

# NanoPro 1000

Characterize cell signaling in your smallest samples

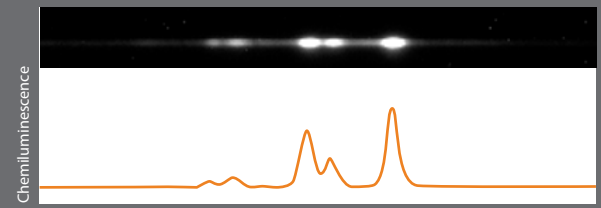


# Technology

## A NEW TAKE ON IMMUNOASSAYS

The NanoPro 1000 is a capillary-based nano-immunoassay platform. As in Western blot analysis, proteins from complex biological samples are separated, immobilized, and probed with antibodies. However, the NanoPro 1000 uses isoelectric focusing (IEF) to resolve the various phosphorylation states of signaling proteins.

NanoPro 1000 assays are fully automated, and all steps are performed in a single capillary. A precision robot moves capillaries to the sample, reagent, incubation, and separation chambers as dictated by the assay protocol.



Chemiluminescent image of separated proteins in capillary and corresponding electropherogram.

### The Process

#### LOAD

The capillary is filled with a 400 nL mixture of sample, fluorescently labeled pI standards, and ampholytes.

#### SEPARATE

Voltage is applied across the capillary to drive the IEF separation. Individual proteins and pI standards concentrate at their isoelectric points, and the position of each standard in the capillary is recorded.

#### IMMOBILIZE

The capillary is exposed to UV light, activating the proprietary linking chemistry and locking the separated protein isoforms to the capillary wall.

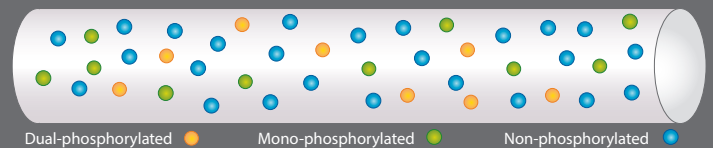
#### IMMUNOPROBE

The capillary is rinsed and immunoprobed for specific proteins. Luminol and peroxide are added to generate chemiluminescent light, which is captured by a CCD camera.

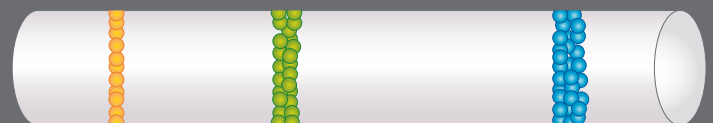
#### QUANTITATE

The digital image is analyzed and quantitative results are presented in the software.

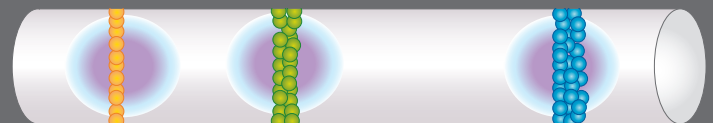
#### LOAD



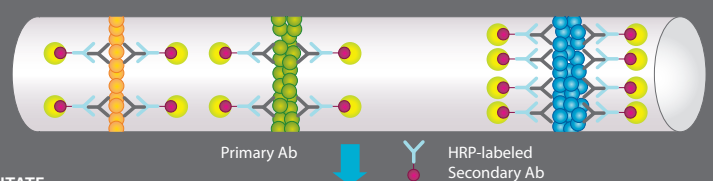
#### SEPARATE



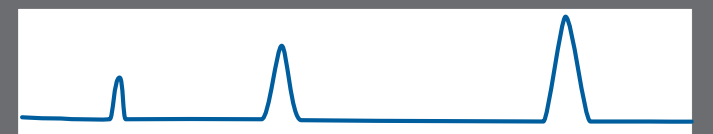
#### IMMOBILIZE



#### IMMUNOPROBE



#### QUANTITATE



# Revolutionize

## phosphoprotein signaling studies

ProteinSimple's NanoPro 1000 provides exciting new insights into protein function and cell signaling. Where traditional protein analysis techniques require thousands to millions of cells, the NanoPro 1000 can analyze as few as 25 cells per assay.

