heliX+
User Manual

dynamic
BIOSENSORS

DYE SCOUTING KIT

with six different dyes (**Ra, Rb, Rc, Ga, Gb, Gc**)

Dynamic Biosensors GmbH & Inc.
DS-6 v5.1

Key Features

- ***Adapter strand 1 - Ra*** and ***Adapter strand 2 - Ra - lfs*** (ligand free strand) for functionalization of **heliX® Adapter Chip** on Spot 1 and Spot 2, respectively.
- Compatible with **heliX® Adapter Chip**.
- Includes ***Adapter strands*** for **10 regenerations** for each dye.
- Ideal for **MIX&RUN** sample preparation.
- This kit contains ***Adapter strand* 1** with 6 different dyes and ***Adapter strand* 2** with 6 different dyes already prehybridized with **ligand free strand**.
- Dye Scouting enables to screen for the most sensitive fluorophore for your application.

Product Description

Order Number: **DS-6**

Table 1. Contents and Storage Information

Material	Cap	Concentration	Amount	Buffer	Storage
Adapter strand 1 - Ra	Black	400 nM	100 µL	TE40 [1]	-20°C
Adapter strand 1 - Rb	Black	400 nM	100 µL	TE40 [1]	-20°C
Adapter strand 1 - Rc	Black	400 nM	100 µL	TE40 [1]	-20°C
Adapter strand 1 - Ga	Black	400 nM	100 µL	TE40 [1]	-20°C
Adapter strand 1 - Gb	Black	400 nM	100 µL	TE40 [1]	-20°C
Adapter strand 1 - Gc	Black	400 nM	100 µL	TE40 [1]	-20°C
Adapter strand 2 - Ra - lfs	White	200 nM	100 µL	TE40 [1]	-20°C
Adapter strand 2 - Rb - lfs	White	200 nM	100 µL	TE40 [1]	-20°C
Adapter strand 2 - Rc - lfs	White	200 nM	100 µL	TE40 [1]	-20°C
Adapter strand 2 - Ga - lfs	White	200 nM	100 µL	TE40 [1]	-20°C
Adapter strand 2 - Gb - lfs	White	200 nM	100 µL	TE40 [1]	-20°C
Adapter strand 2 - Gc - lfs	White	200 nM	100 µL	TE40 [1]	-20°C

For research use only.

This product has a limited shelf life, please see expiry date on label.

To avoid many freeze thaw cycles please aliquot the nanolever.

heliX® Adapter Chip Overview

2 spots with 2 different anchor sequences for DNA-encoded addressing.

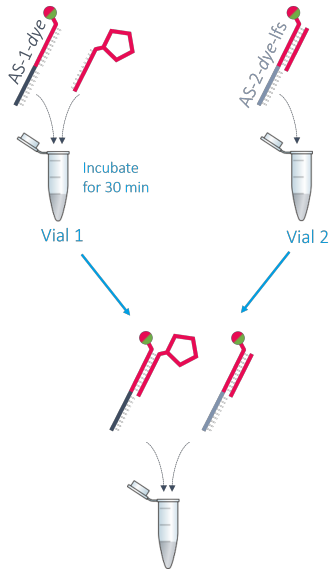
Preparation | MIX&RUN

In-solution hybridization of adapter and ligand strands:

1. Mix ***Adapter strand 1 - dye*** (400 nM) and conjugated ***Ligand strand*** of interest (500 nM) at 1:1 ratio (v/v).
2. Incubate the solution of step 1 at **RT** at **600 rpm** for **30 min** to ensure complete hybridization.
3. Mix solution of step 2 and ***Adapter strand 2 - dye - lfs*** (200/250 nM) at 1:1 ratio (v/v).

Solution is ready to use for biochip functionalization.

Stability of the solution is related to the stability of the ligand molecule.



Example

Required volume for 3 functionalizations: **40 µL** with a final concentration of **100 nM**.

