

PerkinElmer Signals™ Screening - SPR



SPR Data Analysis Software Addresses Unmet Needs

Scientists who run Surface Plasmon Resonance (SPR) experiments are often hampered by inflexible instrument software that requires extensive reconfiguring to make their data presentable. Larger groups, running multiple SPR instrument types, face steep learning curves for new and junior users. Plus inconsistencies in data analysis across instruments are not uncommon. Signals™ Screening - SPR allows the analysis of multiple popular SPR instruments in one easy-to-use platform, promoting consistency of analysis from day to day, within and across departments. Integration with TIBCO Spotfire®, an unparalleled visualization software, provides interactive and dynamic visualizations and greatly expanded graphic output choices. Reading data files directly from the instruments and integration into TIBCO Spotfire® promote data integrity by eliminating the need for cutting and pasting between software programs. Customization to link to electronic notebooks and databases further improves data integrity.

Improve SPR Data Integrity

- One interface to analyze data from many popular SPR instruments and the ability to save analysis templates increases consistency of SPR data analysis from day-to-day, person to person, and across groups
- Integration with Spotfire data tables promotes data integrity by eliminating potential human errors as a result of cutting and pasting and re-configuring data from instrument software
- Customization allows for direct connections to electronic notebooks and corporate databases further increasing data integrity and traceability

Save Time

- Signals Screening's single interface bypasses the need to learn multiple SPR analysis software programs, allowing new users to get up and running faster
- Once protocols are set up, subsequent data analyses are a snap, giving scientists more time to review and study the results

Identify Higher Quality Leads

- Comparing results from multiple experiments within one analysis allows you to draw better conclusions and reduce false positives
- The Hit Selection App provides filtering on relevant SPR parameters such as k_d , k_a , KD , and R_{max} to select hits for annotation or export

Zero in on Data of Interest

- Lasso data points with ideal parameters on an isoaffinity plot to bring corresponding sensorgrams and compound names and associated kinetic values into view
- Filter by inputting a desired kinetic parameter range to bring corresponding sensorgrams into view

Expanded Graphic and Output Choices

- Integration with Spotfire greatly expands graphic output choices, allowing presentation of SPR data in the most impactful way to improve decision making
- Export functions allow choices in what you export for reporting
- Direct export of figures and data to ppt, excel, word, pdf
- Customization allows for direct connections to electronic notebooks and corporate databases further increasing data integrity and traceability

1. Instrument Files Supported

- a. Biacore T200 raw .blr data files
- b. Biacore 4000 data files
- c. ForteBio OctetRED .frd data files
- d. IBIS MX96 .ibmx data files

2. Pre-Processing Steps

- a. Zeroing to y-axis
- b. Alignment to start of injection
- c. Reference Subtraction
- d. Blank Subtraction
- e. Cropping

All common SPR pre-processing steps are available:

- Zeroing to bring the data to a common point on the y-axis
- Cropping to magnify a region of interest
- Aligning the start of injection of all the flow cells
- Referencing to subtract the data from reference flow cell
- Blank subtraction to subtract the data from buffer blank injections

