

# The Most Comprehensive Source of Recombinant Human Proteins

More assays, better assays



17,000 Over-expressed cell lysates of human proteins

6,000 Purified human proteins produced in HEK293 cells

6,000 Heavy labeled proteins as Mass Spec standards

Reverse-phase protein array (RPPA)

# 17,000 Human Proteins as Over-expression Lysates

## Full length human proteins for functional studies and antibody validation

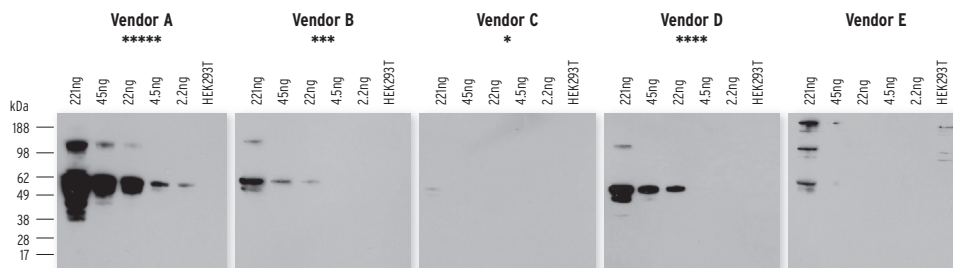
### FEATURES

- 17,000 over-expression lysates of full length human proteins
- Expressed in HEK293T cells
- C-terminal Myc-DDK\* tag for easy detection and isolation
- In RIPA buffer with no SDS to best preserve protein activity

### APPLICATIONS

- Positive controls in Western, immunoprecipitation, etc.
- Standards in ELISA and other assays
- Protein function study
- Reverse phase protein arrays

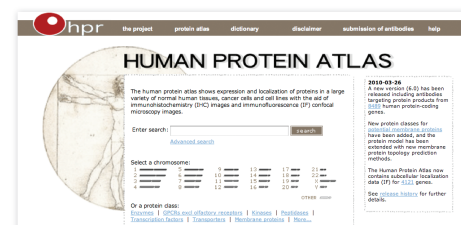
#### Application data #1: Antibody validation



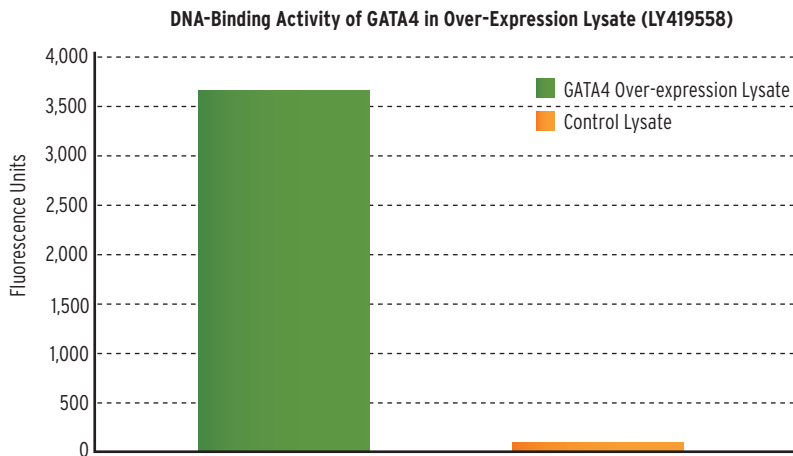
Five commercial antibodies against human P53 were evaluated in Western blot experiments with P53 over-expression cell lysate. P53 protein level in cell lysate was pre-determined using a purified GST-Myc-DDK standard. Lysate was serially diluted before SDS-PAGE and immunoblotting. Antibody quality and star rating is based on P53 protein detection level.

“The Human Protein Atlas project adopted OriGene over-expression lysates and significantly increased our polyclonal antibody Western blot success rate. We are very happy with the results.”

–Prof Mathias Uhlen, Royal Institute of Technology (KTH), Stockholm, Sweden

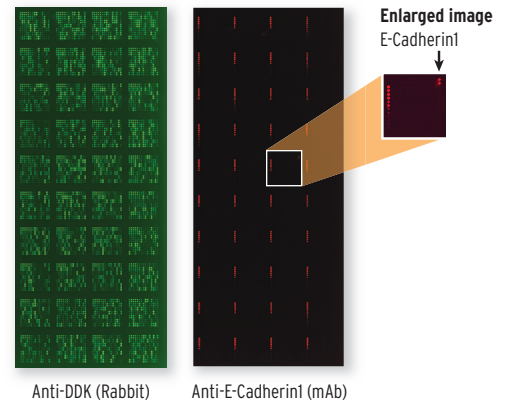
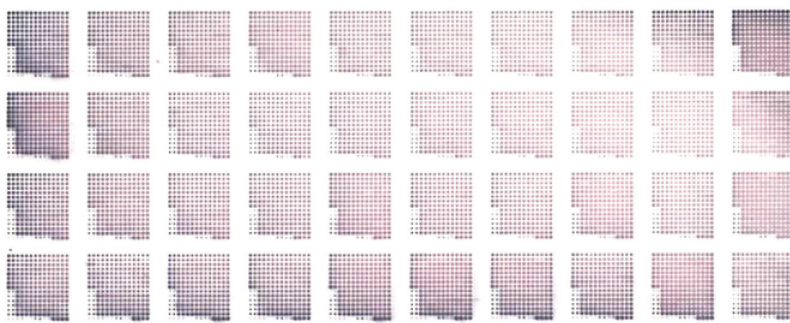


## Application data #2: Protein activity assay – GATA4 (LY419558)



DNA-binding activity of GATA4 was measured in OriGene's over-expression lysate LY419558 and a control lysate. Three microliters of each lysate was tested with a transcription factor binding assay utilizing GATA4-specific DNA sequences. The high level of activity observed in the over-expression lysate compared to the control lysate demonstrates that the expressed GATA4 is biologically active in the lysate.

