

## Microarray hybridization buffer Q.hyb

### Technical Instructions for hybridization microarrays

#### I. INTRODUCTION

Q.Instruments **Q.hyb** is an advanced hybridization solution designed to accelerate hybridization kinetics and reduce background in microarray assays. Use for cDNA and long oligonucleotide hybridizations with fluorescent and non-fluorescent probes in gene expression and SNP applications. Formulation optimized to produce superior results with microarrays printed on Epoxy, Aldehyde and Amine slide surfaces.

**Q.hyb** containing a mixture of salts, detergents, accelerants and buffering components that improves the quality of microarray hybridization reactions involving base pairing interactions between complementary nucleic acid chains by, increasing signals and reducing background.

#### II. GENERAL PRECAUTIONS

The protocols contained in this document are meant to be general guidelines only and some optimization may be required depending on the application and sample being used.

1. Refer to manufacturer supplied Material Safety and Data Sheets (MSDS) for proper handling and disposal of all chemicals.
2. Q.Instruments buffer and solutions are for research use only, not for in vitro diagnostic use.

#### III. PRODUCT DESCRIPTION

The hybridization of Microarray Slides can be done with 'cover slips' or 'gene frames' in **Q.Instruments hybridization chamber HC4**, with **Q.Instruments DiscoverSlip technology** or in other commercially available hybridization chambers.

Re-suspend the dried, labeled target that will be applied to the array in **Q.hyb** hybridization buffer. The amount of buffer depends on the desired final nucleic acid concentration and the size of the hybridization chamber used. In case the target is already dissolved in a different buffer or in water, the sample can also be diluted in **Q.hyb** to get at least 90% (v/v) in the final hybridization solution (mixture ratio sample:buffer = 1:9).

The buffer components stabilize extended hybridizations and are compatible with much different surface chemistry.

The buffer is ready to use.

Recommended final sample concentrations	
Sample	
cDNA / Oligonucleotide and other DNA molecules	Dilute sample in <b>Q.hyb</b> to get at least 90% (v/v) in the final hybridization solution, mixture ratio sample:buffer = 1:9

Denature the suspended target by heating at 95 °C for 3 min in a water-filled well of a heat block, perform a quick spin in a micro-centrifuge, then pipette the appropriate volume onto the array surface of a blocked slide under the cover slip and inside a **Q.Instruments hybridization chamber HC4**. If the sample cannot be applied immediately after denaturation, then place it in a 42 °C water-filled well of a heat block.

# Q.Instruments Buffers and Solutions for Microarraying

## IV. PROTOCOL

1. Print microarrays.
2. Process the microarrays for hybridization.
3. Labeling probe and Purify using Purification Kit.
4. Resuspend fluorescent probe in 1 part dH<sub>2</sub>O and 9 parts **Q.hyb** hybridization buffer.
5. Denature the suspended target by heating at 95°C for 3 min in a water-filled well of a heat block, perform a quick spin in a micro-centrifuge.
6. Pipette the appropriate volume (e.g. 20-100 µl) onto the array surface of a blocked slide under the cover slip or inside a hybridization chamber/station.
7. Hybridize the probe to the microarray under the appropriate conditions. Q.Instruments hybridization chamber **HC4** or temperature systems **HC4 plus** or **HC4 professional** are recommended.
8. Wash away unbound labeled probe. Q.Instruments microarray wash buffers **Q.wash I, II & III** (10x) are recommended.
9. Microarray read out.

The use of the hybridization buffer Q.hyb is described in detail in our '*Complete Protocol for Epoxy Slides*', '*Complete Protocol for Aldehyde Slides*' and '*Complete Protocol for Amino Slides*'.

### Notes:

- **Q.hyb** hybridization buffer is recommended for majority of applications.
- Alternatively a buffer with 3-5x SSC + 0.1 % SDS can be used as hybridization buffer.
- If the sample cannot be applied immediately after denaturation, then place it in a 42°C water-filled well of a heat block.
- DNA-probes in **Q.hyb** hybridization buffer can be stored at -20 °C until hybridization. Warm up to 40 to 60 °C before use if white precipitation occurs.
- The volume of the washing solution should be at least 250 ml for 5 Slides
- Never wash the slides with dH<sub>2</sub>O after hybridization.
- Do not allow slides to dry between washes, and protect from light as much as possible.

### Cautions:

- The results always depend on your equipment, your probes and your experimental conditions.
- By using a automatically hybridization station setup according to the manufacturer's recommendations.

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