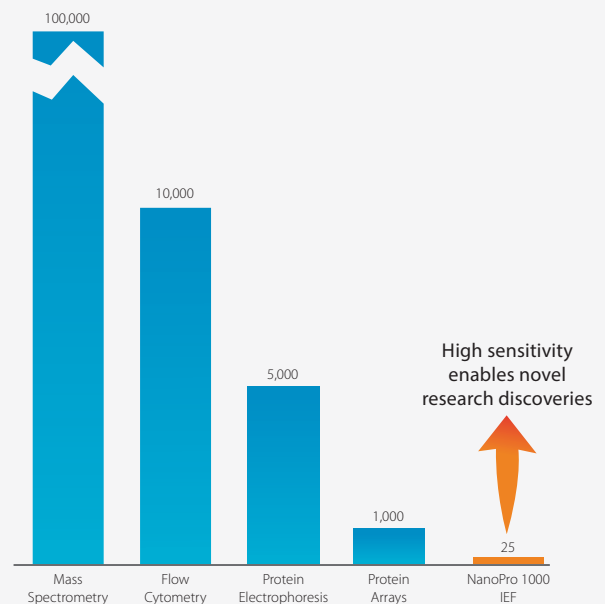
Direct characterization of signal transduction proteins can now be performed in precious and extremely small samples such as:

- Primary cells
- Isolated stem cell populations
- Fine-needle tumor aspirates
- Micro-biopsies
- Laser Capture Microdissection (LCM)

Critical details about intracellular control pathways can be captured from small samples of primary cells and tissue. Even low abundance proteins can be characterized in limited cell populations.

### Transform Your Research

- **Conserve precious samples** — characterize proteins directly in limited cellular subpopulations
- **Detect multiple phosphorylation states with a single antibody** — measure subtle shifts in phospho-isoform distributions using a pan-antibody
- **Improve data quality** — precise, automated assays and digital data analysis provide more accurate and reproducible results
- **Increase sample throughput** — walk-away automation adds convenience for up to 96 samples
- **Save time** — eliminate time-consuming manual processes

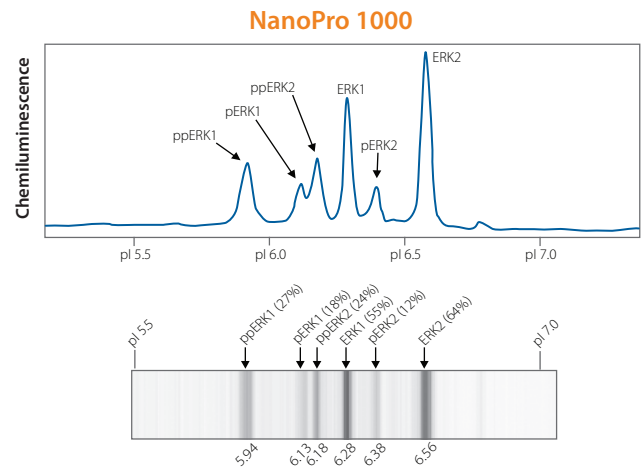
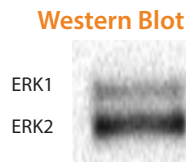


# Reveal

previously undetectable information

## Refresh Your Point of View: Novel Applications

Conventional Western blot results are variable, semi-quantitative, and provide limited isoform identification. ERK1 and ERK2 appear as two poorly resolved bands using Western blot analysis. In contrast, the NanoPro 1000 resolves six bands: dual, mono, and non-phosphorylated isoforms of ERK1 and ERK2.



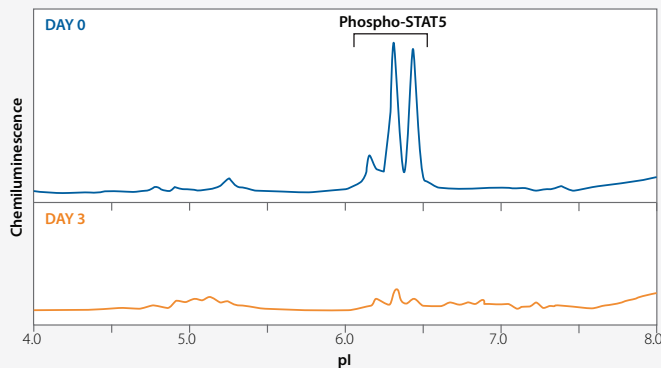
NanoPro 1000 assays uncover fundamental mechanisms controlling cell proliferation and cell death, accelerate the development of new therapeutics, and help identify new prognostic and diagnostic disease biomarkers by enabling:

- Oncoprotein activation studies
- Detailed phospho-isoform profiling
- Quantification of individual post-translational modifications
- Discovery of kinase inhibitor drug effects

The unique capillary-based immunoassay format is highly quantitative and extremely sensitive, enabling the accurate detection and measurement of protein isoforms.

