R&D systems™
by biotechne

The Simple Way to

Your Next *Breakthrough*

Evolve Your Protein Analysis with
Simple Western Systems

Simple Western

Protein Expression Analysis You Can Trust, Specificity You can See, in As Little As 3 Hours

Explore Automated Western Blotting

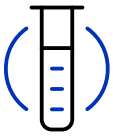
Scan the QR code or visit
rndsystems.com/simplewestern

How Can Simple Western Technology Help You?

The Simple Western Advantage

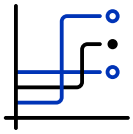
Accelerate Results with Fast, Fully Automated Capillary Immunoassays

With Simple Western Systems, it's pipette, run and done in as little as 3 hours of hands-free run time, you can be analyzing data and making decisions with your data in no time.



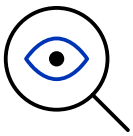
Save Your Precious Samples

Use as little as 3 µL of sample per well.



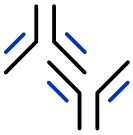
Confidence in Your Data

With highly precise, accurate and reproducible measurements offering <15% intra-assay CVs.



Detect Low Abundance Targets

Low picogram sensitivity in chemiluminescence.



Antibody Pairs Not Required

Save time and effort needed to find compatible antibody pairs, derisk downstream development.

Maximize Data from Your Samples

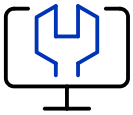
With chemiluminescence and fluorescence detection channels, rePlex, resample.

Flexible Normalization Options

With housekeeping proteins or built in total protein normalization.

Characterize Charge Isoforms with Confidence

Simple Western charge assays enable the identification of charge isoforms such as mono- or di-phosphorylated states.



Support Regulatory Compliance

With Compass for Simple Western 21 CFR Part 11 compliance.

What is Simple Western?

Simple Western™ Technology provides fully automated capillary electrophoresis immunoassays that combine high-resolution protein separation with sensitive, quantitative immunodetection in a fully enclosed system. This modern platform provides precise, reproducible protein data while eliminating the manual steps and variability of traditional Western blots.

More than a western blotting alternative, Simple Western immunoassays function as robust bioanalytical methods for screening, biomarker analysis, and lot-release testing—bringing greater consistency, confidence, and scalability to protein characterization across research, development and QC workflows.

What Can Simple Western Do for You?

- → Detect and quantify proteins, including presence/absence and precise expression changes
- → Resolve isoforms and modifications, including phosphorylation and other post-translational variants
- → Normalize targets to total protein load for accurate, reproducible comparisons
- → Gain deeper insight into protein heterogeneity through size- and charge-based separation
- → Screen compounds and quantify target levels for lead identification and optimization
- → Quantify biomarkers for discovery, translational research, QC, and lot-release applications

What Does the Data Look Like?

Simple Western assay data is processed automatically in **Compass™ for Simple Western™ Software** for you. The sample data is displayed as bands in a virtual-blot like image similar to traditional results with one big exception—not only do you get more information, you get it as soon as the assay is complete. Quantitative results such as molecular weight, signal intensity (area), % area, and signal-to-noise for each immunodetected protein are presented in the results table automatically.

For those who are more accustomed to capillary electrophoresis, we offer a electropherogram view that allows you to visualize your results with ease.

Need total protein normalization?
We've got that covered too!

