Join us in a lively exchange about molecular interactions!

SCIENTIFIC TALKS I TECHNICAL TUTORIALS I HANDS-ON EXPERIMENTS

switchSENSE TECH DAYS
April 23rd – 24th

switchSENSE® Multi-parameter biophysical analysis of molecular interactions

k_{ON} | k_{OFF} | K_D | IC_{50} | D_H | T_M | ΔG | ΔH | ΔS | k_{CAT} | K_M | U

switchSENSE® is an automated, fluorescence-based biosensor chip technology that employs electrically actuated DNA nanolevers for the real-time measurement of binding kinetics (k_{ON}, k_{OFF}) and affinities (with K_D values down to the fM range). The platform offers an automated ligand density control, which allows to conveniently discriminate between affinity and avidity in one single assay. Interactions between proteins, DNA/RNA, and small molecules can be detected with femto-molar sensitivity. At the same time, protein diameters (D_H) are analyzed with 0.1 nm accuracy and conformational changes as well as melting transitions (T_M) can be measured using minimal amounts of sample. The label-free solution-based nature of this method facilitates the higher throughput and content typical for secondary screening techniques.

dynamicBIOSENSORS' technologies also support the coupling of protein and small molecule targets to single-stranded DNA, including the recently-launched **pro**FIRE® system for the purification of DNA-protein conjugates.

The versatility of DNA functionalization enables a wide array of biomolecules to be surface immobilized, with high spatial resolution and tunable surface density. Using numerous DNA nanolever configurations, **dynamic**BIOSENSORS' publications and application notes show the broad range of applications of the **switch**SENSE® technology, including:

- RNA/DNA applications & enzymatic activity measurements
- Interaction kinetics & affinity / avidity measurements
- Sizing and conformational change analysis
- Melting & thermodynamics

Tuesday April 23rd, 2019

The switchSENSE® technology

09:30am Scientific presentation – The **switch**SENSE® technology and its applications in biophysical analysis

10:30am Hands-on DRX² device handling and **switch**SENSE® software usage

Association, Sizing and Dissocation of an Antibody Fab

In this experiment, the binding of an antibody Fab to Biotin is analyzed (k_{ON}, k_{OFF}, K_D). We start with immobilizing Biotin on the biosensor surface. Next, the association of three consecutive concentrations of the antibody Fab to Biotin is observed. During stopped flow it is possible to size the bound Fab (D_H). Finally, dissociation of the antibody Fab is recorded after association of the highest concentration.

01:30pm Hands-on DRX² experiment with Biotin-specific antibody Fab

04:00pm Q&A Session

Wednesday April 24th, 2019

Association, Sizing and Dissocation of an Antibody

In this experiment, the binding of an antibody to human Carbonic Anhydrase 1 (hCA1) is analyzed (k_{ON}, k_{OFF}, K_D). We start with immobilizing hCA1 on the biosensor surface. During stopped flow we can size the protein (D_H). Next, we observe the association of three consecutive concentrations of the antibody to hCA1. Finally, dissociation of the antibody is recorded after association of the highest concentration.

10:00am Hands-on DRX² experiment with antibody to human Carbonic Anhydrase 1 (hCA1)

Association, Sizing and Dissocation of two Antibody Fabs in parallel

In this experiment, the binding of two Fabs to their small molecule antigens is measured on the same detection spot (k_{ON}, k_{OFF}, K_D). The experiment starts with the simultaneous immobilization of the two ligands – Digoxigenin (DIG) and Biotin – on the biochip using two differently labelled DNA sequences in red and green. Finally, the dissociation of both Fabs is measured simultaneously.

01:30pm Hands-on DRX² experiment with Biotin-specific and the DIG-specific antibody Fab

The Speakers

Joanna Deek, PhD, Dynamic Biosensors, DE
Willie Jeffers, Dynamic Biosensors, US

Event Venue

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