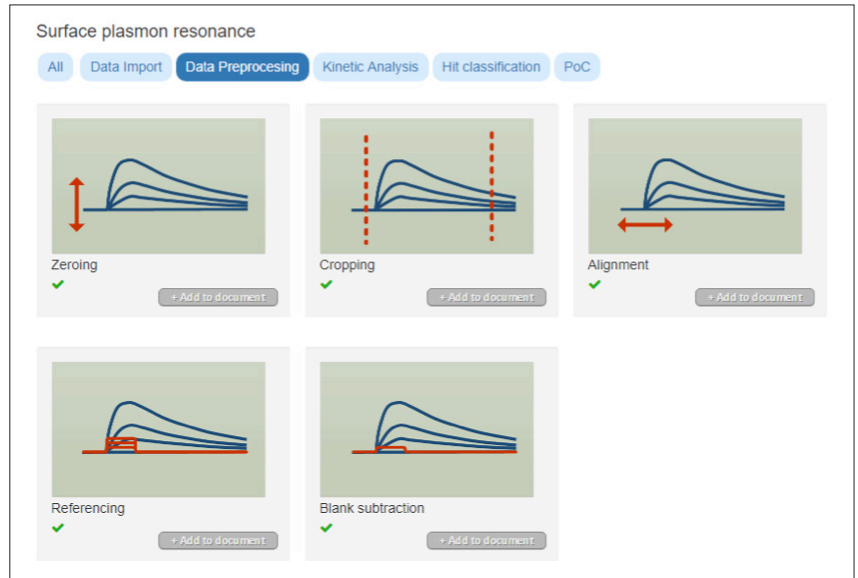


Figure 1. Signals Screening SPR Preprocessing Steps.

On the Cropping App a user can magnify the region of interest and before and after cropping visualizations are present.

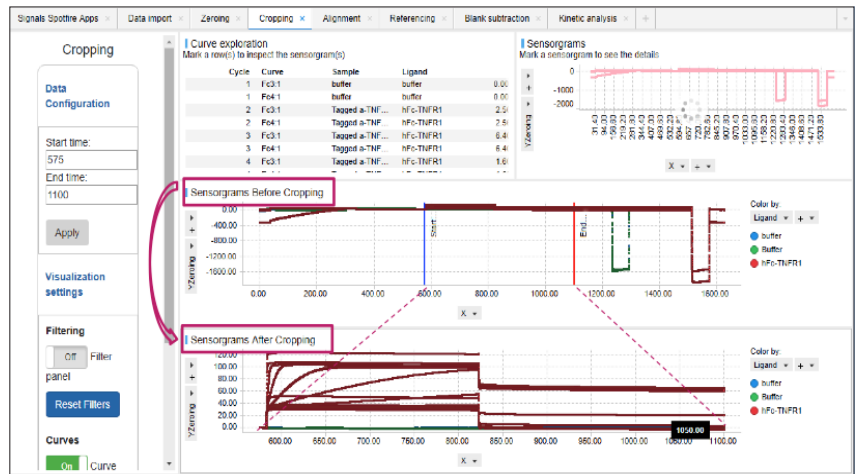


Figure 2. Signals Screening-SPR Data Processing Apps - Before and After Visualizations.

3. SPR Data Analysis

- a. 1:1 Interaction with Mass Transport
- b. Steady State Affinity
- c. Soon- Non-Regenerative Fitting
- d. k_a , k_d , K_D , R_{max} , k_t , χ^2
- e. Sensorgrams with curve fit overlay
- f. Residuals plots show the distance of data to the fit

After the data are fit using a 1:1 interaction with mass transport model, the results, k_a , k_d , K_D , R_{max} , k_t , χ^2 are displayed in the Curve Exploration table. Sensorgrams and the fit of the data can be inspected by scrolling through the sensorgrams or by highlighting compound names in the Curve Exploration Table.

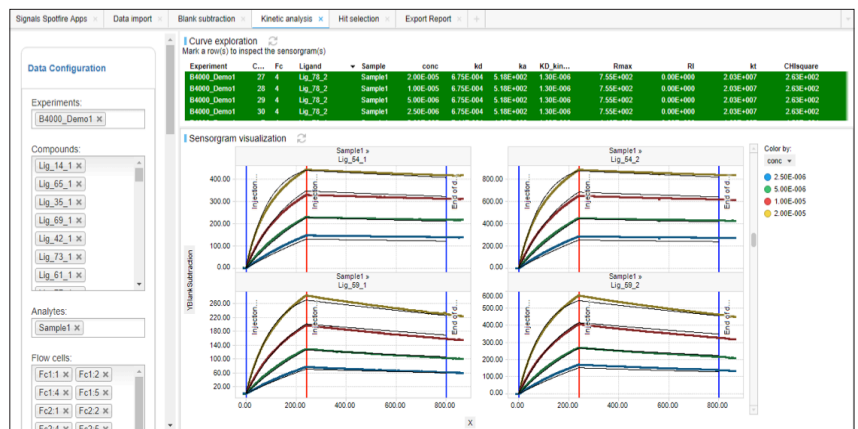


Figure 3. Kinetic Analysis App.