Vial 1		Vial 2
Adapter strand 1 - dye (400 nM)	Conjugated ***Ligand strand*** (500 nM)	***Adapter strand 2 - dye - lfs*** (200/250 nM)
10 µL	10 µL	50 µL

After incubation time, mix vial 1 and vial 2 to obtain 40 µL of ready-to-use DNA solution.

Dye Scouting Information

The two standard fluorescent probes for **switch**SENSE® measurements are the red and green dye **Ra** and **Ga**, respectively. Fluorescence proximity sensing is based on the influence of changes in the local environment on the fluorescence signal of the dye in close proximity. This effect depends on the chemical nature of the dye and the interaction partner. Therefore, a different dye may yield a higher signal response depending on the type of interaction.

This **dye scouting kit** enables to screen for the most sensitive fluorophore for your application. Three red and three green fluorophores with different chemical properties are available to choose from for your **switch**SENSE® assay. The basic differences of the dyes in terms of net charge and hydrophobicity are depicted in Figure 1.

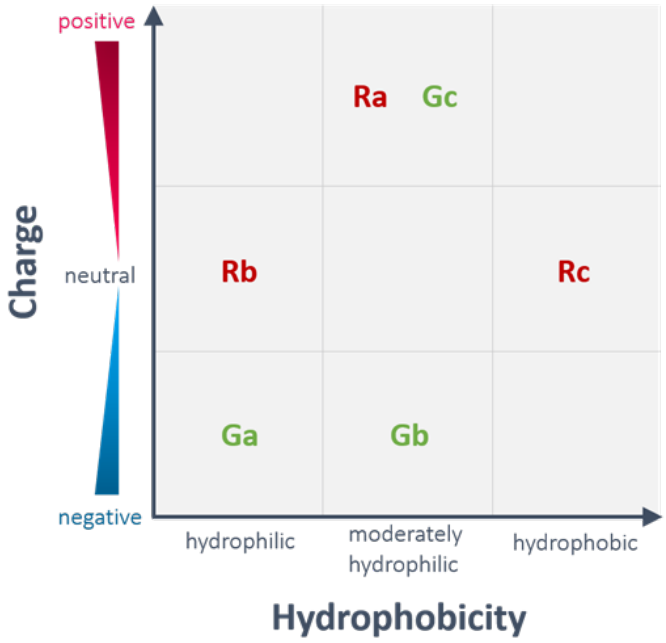


Figure 1. **Overview of the switchSENSE® dye properties**. *Six fluorophores - three red dyes (***Ra, Rb, Rc***) and three green dyes (***Ga, Gb, Gc***) - are available. Depending on the interaction partner, different fluorescent probes may obtain different signal responses. Dye scouting allows to quickly screen for maximum signal amplitudes.*

Assay Setup in heliOS

Go to **heliOS** > create a **New Assay Workflow** > add **Custom Assay** > load **Dye Scouting** > modify the parameters based on your needs and run the assay.

Suggested assay parameters (e.g., flow rate, time, LED power, etc.) are within the **heliOS** assay.

As default setting all six fluorophores are selected. Keep this setting for a full dye scouting run or uncheck any dye, which you want to rule out for your screen. With default parameter settings, the measurement time is around 20 min per dye.

TIP

A high analyte concentration is recommended to ensure saturated association signals (if possible, 10-fold higher than the expected K_D value).
A full dissociation is not required for this assay as the aim of this screening is to check for maximal signal amplitudes of the different dyes during association.

Select **Hit Screening** as type of analysis. The software will plot the amplitude signal of analyte association for each tested dye in a bar diagram. Higher the fluorescent change signal (%), more suitable is the dye to study the interaction.

For further questions, please contact the support team at **support@dynamic-biosensors.com**

Useful Order Numbers

Table 2. Order Numbers

Product Name	Comment	Order No
heliX® Adapter Chip	Chip with 2 detection spots	ADP-48-2-0
heliX® Amine Coupling Kit 1	For five individual conjugation reactions	HK-NHS-1

Contact

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Instruments and chips are engineered and manufactured in Germany.

[**1**] TE40: 10 mM Tris, 40 mM NaCl, 0.05 % Tween20, 50 µM EDTA, 50 µM EGTA