Information Biacore Provides

Yes/No Data
» Is there binding?
» Ligand Fishing
» Did animal produce Ab?

Concentration Analysis: How MUCH?
» Active Concentration
» Assay Validation
» Antibody Production

Affinity Analysis: How STRONG?
» Quantify $K_D$
» Rank Antibodies
» Find best Ab pairs

Kinetic Rate Analysis: How FAST?
» $k_a$ $k_{on}$ (recognition)
» $k_d$ $k_{off}$ (stability)
» $K_D = k_d/k_a$
» Ab selection; wash steps
3 Cornerstones of the Technology

**SPR (Surface Plasmon Resonance) Detection System**

**Gold-DexTRAN Surfaces**

**Microfluidic System**
Precise Sample Introduction

- 4 Flow cells
- Serial Flow
- Single injection
User-Defined Biospecific Surface

- Specific Layer
- Dextran Layer
- Linker Layer
- Gold
- Glass

- Solution Behavior
- Robust & Reusable
- Variety of Sensor Chips Available
How Does SPR Detect Binding?

Sensorgram

Response

Equilibrium

Dissociation

Association

Baseline

Time

Regeneration

Plane-Polarized Light Source

Diode Array Detector

Prism

Chip

Plane-Polarized Light Source

Diode Array Detector

Prism

Chip

How Does SPR Detect Binding?
End-point and Real-time Assays

Biacore Analysis
- Label free assay
- Continuous measurement
- Kinetic information

Standard Plate Assay
- Detection of a label
- Assay development is key
- Multi-wells simultaneous
Kinetics Adds Value to Assays

• Quantification of effects of structural changes on interactions
  » Understanding of structure-function relations
  » Design of affinity pairs

• Characterization of biopharmaceutical products
  » Recombinant proteins
  » Characterization of the immune response in vaccine development/antibody production

• Development of assays based on affinity
  » Selection of reagents

• Development of purification schemes
  » Selection of affinity ligands and conditions for use
  » Study the effect on function of conditions used
Same Affinity, Different Behavior

Affinity = $K_D = \frac{k_a}{k_d} = \frac{k_{off}}{k_{on}}$
Antibody Characterization & Assay Validation

- No purification
- No labelling
- Earlier characterization
- Kinetic information

<table>
<thead>
<tr>
<th>BIACORE® Method</th>
<th>BIACORE® Time</th>
<th>Conventional Method</th>
<th>Conventional Time</th>
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<tr>
<td>Isotyping</td>
<td>Day 1</td>
<td>ELISA</td>
<td>One Day</td>
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<td>Affinity</td>
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<td>Overnight</td>
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<td>Day 3</td>
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