## Kinase Inhibitors in Xenograft Tumor Models

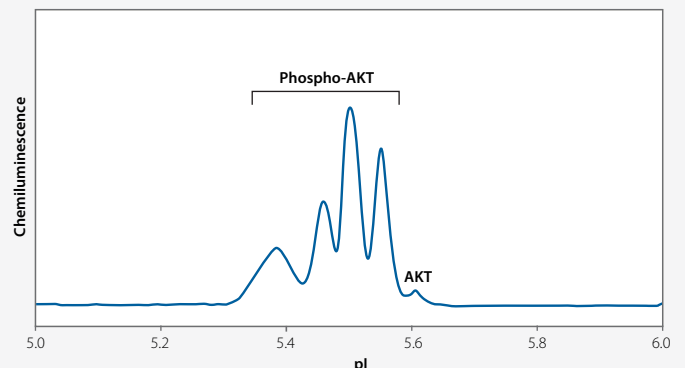
Traditional techniques for studying drug actions in mouse models require numerous animals to generate sufficient tissue for analysis. The ability of the NanoPro 1000 to analyze fine-needle aspirates of tumor xenografts ultimately reduces the number of mice required (and related costs), while increasing data consistency.



**FNA Analysis of Gleevec® Inhibition of STAT5 Phosphorylation.** The data show almost complete suppression of STAT5 phosphorylation by day three of Gleevec treatment in a single mouse. Data courtesy of Stanford University, School of Medicine, Palo Alto, CA.

## Single-Assay Detection of AKT Phosphorylation

The AKT pathway plays a pivotal role in cell proliferation and survival, and is deregulated in many cancers. Because AKT isoforms are separated in the capillary, a single antibody is used for detection. The resulting phospho-isoform profiles provide a powerful new way to probe signal transduction processes.



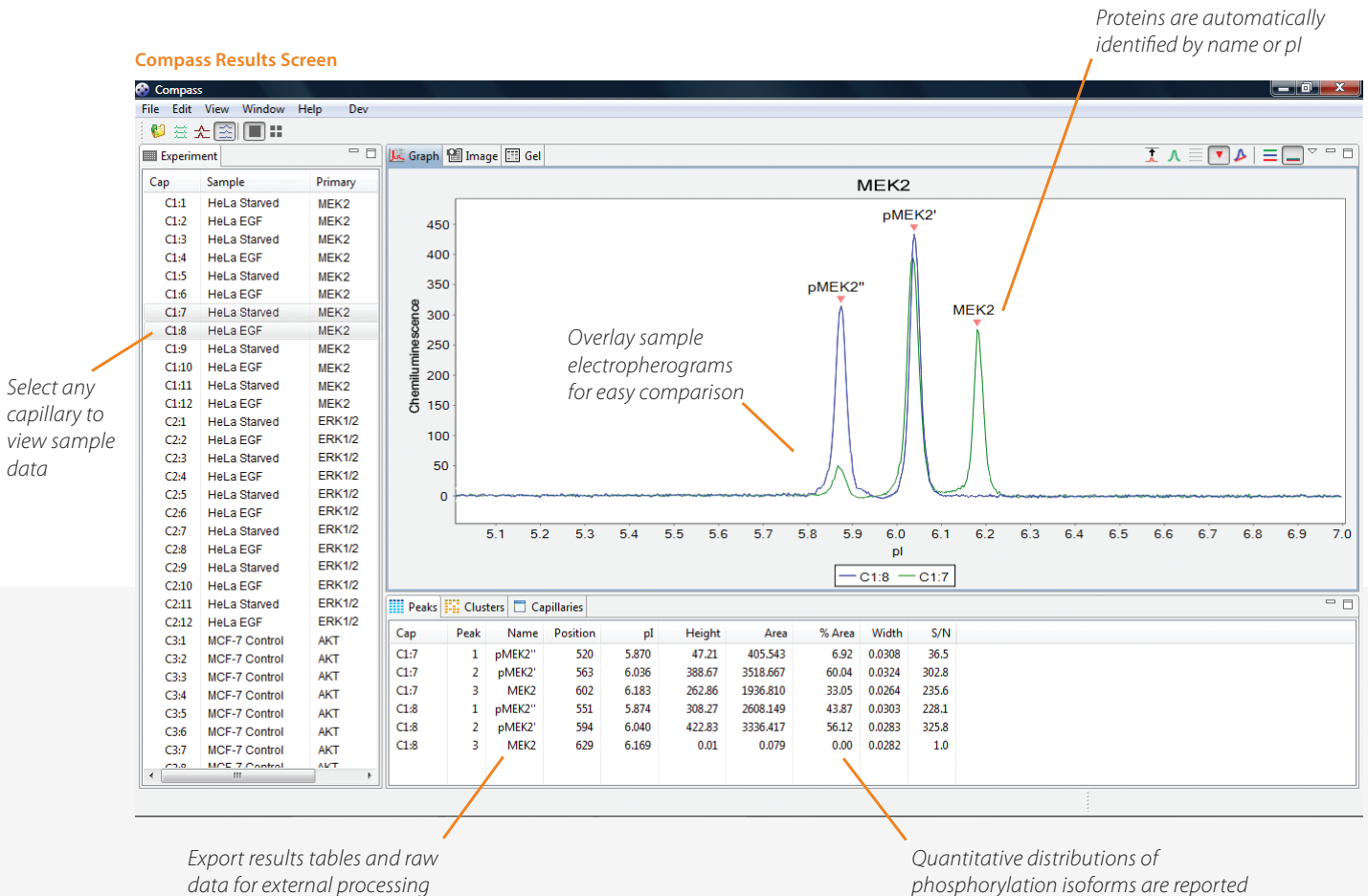
**Characterization of AKT Phosphorylation.** Analysis of proliferating MCF-7 human breast adenocarcinoma cells reveals multiple phosphorylated AKT isoforms, with a very low level of non-phosphorylated AKT.

