

# Access the human proteome on a microarray scale

## ProtoArray® Human Protein Microarray v5.0

- Study over 9,000 disease-relevant proteins from a broad range of gene families
- Detect femtomole levels of highly functional protein using a variety of sample sources
- Identify proteins immediately and access sequence-verified Gateway® clones for rapid follow-up validation studies
- Analyze and manage data with an advanced software package

### A high-content human protein microarray with new features and controls

The ProtoArray® Human Protein Microarray v5.0 is an advanced, high-content, functional protein microarray (Figure 1) that enables you to scan thousands of proteins for biochemical interactions in as little as one day. Version 5.0 of the ProtoArray® Human Protein Microarray contains more than 9,000 disease-relevant human proteins representing multiple important protein classes (Table 1). Proteins are arrayed in duplicate on a 1 x 3 inch ultrathin nitrocellulose-coated slide with a 22 x 22 format that allows room for additional custom content and controls. Control features for v5.0 include:

- Positional mapping control agent to enable radiolabeled small-molecule profiling assays
- Positive controls for ubiquitination and sumoylation studies
- Control content to facilitate an optimized data normalization algorithm for biomarker discovery
- Human IgA and anti-human IgA gradients to allow for profiling of IgA serum antibodies

The purified human proteins are printed in a dust-free, temperature- and humidity-controlled environment to maintain consistent quality. The arrays are printed by an automated process on an instrument that is extensively calibrated and tested for printing ProtoArray® Human Protein Microarrays.

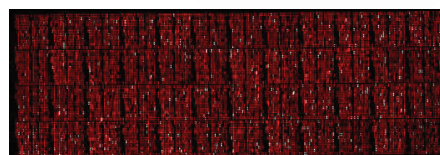


Figure 1. Image of more than 9,000 human proteins after probing of the ProtoArray® Human Protein Microarray v5 with Alexa Fluor® 647-labeled anti-GST.

Table 1. ProtoArray® v4.1 content and distribution by class.

Class	No. on array
Protein kinases (unique)	268
Protein kinases (including domains, splice variants, and mutants)	776
Transcription factors	328
Membrane proteins	2,635
Nuclear proteins	2,252
Signal transduction	1,526
Secreted proteins	192
Cell communication	1,687
Metabolism	3,862
Cell death	505
Protease/peptidase activity	219

Numbers are based on Gene Ontology classification and are subject to change. For a complete list of array proteins, visit [www.invitrogen.com/protoarray](http://www.invitrogen.com/protoarray).



## Maximum protein functionality

The ProtoArray® Human Protein Microarray is designed for maximum protein quality and functionality. Proteins are derived from sequence-validated open reading frames selected from Invitrogen's extensive Ultimate™ ORF Clone Collection.\* These full-length proteins are expressed as N-terminal GST fusion proteins using a baculovirus-based expression system. All proteins are purified under nondenaturing conditions and printed at 4°C to preserve native structure and functionality.

\* The Ultimate™ Human and Mouse ORF Clone Collection is the first and only clone resource to offer full-insert sequenced clones in a Gateway® vector. To learn more, visit [orf.invitrogen.com](http://orf.invitrogen.com).

Each slide is labeled with a unique bar code for easy tracking. The nitrocellulose-coated slide provides high protein stability and yields sensitive results for discovery studies, such as immune response biomarker profiling, small-molecule screening, and purified protein profiling.

## Broad range of discovery applications

The ProtoArray® Human Protein Microarray platform enables a wide range of discovery applications (Figure 2), including:

- Profiling of radiolabeled or fluorescently labeled molecules for target identification or selectivity
- Rapid discovery of disease markers for more than 9,000 antigens specific to a variety of cancers, autoimmune, and other diseases

- Mapping of protein–protein interactions important in biochemical pathways
- Identification of kinase and ubiquitin ligase substrates for target discovery and validation
- Antibody specificity profiling for research and therapeutic antibody development

## Rapid and efficient data analysis

ProtoArray® Human Protein Microarrays can be easily read with most commercially available fluorescent microarray scanners (for a list of compatible scanners, please visit [www.invitrogen.com/protoarray](http://www.invitrogen.com/protoarray)).

ProtoArray® Prospector v5.2 software is a free data analysis tool that generates a list of positive interactions between the probe of interest and the immobilized proteins on the array. New features of ProtoArray® Prospector v5.2 software include:

- Optimized report output and data normalization
- New algorithms for analysis of small-molecule profiling data
- Auto-update feature

You can download ProtoArray® Prospector v5.2 at [www.invitrogen.com/protoarray](http://www.invitrogen.com/protoarray). Once you have identified your proteins of interest, you can obtain the corresponding ready-to-use Ultimate™ ORF clones and get started on your downstream validation studies.

