Surface plasmon resonance (SPR): Three decades of SPR supporting target-based drug discovery

Cytiva was the first company to commercialize SPR technology.

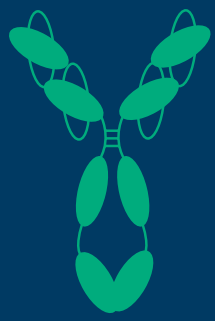
Our Biacore™ SPR platform and assays went on to become the first label-free interaction analysis system to receive FDA approval for immunogenicity testing.

SPR was first used successfully in the characterization of the antibody-based drug, Humira™, in the early 1990s.

Today, SPR is the standard for real-time detection of antibody-antigen binding and kinetics in target–based drug discovery.

1990–1999

SPR in research, large molecules, few samples.



- 1990: Abbott was the first to buy Biacore™ SPR system.
- Biopharma industry adopts SPR technology to determine antibody-antigen affinity, kinetics, and epitope binning.
- Phage display provides fully human antibody libraries.
- 1997: FDA approves first humanized mAb developed using SPR for the prevention of transplant rejection — anti-IL-2 receptor.
- Unknown molecule binding to target of interest could be identified by connecting SPR to mass spectrometry.

2000–2010

Core technology in drug discovery.

- 2003: Alefacept, the first biologics for skin disorder, used Biacore™ system for drug release to ensure patient safety and drug efficacy.
- 2008: About 50% of new medicines released use a target-based discovery strategy.
- The sensitivity and throughput of SPR enables screening of large libraries of fragments or compounds. SPR makes binding analysis of challenging targets like G protein-coupled receptors (GPCRs) possible.

2011–2020

Key technology for biosimilar analysis. Approved by regulatory authorities.

- First pharmaceutical developed through fragment-based drug discovery is launched.
- ~ 25% of the top 100 selling drugs-target are GPCRs.
- 2018: eight of the top 10 bestselling drugs worldwide are biologics.
- SPR technology included in Pharmacopeia for United States, Europe, and Japan.

cytiva.com

CY16061-06Oct21-IG