FIGURE 1

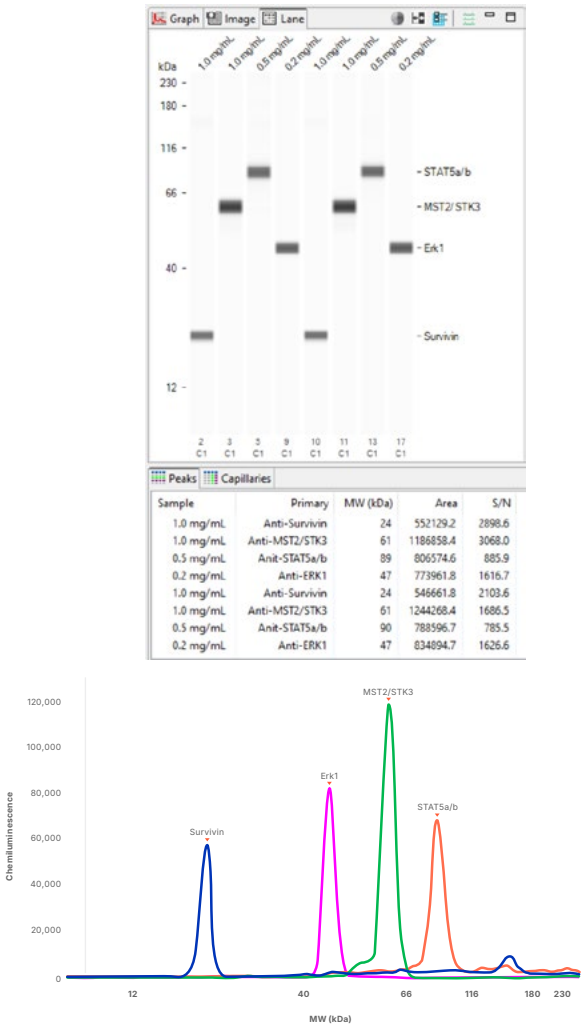


Figure 1. Multi-target detection in HeLa lysate as shown in Compass for Simple Western lane view with tabulated results (top image) and graph view with protein names for each peak (bottom image).

FIGURE 2

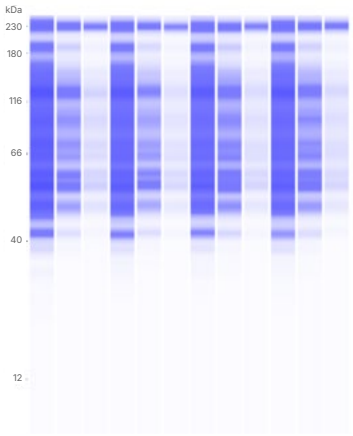
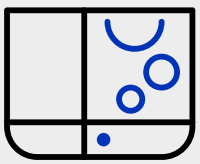


Figure 2. Total protein detection. A titration series of HeLa lysate (0.16, 0.08, and 0.04 mg/mL) demonstrates total protein signal response to lysate concentration when used with Total Protein Normalization.

Simple Western *Applications*



AAVs
Animal Models
Antibody-Drug Conjugates
Biomarke
Bioprocess
Biodistribution
Bioprocess Impurity Detection
ars
Bispecific Antibodies
Cancer Biology
CAR-T Cell Ther
Cell Lysates
Cell Signaling Pathways
Cell & Gene Therapy
Clinical Biomarkers
Clinical Trials
CRISPR/Cas9
DC50/
Extracellular Vesicles
Dose-Response Curves
Discovery
Gene Editin
strophin
Exosome
ene Therapy
Glycosylation
High-throughput Screening
Host Cell Proteins
Immune Cell The
Immuno-Oncology
Induced Proximity
Infectious Disease
iPSCs
Lead Optimization
Lead Selection
Lipid Nanop
LOD/LOQ
Mesenchymal Stem Cells
Monoclonal Antibodies
Metabolism
Muscular Dystrophy
Multi-Antigen Serology Assay
Neuroscience
Pharmacokinetics
Organoids
Patient Sa
Pharmacodynamics
Phospho/Total Isoforms
Phosphorylation

How Simple Western Works

01

Prepare Your Reagents

Reagent prep with Simple Western System isn't complicated. Pipette, mix, spin...Soon you'll be a protocol prodigy.

02

Load the Plate

After preparing the reagents, simply load the reagents and samples into a Simple Western Sample Plate.

