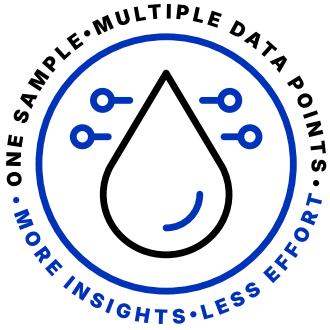
bio-techne®

Redefine the Limits of Western Blotting with RePlex



More Quantitative Data from Every Sample

Simple Western™ technology is a capillary-based immunoassay that automates and modernizes protein expression analysis, offering precise, reliable data with minimal hands-on time. The RePlex™ Assay builds on this advancement, enabling you to perform two sequential immunoassays (IA) or an IA + Total Protein Assay (TPA) within the same capillary.

RePlex is not your traditional stripping and reprobing. Because samples are covalently bound to the capillary wall, RePlex efficiently removes antibodies between cycles without loss of signal intensity, preserving protein integrity and delivering reproducible, quantitative results. With RePlex, you get more data points from every sample, save time, and confidently move your research forward.

- **More Data from Every Sample:** Analyze two targets sequentially on the same 3 µL sample in a single capillary without wasting limited sample volume.
- **Reproducible Antibody Removal:** Achieve efficient antibody removal between cycles without loss of signal intensity thanks to covalent sample bonding to the capillary wall.
- **Multi-target Detection:** Quantify expressed phosphorylated target and total target levels from the same sample for comprehensive protein characterization.
- **Confident Normalization:** Normalize with ease and precision by utilizing a second detection cycle in the same capillary dedicated to total protein analysis.
- **Fully Automated Workflow:** Simple Western systems automate every step of the RePlex process, reducing manual effort and minimizing human error.

Discover the power of MORE with RePlex.

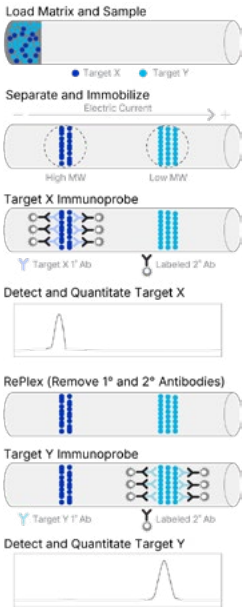
Contact our specialists to see how RePlex and Simple Western can maximize the data you get from every sample!

Find Out More

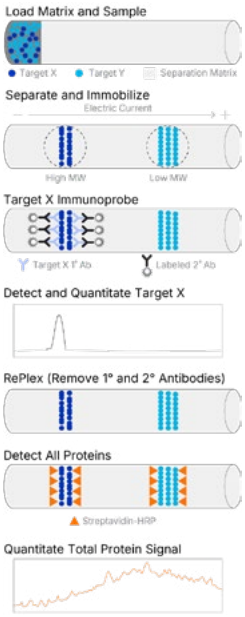
Scan the QR Code or Visit:
bio-techne.com/simplewestern

How RePlex works

Run two sequential immunoassays with RePlex



Run an immunoassay and total protein normalization assay with RePlex



Efficient Antibody Removal Between Probing Cycles

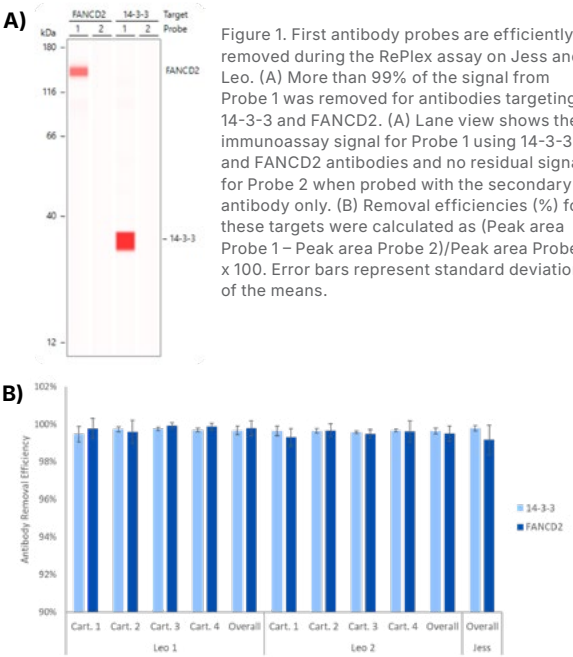


Figure 1. First antibody probes are efficiently removed during the RePlex assay on Jess and Leo. (A) More than 99% of the signal from Probe 1 was removed for antibodies targeting 14-3-3 and FANCD2. (A) Lane view shows the immunoassay signal for Probe 1 using 14-3-3 and FANCD2 antibodies and no residual signal for Probe 2 when probed with the secondary antibody only. (B) Removal efficiencies (%) for these targets were calculated as (Peak area Probe 1 – Peak area Probe 2)/Peak area Probe 1 x 100. Error bars represent standard deviations of the means.

