Biotin Sensors

Tech Guide

Immobilization method:	Capture
Ligand Requirements:	Streptavidin tag
Ligand orientation:	Oriented via tag

Sensor storage buffer	PBS
Recommended storage	4°C
Shelf life	6 months

Overview

The Biotin Sensors have a uniform layer of biotin groups on their surface, providing a foundation to catpure streptavidin-tagged ligands. These chips create a strong, specific, stable bond that can be utilized with minimum preparation by the OpenSPR user. The streptavidin-tagged ligand can be directly bound to the biotin sensor surface (Figure 1).

Figure 1. *Capture coupling of streptavidin-tagged ligand onto a Biotin Sensor.*

Materials and Reagents Required for Coupling:

- **Biotin Sensor**
- **10 mM HCl, pH 2-3**

Injection Volumes

Minimum recommended injection volumes for a 100 µL sample loop:

OpenSPR Rev 4	150 µL
OpenSPR-XT Rev 4	200 µL
OpenSPR Rev 3	200 µL
OpenSPR-XT Rev3	300 µL

Buffer Conditions

Conditions to avoid:

- Samples containing free streptavidin - e.g. insufficiently purified samples

Ligand Removal

Removal of a ligand captured to a Biotin Sensor surface is not possible.

Referencing

For the 2-Channel OpenSPR, it is recommended to immobilize the ligand in channel 2 only and use channel 1 as the reference channel without any ligand. As alternatives, a negative control streptavidin-tagged protein or streptavidin itself can be bound to the reference sensor surface in channel 1. For a non-specific binding experiment using the 1-Channel OpenSPR, the sensor surface should have no ligand immobilized, or a negative control protein or streptavidin immobilized to the sensor surface, then inject an analyte at the highest concentration to be used for the experiment for evaluation of non-specific binding.

Coupling Procedure

1. Surface Conditioning

Perform an injection of 10 mM HCl (pH 2-3) to clean the sensor surface.

CH	Flow Rate
1+2	150 µL/min

2. Ligand Immobilization

Dilute the streptavidin-tagged ligand into the running buffer to a concentration of 1-50 µg/mL. Inject the ligand into the instrument (5-minute interaction time).

CH	Flow Rate
2	20 µL/min

Evaluation

The amount of ligand binding is calculated by comparing the signal after the streptavidin binding signal to the signal after the ligand immobilization step. In the example shown in *Figure 2*, it is approximately 1650 RU. Ensure this meets your minimum ligand immobilization target.

If your immobilization target is not reached, repeat another ligand immobilization injection, or consider optimization of this step.

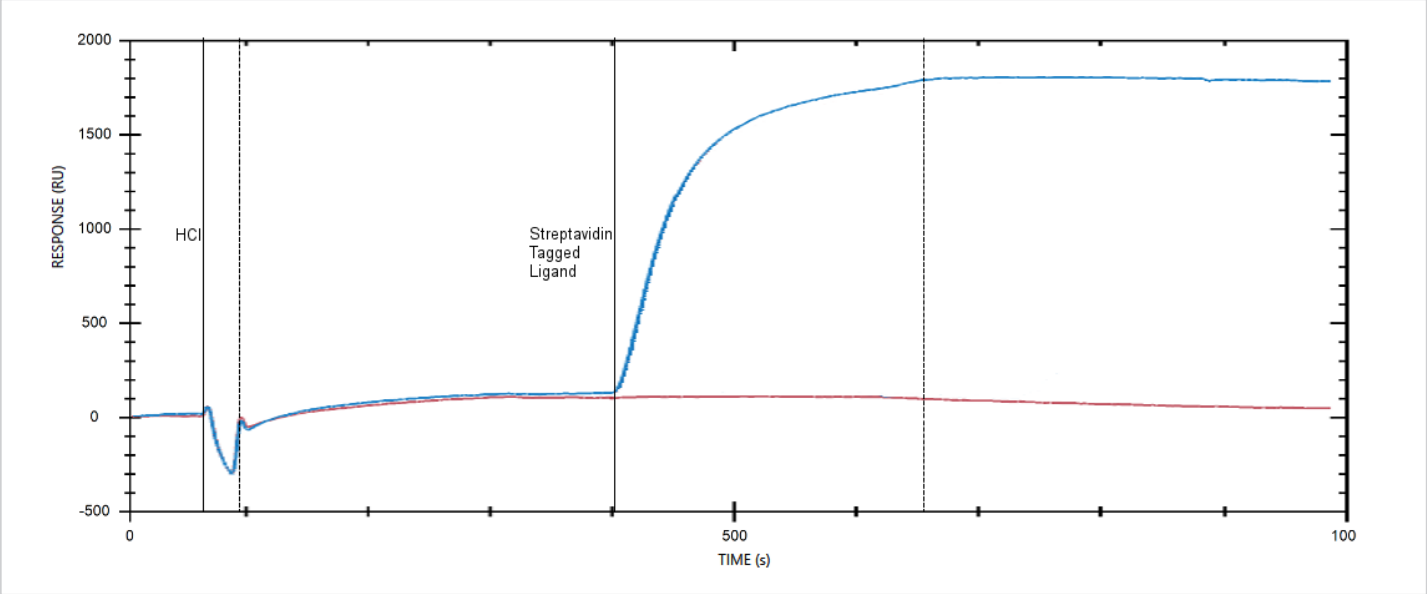

Figure 2. Example response graph coupling a streptavidin-tagged ligand onto a Biotin Sensor on the OpenSPR 2 channel system (red: Channel 1, blue: Channel 2).