The Protein Lysate Microarray (LMA)

- a rapid systematic profiling of multiple proteins

Protein lysate microarray technology, or reverse-phase protein microarray, allows proteomic profiling of a large number of biological samples with specific antibodies. Cells are lysed and printed on nitrocellulose-coated microarray slides to be stained with a specific antibodies. The slides are also counterstained with Sypro Ruby in order to normalize total protein levels.

With the LMA, you can analyze up to 9000 lysates on one slide with your favourite antibody. Since several slides can be printed from one analyte plate, LMA provides you with countless opportunity to detect multiple biological read-outs from a single high-throughput screen.

**Readout**
- Multiple slides enable many readouts from a single screen
- Specific protein markers detected with antibodies
- Fluorescent detection

**All-in-one assays**
- Proliferation
- Apoptosis
- Cell cycle
- Epithelial-to-mesenchymal transition
- Specific targets & pathways

**Applications**
- Chemical library screening
- RNAi
- Target validation
- High-throughput Western Blotting
Protein lysate microarray screening

Example 1: LMA analysis for identification of microRNAs regulating estrogen receptor in breast cancer cells.

Figure 1. Protein lysate microarray analysis identifies miRNAs regulating estrogen receptor (ERα) in breast cancer cell lines. A workflow of lysate microarray screen. Breast cancer cells were transfected with pre-miR™ miRNA library (Ambion) containing 319 pre-miRs. After 72 h incubation, the cells were lysed, printed onto nitrocellulose-coated microarray slides, and stained with a specific antibody for ERα. Slides were counterstained with Sypro Ruby to normalize the total protein amount. A representative image of the array, stained with ERα antibody and Sypro Ruby. Spots for miR-206 samples are indicated with arrows. Leivonen et al. Oncogene (2009) 28(44):3926-36.

Example 2: Visualization of multiple read-outs from LMA screens in five breast cancer cell lines.

Figure 2. Graphical representation of LMA results. After normalization of the screening results to total protein counterstaining, the hits can be easily visualized by staining-vise grouping as shown in the example. This enables a rapid overview of the results and makes comparison of the siRNA / microRNA / compound effects easy.

We provide customized solutions based on high-throughput screening and protein lysate microarray (LMA) printing. Please contact us to discuss solutions that would suit your needs!

Our valued customers and partners include

Bayer HealthCare  Roche  GSK

Additional information

Dr. Kirsi-Marja Oksman-Caldentey  Dr. Sampo Sammalisto  Rami Mäkelä
Technology Manager  Customer Manager  Research Scientist
Tel. +358 20 722 4459  Tel. +358 20 722 4474  Tel. +358 20 722 2819
kirsi-marja.oksman@vtt.fi  sampo.sammalisto@vtt.fi  rami.makela@vtt.fi

VTT TECHNICAL RESEARCH CENTRE OF FINLAND