RePlex in the Hands of Your Peers

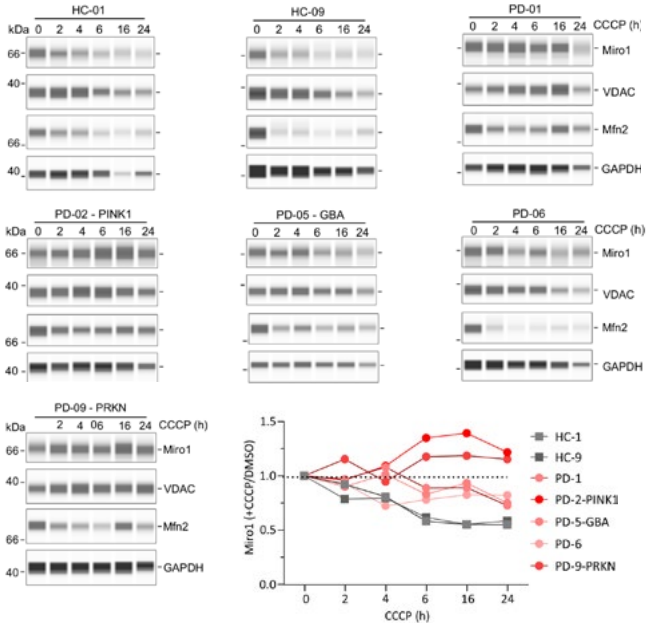


Figure 3. A study published in npj Parkinson's Disease uses RePlex to quantify Miro1, Mfn2, and VDAC levels in fibroblasts, blood cells, and iPSC-derived neurons, providing scalable assay and quantifiable score for mitochondrial-PD support biomarker development and pharmacological screening.[1] All four targets (Miro1, VDAC, Mfn2, and GAPDH) were detected in the same sample and in the same capillary using multiplex detection and RePlex. To this end, two probes were used with RePlex to allow sequential detection: in probe 1, Miro1 and VDAC primary antibodies were multiplexed and both were detected using anti-rabbit secondary antibody. In probe 2, Mfn2 and GAPDH primary antibodies were multiplexed and both were detected using anti-mouse secondary antibody. Adapted with permission (CC BY 4.0)[1]
[1]Drwesh, L., Arena, G., Merk, D.J. et al. Methodological validation of Miro1 retention as a candidate Parkinson's disease biomarker. npj Parkinsons Dis. 11, 270 (2025).

RePlex Enables Simultaneous Phospho / Total Detection in the Same Capillary

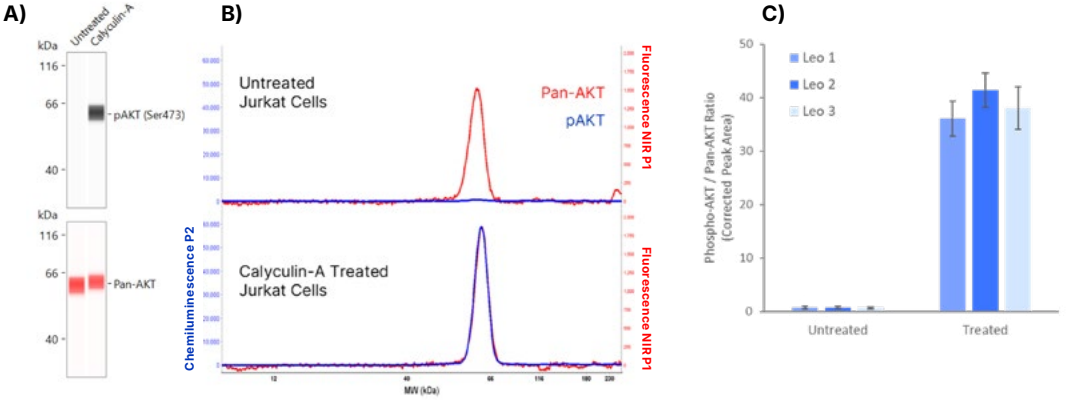


Figure 2. Total and phosphorylated isoforms of the signaling protein AKT in untreated and Calyculin-A treated Jurkat cells. A) Lane view showing total AKT detected in Probe 1 and phosphorylated AKT detected in Probe 2 of RePlex, with clear phospho-AKT upregulation in treated cells. B) Electropherograms show how the overlapping molecular weights of total AKT and pAKT can be distinguished using two detection channels (Chemi and NIR), which simultaneously confirms the specificity of each immunoassay. (C) Quantification of phospho-to-total AKT peak area ratio shows a 40-fold increase in treated samples. This study was performed across 3 Leo instruments using a single lot of reagents and split samples. The overlapping dynamic ranges of the NIR and chemiluminescence channels allow for the detection of both the highly abundant total AKT and lower abundant pAKT in the same sample since. Combining these capabilities provides relative quantitation through multiplexing without any additional sample prep, saving time, increasing accuracy, while providing a much richer dataset.

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