03

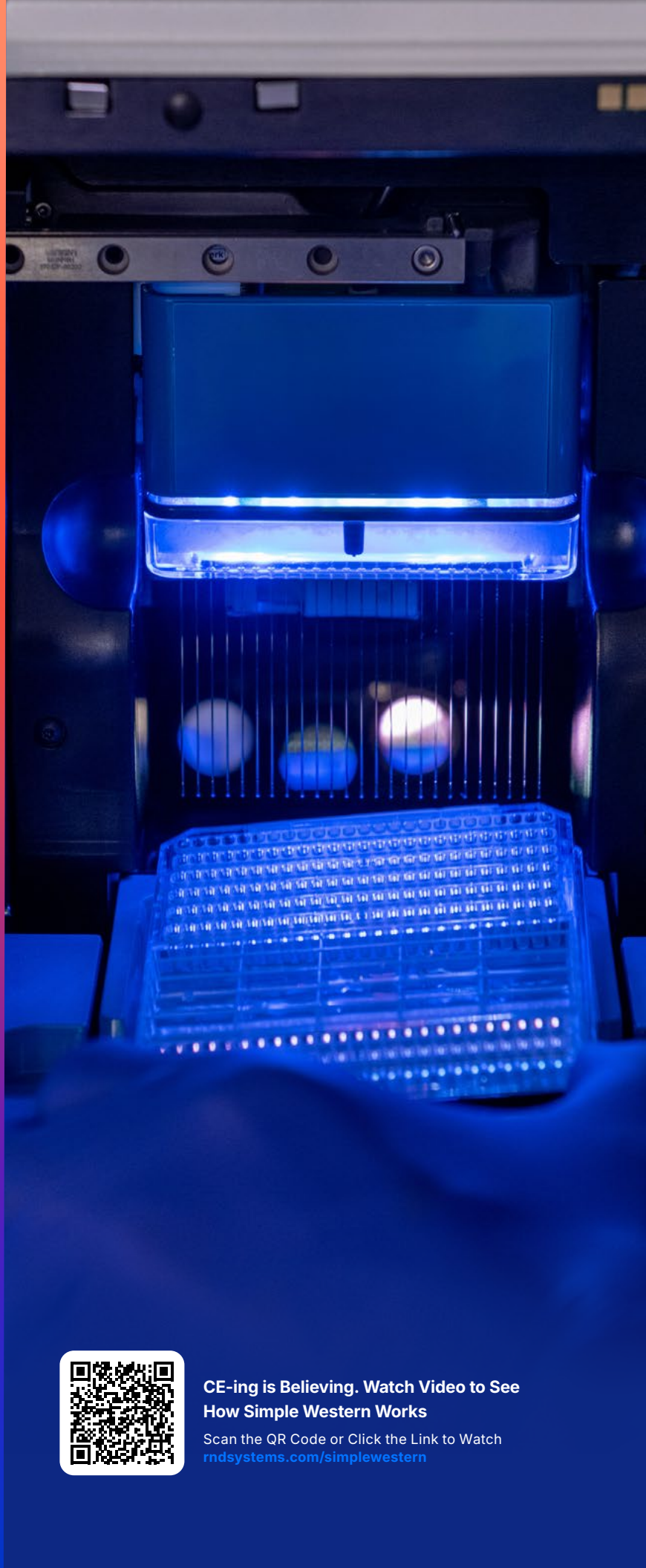
Start the Run

Place the Sample Plate, any additional Pre-filled Reagent Plate(s) needed and the capillary cartridge(s) or capilary box into the Simple Western Instrument and use Compass Software to start a run. Walk away and reclaim your time.

04

Your Simple Western System Does the Rest

Simple Western Systems analyze proteins through separation and immunoprobing in a capillary-based system. Each step of the process is precisely controlled, ensuring the highest quality results. Come back to fully analyzed, quantitative results.

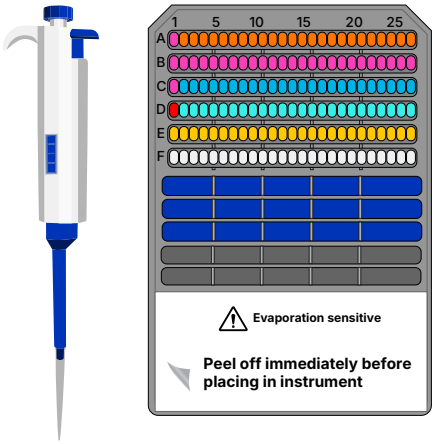


CE-ing is Believing. Watch Video to See How Simple Western Works

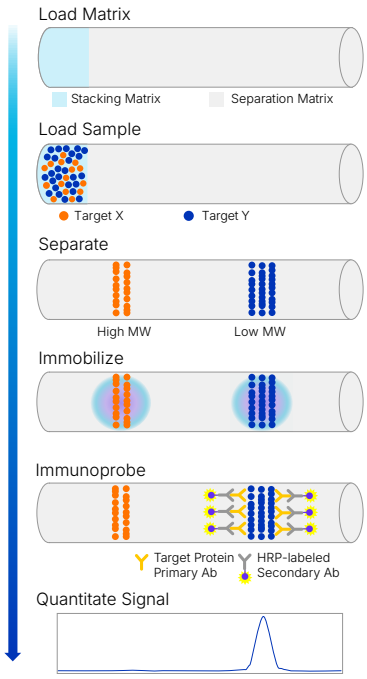
Scan the QR Code or Click the Link to Watch
rndsystems.com/simplewestern

It's pipette, run & done! Simple Western does the rest.

