

## SPRi Demonstration Array Chip Kit

### For demonstrating SPRi-based array capabilities of the PlexArray<sup>®</sup> HT system

*An efficient, label-free, real-time, high-throughput method for demonstrating many of the applications of the PlexArray<sup>®</sup> HT system, with the use of a single microarray chip, and provided analyte samples and assay buffers.*

#### FEATURES

- High-throughput array format
- Label-free technology
- Quantitative kinetic result analysis
- Real time binding
- Minimal sample preparation
- Rapid experimental process

#### BENEFITS

- Time and cost efficient
- Wide range of research applications
- A multiplexed binding assay can be performed with a single experiment
- Diverse set of molecules both arrayed and provided for injection

#### INTRODUCTION

The Plexera Demo Chip has been developed and designed for use and demonstration with the Surface Plasmon Resonance imaging (SPRi) PlexArray<sup>®</sup> HT instrument, as well as the Data Analysis module. With this product, many different types of binding associations and kinetics can be demonstrated, using just one printed chip. The Demo Chip has been tested for long term stability and resistance to a multitude of regeneration solutions and cycles. It can be used many times for both binding demonstration and other kinetics experiments without the need for replacement. Its wide range of capabilities and applications has been extensively demonstrated.

#### ASSAY OVERVIEW

The PlexArray HT System offers a powerful tool for the high-throughput quantitative measurement of molecular interactions in real

time via SPRi technology. Utilizing the microarray format, users are able to observe and analyze binding between injected analytes and a variety of immobilized ligands on the provided chip.

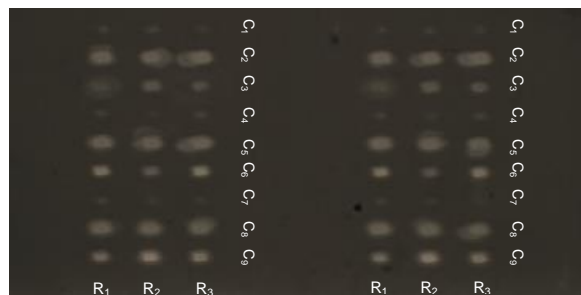
#### DEMO CHIP OVERVIEW

There are nine unique ligands immobilized on the surface of the Demo Chip. Each panel of ligands is printed in triplicates on the surface of the chip. This gives the user replicates of each set of data in parallel. By making replicate measurements of data during only one injection, any error that could arise from changes in environmental conditions is eliminated.

Two of the (3 column x 9 row) triplicates of the demo chip array are shown below in **Fig.1**.

# APPLICATION NOTE

## SOLUTIONS FOR FUNCTIONAL PROTEOMICS



**Fig.1. Two replicates of the array panel printed on the Demo Chip**

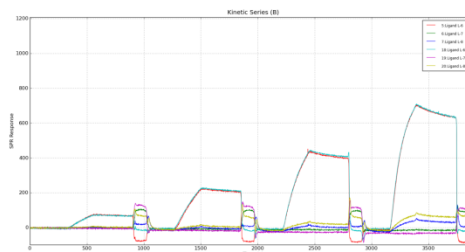
The Demo Chip Kit allows the SPRi user to perform the following experiments:

- Strong and Weak Binding
- Cross Reactivity
- Multiple Interactions
- Signal Amplification – Step Up
- Small-Large Molecule Interactions
- Complex Formation In Vitro
- Kinetics Series
- Concentration Determination

One of the most useful capabilities of SPRi is the ability to quickly and efficiently analyze the binding kinetics between two proteins. Using the Demo Chip array, the user can inject a concentration series and use the multitude of injections to solve for the kinetics of the interaction of the injected protein with one or more immobilized ligands.

### APPLICATIONS

One application of the Demo Chip Kit, a kinetic series, is detailed here. Four concentrations of one analyte were injected, and binding to the spots of the demo chip was monitored. Strong binding was observed and using Plexera's Data Analysis software, the kinetics of the interaction could be determined. A sensorgram of the interaction between the spots and the analyte injection is shown in **Fig.2**.



**Fig.2. Results of concentration series injections of analyte**

This is only one of the many applications of SPRi and the PlexArray HT instrumentation that can be demonstrated using a single array chip. By combining SPR with a chip-based array format, Plexera allows for study of multiple interactions amongst all kinds of molecules, which is particularly useful for screening ligands against targets of interest in a multiplexed assay format. Please visit Plexera's website for more information on the Demo Chip Kit.

### REFERENCES

- Lausted C, Hu Z, Hood L. Label-Free Detection with Surface Plasmon Resonance Imaging. *Methods Mol Biology*. 2011; 723: 321-33.
- Lausted C, Hu Z, Hood L. Quantitative Serum Proteomics from Surface Plasmon Resonance Imaging. *Mol Cell Proteomics*. 2008; 7 (12): 2464-74
- Lausted C, Hu Z, Hood L, Campbell C. SPR Imaging for High Throughput, Label-Free Interaction Analysis. *Comb Chem High Throughput Screening*. 2009; 12 (8): 741-51.