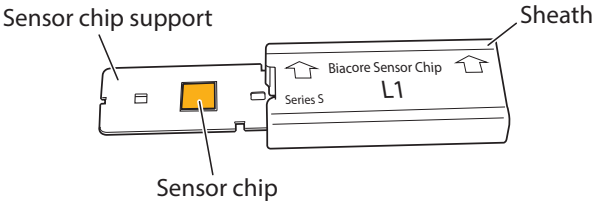
Series S Sensor Chip L1

Instructions for Use

Product description

Order code:	29104993 (package of one sensor chip)
Storage:	The use-before date applies to chips stored at 2°C to 8°C in unopened pouches.



The sensor chip is fixed to a polystyrene support sheath. Each cassette, consisting of a sensor chip and sheath assembly, is individually packed under a nitrogen atmosphere in a sealed pouch.

Note: *For in vitro use only.*

Application areas

Series S Sensor Chip L1 is designed for interaction analysis in Biacore™ systems. The surface consists of a carboxymethylated dextran matrix pre-immobilized with lipophilic groups for rapid and reproducible capture of lipid vesicles with and without membrane proteins.

The binding process involves diffusion of the vesicles to the surface and incorporation of the lipophilic structures on Series S Sensor Chip L1 into the lipid membrane, non-covalently anchoring the vesicle.

These instructions describe recommended procedures for lipophilic capture of membrane vesicles. The surface chemistry also allows covalent coupling to be used, based on carboxylmethyl chemistry[1]. For advice on covalent coupling procedures, refer to *Biacore Sensor Surface Handbook*.

Refer to *cytiva.com/biacore* for updates on applications and scientific publications.

Required solutions

See table below for solutions required for use with Series S Sensor Chip L1.

Solution	Description
Running buffer	HBS-N (available from Cytiva) or other detergent-free buffer
Regeneration solution, for stripping vesicles off the chip	A detergent (e.g., 20 mM CHAPS[1] or 40 mM OG[2]) or a mixture of 2 parts isopropanol and 3 parts 50 mM NaOH.

1 3-[(3-cholamidopropyl)dimethylammonio]-1-propane-sulfonate in water
2 n-octyl β-D-glucopyranoside in water

Preparations for use

Step	Action
1	If you are working in a humid environment, allow the sealed sensor chip pouch to equilibrate at room temperature for 15 to 30 minutes in order to prevent condensation on the chip surface.

1 Karlsson, O. & Löfås, S., Anal. Biochem. (2002) 300, 132-138

Step	Action
2	Prepare the Biacore instrument with detergent-free running buffer using the regular procedure for change of running buffer. The buffer should be filtered (0.22 µm), and degassed for systems that do not have an integrated buffer degasser.
3	Open the sensor chip pouch. Make sure that the sensor chip support remains fully inserted into the sheath at all times to protect the chip from dust particles.
4	Dock the sensor chip in the instrument as described in the instrument handbook. ***Note:*** *Sensor chips that are not docked in the instrument should be stored in closed containers.*

Capture of lipid vesicles

Step	Action
1	Prepare vesicles in running buffer. A concentration of 0.5 mM with respect to phospholipid is usually sufficient.
2	Condition the surface with two 30-second injections of detergent (e.g., 20 mM CHAPS or 40 mM OG) or a mixture of 2 parts isopropanol and 3 parts 50 mM NaOH before using the surface.
3	Inject the vesicle sample using a low flow rate (recommended 2 to 10 µL/min). Vesicle binding typically takes about 15 min, although the time required may vary according to vesicle composition, temperature and buffer conditions.
4	Examine the sensorgram to monitor the adsorption of vesicles to the surface. The process is complete when the sensorgram flattens out at a constant response.
5	If compatible with the vesicle composition, one short pulse of 10 to 100 mM NaOH and/or regeneration solution may be injected after vesicle binding to stabilize the baseline before interaction analysis.

Refer to *Biacore Sensor Surface Handbook* for more detailed information on immobilization strategies and procedures.

Interaction analysis

Interaction analysis is performed as analytes in solution are injected over the surface of Series S Sensor Chip L1. Non-specific binding may in some cases be successfully counteracted by coating the surface with an injection of serum albumin or other protein that does not interact with the analyte (recommended 0.2 mg/mL in running buffer) prior to analysis.

Refer to Biacore handbooks and *cytiva.com/biacore* for details on experimental protocols and methodology.

Regeneration

Removal of vesicles

The vesicles may be stripped from Series S Sensor Chip L1 using a 30-second injection of detergent (e.g., 20 mM CHAPS or 40 mM OG) or isopropanol: 50 mM NaOH at a ratio 2:3. With this approach, fresh vesicles are captured for each cycle after the detergent is washed out of the system. To prevent carry-over of vesicles in systems with serial flow cells, include a wash using regeneration solution after the vesicle injection. This wash does not pass over the surface.

Removal of analyte

Regeneration of the vesicles on the surface may be performed by selective dissociation of the bound analyte. Conditions should be chosen to achieve complete dissociation of the analyte without affecting the binding characteristics of the vesicle. Agents that will not destabilize captured POPC[1] liposomes are listed the following table (see the *Chemical resistance* section below). Vesicles with other compositions may require different regeneration procedures.

Detergents and organic solvents may alter or destabilize vesicle binding or even cause it to disintegrate. Such agents may be used to strip the vesicles from the sensor chip.

Refer to *Biacore Sensor Surface Handbook* for more detailed information on regeneration strategies.

Chemical resistance

The surface of Series S Sensor Chip L1 is resistant to one-minute pulses of many commonly used agents. See table below for information of common agents compatible with Series S Sensor Chip L1. Agents for which no concentration is listed have not been tested.

1 1-palmitoyl-2-oleoyl-*sn*-glycero-3-phosphocoline

Agent	Compatible with the sensor surface	Compatible with POPC vesicles
Acetonitrile	30%	-
DMSO	10%	10%
DTE	0.1 M	-
EDTA	0.35 M	-
Ethanol	70%	10%
Ethanolamine	1 M	-
Ethylene glycol	100%	-
Formamide	40%	-
Formic acid	20%	-
Glycine pH 1.5 to 3.0	100 mM	-
HCl	100 mM	100 mM
Imidazole	300 mM	-
$MgCl_2$	4 M	-
NaOH	100 mM	100 mM
NaCl	5 M	-
SDS	0.5%	-
Surfactant P20	5%	-
Urea	8 M	-

cytiva.com/sampleprep

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

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