: is BLI as accurate as SPR?

Independent evidence on older Octet hardware shows weaker resolution of slow dissociation than continuous-flow SPR and underestimation of low-picomolar affinities. No R8-specific independent data have been published to our knowledge.

Carterra LSA vs Octet R8 throughput: which is faster?

They are not directly comparable. The R8 claim is up to 96 samples in 30 minutes to 2.5 hours; the LSA claim is screening up to 1152 mAbs. Compare accepted interactions per week on your panel.

What are the main high-throughput SPR instruments for comparison?

In this report's scope, the Biacore 8 series (8K, 8K+, and the newer 8S and 8S+), the Carterra LSA family (LSA, LSAXT, Ultra and Vega) and, as a BLI alternative, the Octet R series (R8 and R8e). Models differ in ligand capacity, sample handling and software, so compare them on your panel, not on the number of channels.

What is the best SPR instrument for antibody screening?

For very large panels, array SPR (LSA family) is designed for it; for flexibility including small molecules, flow-based SPR has documented low noise. Both need a pilot.

How much does a Biacore 8K+ or Carterra LSA cost?

No public list price is available for either. Public data points are service awards, reseller service plans and core rates, none of which is an instrument price.

Are the systems 21 CFR Part 11 compliant?

A feature set is not a compliance statement. Cytiva describes an optional GxP extension; Sartorius offers a GxP package and says compliance depends on configuration.

Conclusion

The three platforms answer different questions. The Biacore 8K+ pairs eight-channel flow SPR with optional extensions for binning, integration and regulated use. The Octet R8 offers fast, dip-and-read BLI with software that moved to a governed Hub in version 14. The Carterra LSA offers array-scale SPR for kinetics and binning with a smaller set of native models and an export route for the rest. Independent evidence is thinner than the marketing: the one direct SPR study compares two platforms using one older Biacore model, and BLI benchmarks predate the R8.

A defensible purchase therefore rests on a pilot, not a table. Define thresholds before review, capture lineage into the ELN or registry, price the module list line by line, and compute cost per accepted interaction with your own pass fraction and reviewer time. Re-check model names, software editions and lifecycle statements at quote time, since all three vendors have newer family members.

Source links

Links cited in this article, in order of first appearance. Full addresses are provided for readers using extracted text.

1. https://lifesciencesbc.ca/members/cytiva-introduces-next-generation-biacore-8-series-spr-systems-for-faster-more-confident-drug-discovery
2. https://www.news-medical.net/news/20260211/Carterra-launches-industrye28099s-first-48-channel-HT-SPR-platform-for-advanced-label-free-biomolecular-screening-and-characterization.aspx
3. https://shura.shu.ac.uk/34933/1/Clark-DirectComparisonOfLabelFree%28VoR%29.pdf
4. https://pmc.ncbi.nlm.nih.gov/articles/PMC3893237
5. https://pmc.ncbi.nlm.nih.gov/articles/PMC10793667
6. https://help.benchling.com/hc/en-us/articles/38256417638029-Cytiva-Biacore-Insight-Configuration-Guide
7. https://www.ecfr.gov/api/renderer/v1/content/enhanced/current/title-21?part=11
8. https://www.fda.gov/media/119267/download
9. https://www.highergov.com/contract-opportunity/service-contract-for-a-cytiva-biacore-8k-in-ncats-75n98026q00984-o-d706c
10. https://lombardi.georgetown.edu/research/sharedresources/gesr-and-bmis/bmis/biacore-molecular-interaction-shared-resource-fees
11. https://www.sartorius.com/en/products/biolayer-interferometry/octet-r8
12. https://pmc.ncbi.nlm.nih.gov/articles/PMC5564993
13. https://pmc.ncbi.nlm.nih.gov/articles/PMC3961344
14. https://carterra-bio.com/lsa
15. https://www.sartorius.com/products/biolayer-interferometry/octet-systems-software
16. https://cdn.cytivalifesciences.com/api/public/content/digi-18215-original
17. https://cdn.cytivalifesciences.com/api/public/content/digi-18070-pdf
18. https://api.ai-analytics.org/grant/nih/10176937.md
19. https://www.technologynetworks.com/drug-discovery/product-news/cytiva-unveils-faster-biacore-spr-platform-413076
20. https://cdn.cytivalifesciences.com/api/public/content/digi-32607-pdf

21. https://d3.cytivalifesciences.com/prod/IFU/29798349.pdf
22. https://www.sartorius.com/download/1833262/octet-software-version-14-with-octet-hub-faq-en-sartorius-pd-1--data.pdf
23. https://cancer.gov/about-nci/contracts/opportunities/bidboard/nci-25-002751.pdf
24. https://www.biotech.cornell.edu/core-facilities-brc/price-list/490
25. https://www.sartorius.com/en/products/biolayer-interferometry/octet-r8e
26. https://www.sartorius.com/download/1833258/octet-software-validation-package-compliance-suite-version-1-1--data.pdf
27. https://carterra-bio.com/applications/kinetics-software
28. https://carterra-bio.com/product-overview
29. https://carterra-bio.com/lsa-xt
30. https://carterra-bio.com/wp-content/uploads/2025/10/Kinetics-RN_2_0_0_5078_Final.pdf
31. https://www.governmentcontracts.us/government-contracts/opportunity-details/09387188270400159.htm
32. https://pmc.ncbi.nlm.nih.gov/articles/PMC7058304
33. https://carterra-bio.com/customer-faqs
34. https://carterra-bio.com/applications/epitope-binning-software
35. https://www.sartorius.com/en/products/biolayer-interferometry/octet-automation
36. https://pmc.ncbi.nlm.nih.gov/articles/PMC13127243
37. https://www.sartorius.hr/media/3sjhoyxi/octet-cfr-software-validation-package-datasheet-en-sartorius-data.pdf
38. https://www.sartorius.com/resource/blob/1573616/1e1de090915da4fa88748836f5a2beb5/bli-software-gxp-compliance-21-cfr-part-11-octet-faq-en-sart-1--data.pdf
39. https://www.nature.com/articles/sdata201618
40. https://github.com/Benchling-Open-Source/allotropy/blob/main/README.md
41. https://gitlab.com/allotrope-public/asm/-/raw/main/README.md
42. https://pmc.ncbi.nlm.nih.gov/articles/PMC5218414
43. https://www.govsci.com/product-detail/Cytiva/29369491/EA

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