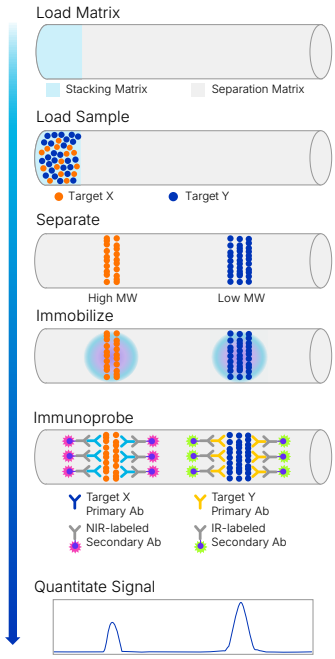
Jess/Abby Sample Plate



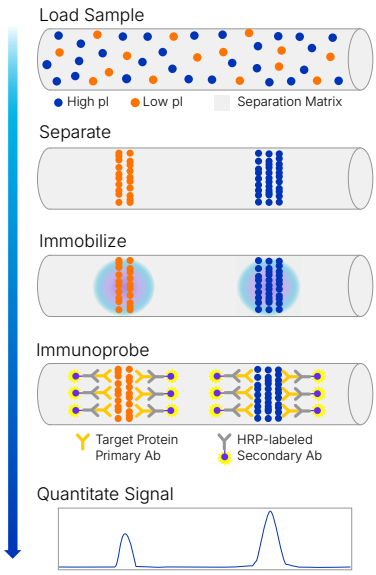
Sized-Based Assay: Chemiluminescent Detection



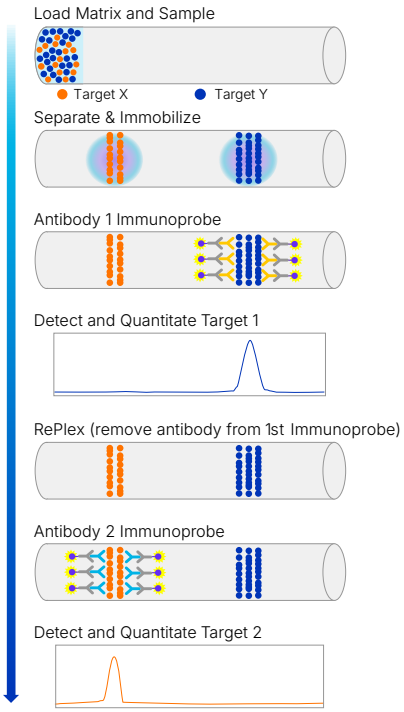
Sized-Based Assay: Fluorescent Detection



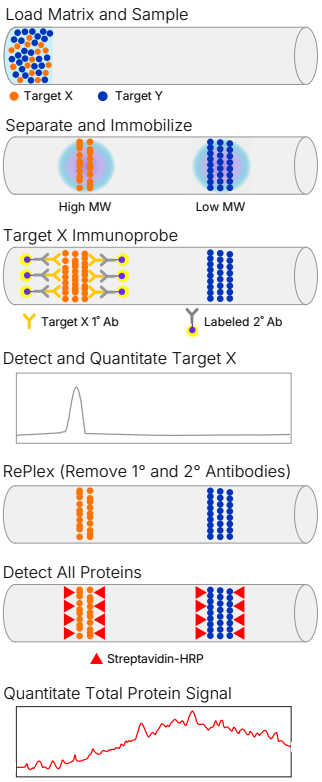
Charge-Based Assay: Chemiluminescent Detection



RePlex Assay Run Two Sequential Immunoassays



Total Protein Normalization using RePlex and Chemiluminescence Detection



Stop, Analyze, & Wow!

At the end of your run, you'll have multiple options for data viewing. For size-based runs, view the electrophoregram of the protein separation by size and intensity (Figure 4), or use the lane view option to view data similar to traditional western blotting data (Figure 3). Easily turn these qualitative views into fully quantitative tables or use standard curves to dive deeper into quantitative analysis, allowing you to compare protein expression changes and analyze protein isoforms or size changes (Table 1).

With **NanoPro 1000™ System**, distinguish phosphorylation changes in proteins using the cIEF separation. View your results in electropherogram format and take your analysis further by examining the signal intensities across the isoelectric point (pI) range (Figure 5).