# Envision

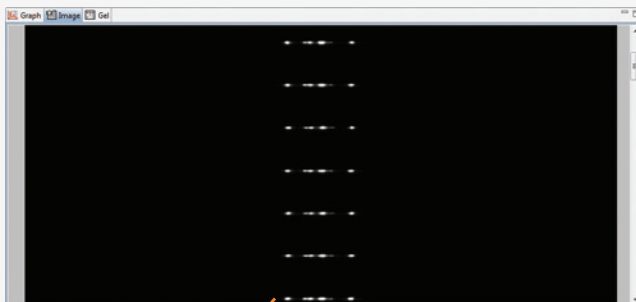
## data that provide new insights

The NanoPro 1000 generates much more precise and accurate data than traditional techniques, and its Compass software translates those data into easily understandable, useful results.

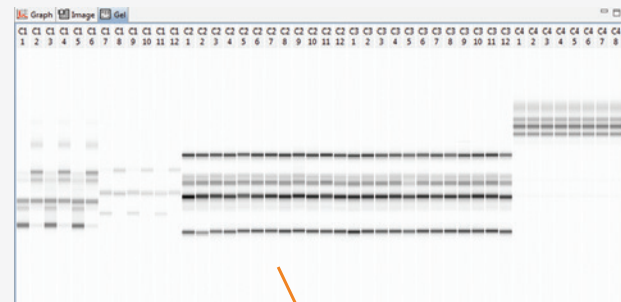
- Isoform percent totals for each protein are automatically calculated
- Data can be viewed in three formats: graph, digital capillary photo or virtual gel-like image
- IEF separations are recorded — videos can be viewed at any time
- Results tables and data views can be easily copied into reports and presentations



### Image View



### Gel View



# Specifications and Ordering Information

## Specifications

Specification	Details
Dimensions	84 cm H x 94 cm W x 61 cm D (33" H x 37" W x 24" D)
Weight	82 kg (180 lbs)
Power Requirements	100–230 V AC, 50/60 Hz
Power Consumption	205W
Operating Humidity Range	15–70% relative, non-condensing
Operating Temperature Range	15–25 °C (59–77 °F)
Sample Cooling	3 °C
Maximum Samples per Run	96
Capillary Length	5 cm
Capillary Volume	400 nL
Capillary Internal Diameter	100 µm
Certifications	CE

## Ordering Information

Part #	Description
004-109	<b>NanoPro 1000-</b> Includes instrument, computer, Windows operating system, Compass software (10-seat license), and one year warranty
004-411	NanoPro1000 IQ/OQ Validation Service
001-499	Authorization Server. Used in conjunction with the Compass Software Access Control feature (10-seat license). Supports Compass Software 21 CFR Part 11 data security requirements when using Simple Western instruments



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