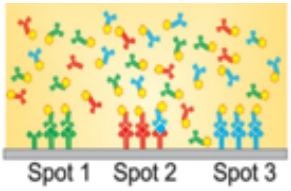
PARALLEX BIOASSAYS

Improved Multiplex Sandwich Assays with the SnapChip™ Technology

Background Multiplexed sandwich immunoassay is a powerful technique to measure multiple protein concentrations simultaneously. Its wide adoption is hampered by inadequate antibody specificity which results in cross-reactivity and false positive signals This is a known weakness of multiplexed assays that is mitigated by months of assay optimization and validation, and despite considerable effort, it's often impossible to combine related analytes in the same assay.



Multiplexed assay. Cross-reaction occurs because the detection antibodies are mixed and applied as a "**soup**" to the array. Five scenarios of cross-reactivity are possible[1]. In this example, the signal on spot 2 is wrongly amplified by the binding of the blue protein to the red capture antibody.

Solution Parallex BioAssays Inc. substituted the "detection soup" by an array of detection nanodroplets and offers a new microarray-to-microarray approach to deliver the detection antibodies precisely to their cognate spots. As a result, a cross-reaction free chip harboring an assembly of parallelized assays, physically isolated from each other.

SnapChip™ assay. The absence of mixing keeps the blue detection antibody from binding to the spot 2, thus leaving the wrong protein binding event with no consequence. Co-localization of capture and detection antibodies is an efficient approach to eliminate the cross-reaction.

Mix-&-Match – All your assays on the same chip. ***No limitation.***

- No need to split your samples; up to 500-plex (vs 5-10-plex).
- Off-the-shelves chips are available with unique target combinations!

Small Volume – Get the most of your precious samples. ***Always.***

- run an assay with as low as 20µL total.

Rapid assay development – All assays are optimized individually. ***That's it.***

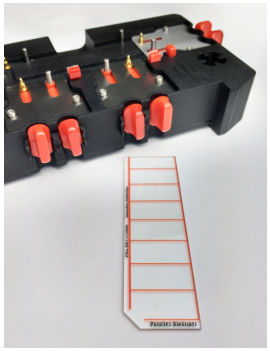
- Assemble multiplex in less than 3 weeks (vs 4-6 months)

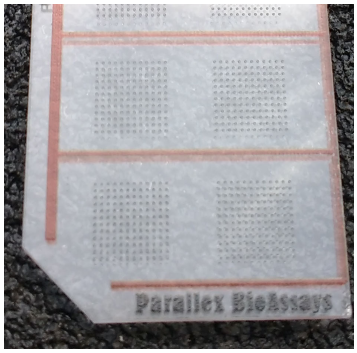
Accurate Results - Despite rigorous assays validation, no one can predict cross-reaction in samples. ***We eliminated it.***

- Reproduce the quality of a 96-well plate ELISA

New opportunities - such as the measurement of concentrations, post-translational modifications and enzyme activities ***all at once.***

- Ideal for cell signaling pathway activation studies





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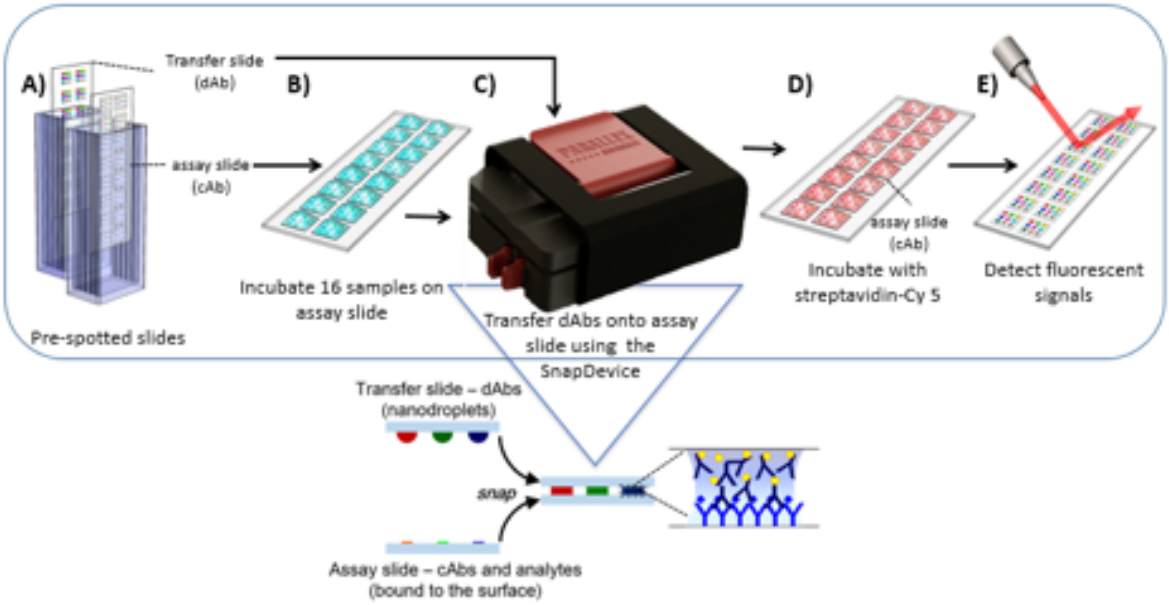
chip2chip technology™

The assay process flow is highly similar to ELISA or regular multiplexed sandwich assay on planar microarray. Indeed, only the pipetting of the detection antibodies is replaced by a “SNAP” using the *Snap Device.*

The “detection soup” is eliminated as the detection antibodies are precisely delivered to their cognate spots during this microarray-to-microarray transfer.



***SnapChip™ assay process flow*.**

A) Customers will receive a complete kit that includes two pre-spotted slides.

B) They will incubate their samples for 1h on the assay slide harboring the capture antibodies.

C) After washing and drying the assay slide, they will precisely deliver the biotinylated detection antibodies contained in droplets on the transfer slide to their cognate spots using the reusable SnapDevice™. The slides are brought together so the droplets on the transfer slide bridge with the assay slide and leave liquid behind after separation.

D) After 1h incubation and washing, the assay signal will be created by an incubation with fluorescently-labelled streptavidin and

E) the signals are revealed using a scanner with fluorescent capability.

The co-localization of the capture and detection antibodies on the SnapChip™ reproduce the conditions of common ELISA in 96-well plate. We can mix-and-match existing singleplex and measure all your proteins and PTM of interest into a unique assay.
As it’s performed on standard planar arrays, it represents an attractive solution to accelerate your research without investing in expensive equipment

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