Use RePlex™ assay with Leo™, Jess™ and Abby™ Systems to run two serial immunoassays within the same capillary so you can quantify expressed phosphorylated target and total target levels.

FIGURE 3

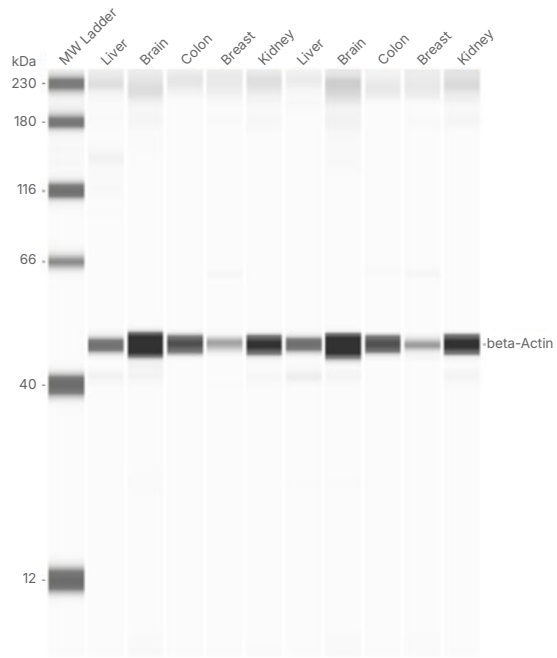


Figure 3. The virtual lane view option in Compass Software for Simple Western Technology lets you compare protein separation and band intensity, like in traditional western blotting.

Simple Western offers two flexible methods to implement total protein normalization (TPN) for accurate protein expression measurements. Choose either **TPN using RePlex and Chemiluminescence detection** or **TPN using RePlex and NIR detection** to normalize your immunoassay data so you can have the confidence you need in your analysis.

Get all your rich protein characterization data from just one sample!

FIGURE 4

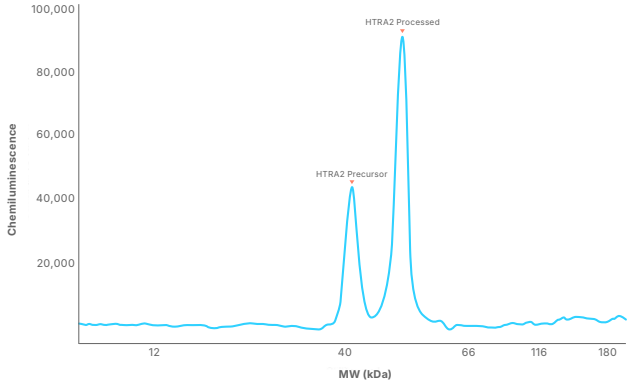


Figure 4. Electropherogram graph view of protein separation by size and intensity in Compass for Simple Western Software.

FIGURE 5

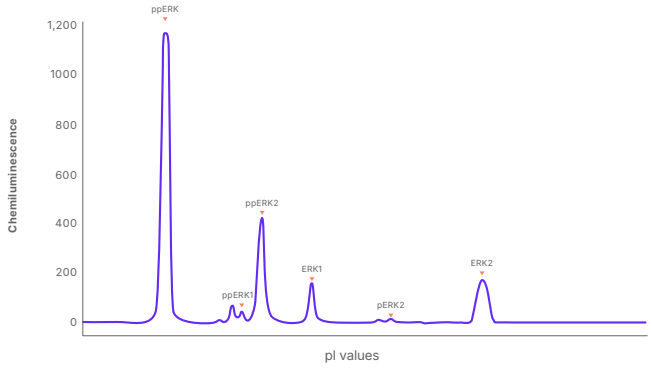


Figure 5. Electropherogram graph view of charge-based Simple Western assay data using NanoPro 1000 System. Distinguish protein isoforms like phospho-protein isoforms (shown here) separated by their isoelectric point.

TABLE 1

Sample	Primary	Cap	MW (kDa)	Height	Area	Conc	Known Conc	Width	S/N	Baseline	Channel
S1	Anti-GDF-15	C1:11	12	209633.9	3699190.7	398.4	400.0	16.6	8046.2	358.6	CHEMI
S2	Anti-GDF-15	C1:16	13	13524.4	189900.0	14.81	13.80	13.2	461.2	200.5	CHEMI
S3	Anti-GDF-15	C1:19	12	4143.8	56384.0	4.821	4.900	12.8	155.0	175.8	CHEMI
S4	Anti-GDF-15	C1:13	13	102514.1	1527275.4	138.4	133.3	14.0	3971.4	288.7	CHEMI
S5	Anti-GDF-15	C1:14	13	35671.0	509916.5	44.92	44.4	13.4	1180.5	222.8	CHEMI

Table 1. Compass for Simple Western Software automatically calculates fully quantitative results for each peak detected in your sample and even has a built-in standard curve tool to calculate absolute protein expression levels.