4. Hit Selection

- Isoaffinity Plot
- Selecting and annotating hits for export

Signals Screening - SPR Hit Selection App - contains an interactive isoaffinity plot to select hits of interest for sensorgram inspection and the ability to filter hits based on k_a , k_d , K_D or R_{max} values (left panel). Hits can be selected by typing in values, using the sliding scale, or lassoing values in the k_{on}/k_{off} isoaffinity plot. The visualizations are interactive, if a compound is selected in the Hit Exploration table or k_{on}/k_{off} isoaffinity plot, the sensorgram shows up below.

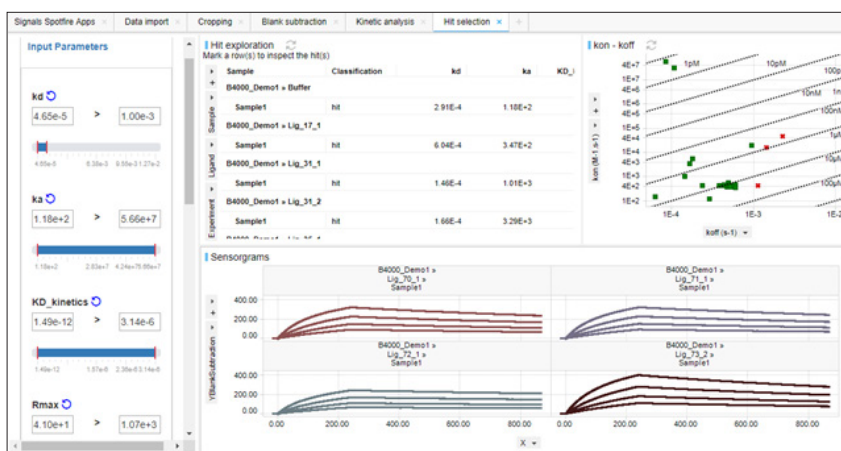


Figure 4. Signals Screening - SPR Hit Selection App.

5. Export Function

- Export sensorgrams, plots and results tables to .ppt, .pdf, .csv, .html, etc.

MAIN FEATURES AND BENEFITS

Features	Benefits
Protocol Templates- once a template is set up it can be used over and over.	<ul style="list-style-type: none"> Time savings: subsequent data analyses are a snap Data consistency: from day to day, between and across groups Data integrity: Less human configuring, less human error
One software package for multiple instruments and assay types	<ul style="list-style-type: none"> Time savings: Less time getting up to speed on multiple different instrument software packages Data accuracy: Compare results from multiple instruments and formats together to make better conclusions and reduce false positives
Graphics driven by TIBCO Spotfire®	<ul style="list-style-type: none"> Show off your data in the most meaningful way <ul style="list-style-type: none"> Integration with TIBCO Spotfire® allows for nearly limitless visualization capabilities. Heat maps, dendrograms, cluster analyses to highlight a few Interactive visualizations, clicking on one highlights data in another field
Standard Statistical Analyses driven by TIBCO Spotfire®	<ul style="list-style-type: none"> 1:1 interaction with mass transport Steady State affinity Soon- non-regenerative fitting k_a, k_d, K_D, R_{max}, k_t, x^2, stdev Sensorgrams with curve fit overlay Residuals
Reporting	<ul style="list-style-type: none"> Filter hits for export Easily export graphics and tables directly to Powerpoint, .csv, Excel, .pdf
Customization	<ul style="list-style-type: none"> If your instrument is not listed, responsive PerkinElmer software developers are available to layer it in If your instrument software is inflexible, let responsive developers at PerkinElmer bring new functionality to it Custom packages allow for integration with corporate databases and electronic notebooks