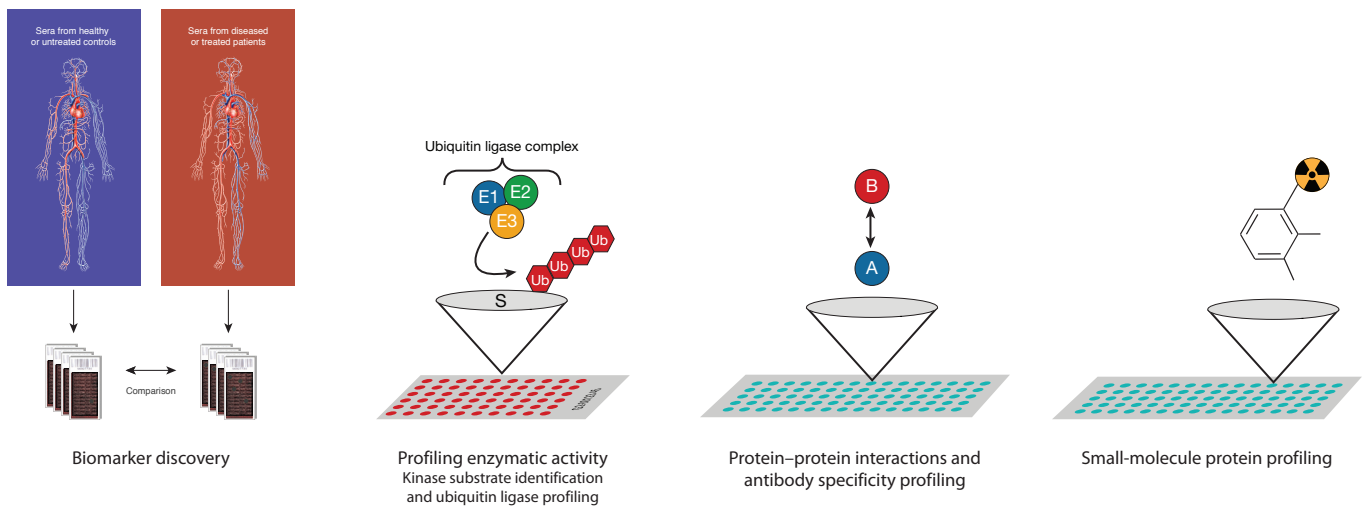


Figure 2. Range of ProtoArray® applications.

## Ordering information

Product	Cat. no.
ProtoArray® Control Protein Microarray v5.0	PA10057
ProtoArray® Human Protein Microarray v5.0	PAH052501
ProtoArray® Human Protein Microarray v5.0, 20-pack	PAH0525020
ProtoArray® Human Protein Microarray v5.0 PPI Kit (for biotinylated proteins)	PAH0525011
ProtoArray® Human Protein Microarray v5.0 PPI Kit (for V5-tagged proteins)	PAH0525013
ProtoArray® Human Protein Microarray v5.0 KSI Kit	PAH0525065
ProtoArray® Blocking Buffer Kit	PA055
10X Synthetic Block	PA017
Array Control Protein	451096
Alexa Fluor® 647 Anti-V5 Antibody for ProtoArray®	451098
Alexa Fluor® 647 goat anti-human IgM (μ chain)	A21249
Alexa Fluor® 647 goat anti-human IgG (H+L)	A21445



## Protein Analysis

### References

1. Auger, I. et al. (2008) New autoantigens in rheumatoid arthritis: screening 8268 protein arrays with RA patients' sera. *Ann Rheum Dis* (Epub ahead of print).
2. Schnack, C. et al. (2008) Protein array analysis of oligomerization-induced changes in alpha-synuclein protein-protein interactions points to an interference with Cdc42 effector proteins. *Neuroscience* 154:1450–1457.
3. Gunawardana, C. et al. (2008) Identifying novel autoantibody signatures in ovarian cancer using high-density protein microarrays. *Clin Biochem* (Epub ahead of print).
4. Gnjatic, S. et al. (2008) Seromic analysis of antibody responses in non-small cell lung cancer patients and healthy donors using conformational protein arrays. *J Immunol Methods* (available online).
5. Singh, J. et al. (2008) DcpS as a therapeutic target for spinal muscular atrophy. *ACS Chem Biol* 3:711–722.
6. Satoh, J. et al. (2008) Protein microarray analysis identifies human cellular prion protein interactors. *Neuropathol Appl Neurobiol* 35:16–35.
7. Marina, O. et al. (2008) A concentration-dependent analysis method for high density protein microarrays. *J Proteome Res* 7:2059–2068.
8. Schnack, C. et al. (2008) Identification of novel substrates for Cdk5 and new targets for Cdk5 inhibitors using high-density protein microarrays. *Proteomics* 8:1980–1986.
9. Li, Z. et al. (2008) Cdc34p ubiquitin-conjugating enzyme is a component of the tombusvirus replicase complex and ubiquitinates p33 replication protein. *J Virol* 82:6911–6926.
10. Roche, S. et al. (2008) Autoantibody profiling on high-density protein microarrays for biomarker discovery in the cerebrospinal fluid. *J Immunol Methods* 338:75–78.