Simple Western
Proven, Trusted Technology

Leo

The simple way to maximize throughput for quantitative western results.

Jess

The simple way to experience powerful multiplex western results.

Abby

The simple way to faster publication ready western results.

NanoPro 1000

The simple way to reveal protein isoforms in limited samples.

Specifications

TABLE 2

Instrument Specifications

System	Jess	Abby	Leo	NanoPro 1000
	Flexible, Multiplexing	Budget-Friendly	High throughput, Quantitative	Charge Separation
Simple Western size assays	×	×	×	
Simple Western charge assays				×
Max capillaries per run	25	25	100	96
Run time*	<3 hours RePlex: 5 hours	<3 hours RePlex: 5 hours	3 hours RePlex: 5 hours	11-19 hours
Minimal sample volume required	3 µL/well	3 µL/well	3 µL/well	12 µL/well
Detection	Chemiluminescence and Fluorescence (NIR & IR)	Chemiluminescence	Chemiluminescence and Fluorescence (NIR & IR)	Chemiluminescence
RePlex	Yes	Yes	Yes	No
Dimensions (H x W x D)	0.33 m x 0.36 m x 0.52 m (1.07' x 1.15' x 1.71')	0.36 m x 0.36 m x 0.57 m (1.08' x 1.08' x 1.71')	0.75 m x 0.70 m x 0.73 m (2.5′ x 2.3′ x 2.4′)	0.84 m x 0.94 m x 0.61 m (2.76' x 3.08' x 2.00')
Weight	23 kg (50 lbs)	21 kg (46 lbs)	136 kg (300 lbs)	82kg (180 lbs)
Part number	004-650	004-680	004-550	004-109

*For chemiluminescence assays only

TABLE 3

Performance Specifications

	Jess & Abby			Leo			NanoPro 1000
Description	**Chemiluminescence**	**Fluorescence**	**Total Protein with Chemiluminescence**	**Chemiluminescence**	**Fluorescence**	**Total Protein with Chemiluminescence**	**Immunoassay Charge**
Sample Required⁺	0.3–1.2 µg	2-4 µg	0.3–1.2 µg	0.3-1.2 µg	2-4 µg	0.3-1.2 µg	0.3-1.2 µg
Size Range	Molecular weight (MW) ladders range from 2–440 kDa			Molecular weight (MW) ladders range from 2–440 kDa			Widest gradient ranges from pI 3 to pI 10
Sizing CV	<10%			<10%			<10%
Intra-assay Peak Area CV	<15%			<15%[1]			<20%
Inter-assay Peak Area CV	<20%[3]	<20%	N/A	<15%[2]	<15%[2]	N/A	<20%
Intra-assay Quantitation CV	<20%[4]	<20%	N/A	<10%[4]	<20%	N/A	<20%
Inter-run Quantitation CV	N/A	N/A	N/A	<10%[4]	N/A	N/A	N/A
Inter-instrument Quantitation CV	N/A	N/A	N/A	<10%[4]	N/A	N/A	N/A
Resolution (± percent difference in MW)	± 10% for MW >20KDa ± 15-20% for MW <20KDa			± 10% for MW >20KDa ± 15-20% for MW <20KDa			± 1 pI units
Dynamic Range	3-4 logs	3-4 logs	2-3 logs	3-4 logs	3-4 logs	2-3 logs	3 logs
Sensitivity	Low pg	High pg	ng	Low pg	High pg	ng	low pg

⁺Sample Required is 3 µL/well for Leo, Jess, and Abby systems, and 12 µL/well for NanoPro 1000 system.
[1] Based on model assay system with signal to noise ratio > 250, n= 96, Leo uses cartridge correction.
[2] Based on model assay system, signal to noise ratio >250, n=3, Leo uses cartridge correction.
[3] Inter-assay CV is with system control
[4] %CV of calculated concentration generated using a standard curve for all samples above LLOQ. Leo uses cartridge correction.

R&D systems by bio-techne

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