## Application data #3: Protein arrays made from over-expression lysates

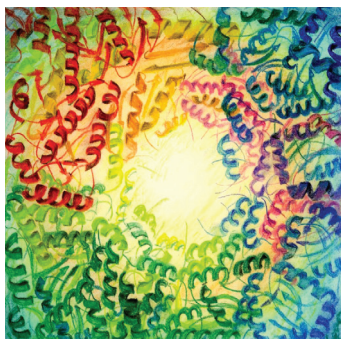


Using OriGene antigen microarray chip technology to decode antibodies that were generated by whole cell immunization

OriGene's high density protein array made with more than 10,000 unique over-expression lysates, printed in duplicate, with controls. Such protein arrays can be used in antibody specificity validation, protein-protein interaction, and for auto-antibody profiling.

# 6,000 Purified Human Proteins

Expressed in HEK293 Cells



## FEATURES

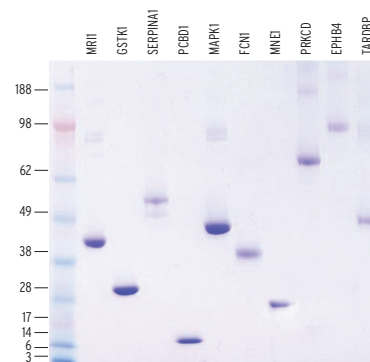
- Produced with TrueORF cDNA clones
- 6,000 full length human proteins
- Expressed in HEK293 cells
- Optimal preservation of protein structure, post-translational modifications and functions
- Large scale production available

## COMPARISON OF DIFFERENT EXPRESSION SYSTEMS

	Mammalian	Yeast	Insect cells	E. coli
Protein folding and purification	Optimal	Poor	Low	Poor
Post-translational processing	Yes	Low	Low	No
Authenticity & Bioactivity	Native and active	Poor	Poor	Very poor

## APPLICATIONS

- Native antigens for optimized antibody production
- Positive controls in antibody based immunoassays, such as ELISA
- Protein-protein interaction
- In vitro biochemical assays and cell-based functional assays



**Buffer and Storage:** 10% glycerol, 100 mM glycine, 25mM Tris-HCl, pH 7.3. Store at -80°C.

**Purification:** The over-expressed protein was purified using an anti-DDK affinity column

**Tags:** C-terminal Myc-DDK

**Purity:** > 80% as determined by SDS-PAGE

**Concentration:** > 50 ug/ml

**Endotoxin:** < 0.1EU/ug of protein

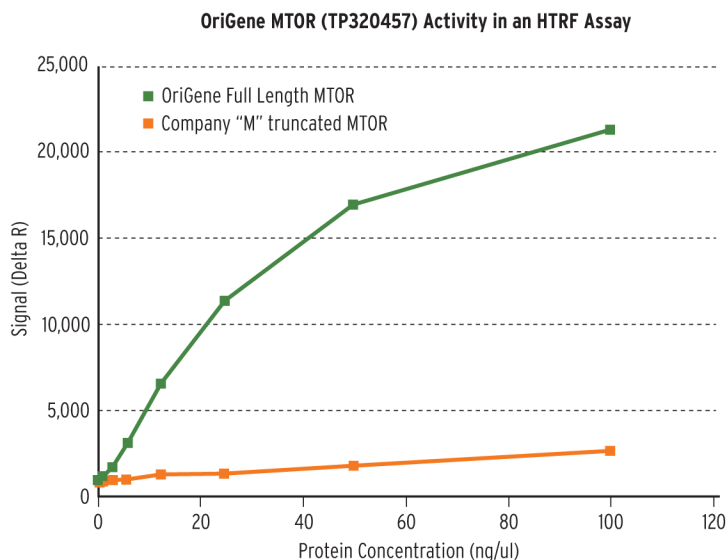
DDK-tag is the same as FLAG tag. Flag® is a registered trademark of Sigma-Aldrich.

## CUSTOM PROTEIN EXPRESSION AND PURIFICATION SERVICE

- HEK293 cell transient transfection from 1 liter scale and up
- Custom clone construction and optimization
- Multiple expression hosts
- Your choice of protein tags
- Custom buffer formulation, etc.

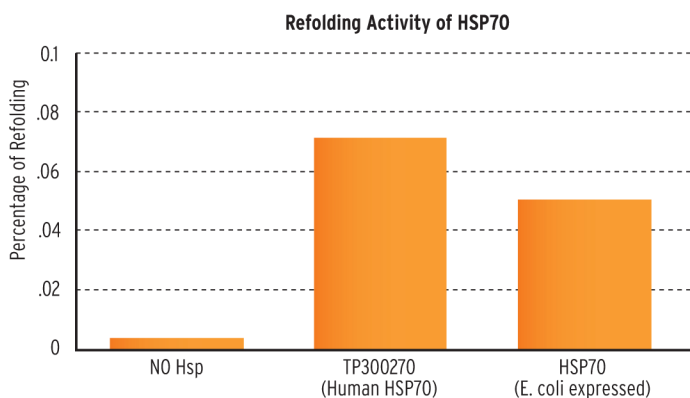
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Tag	<input checked="" type="radio"/> N-fusion <input type="radio"/> C-fusion Tag Description: <input type="text"/>
DNA or protein sequence of the final product	<input type="text"/>
Preferred Expression Host	<input checked="" type="radio"/> HEK293 <input type="radio"/> CHO <input type="radio"/> Other, please specify: <input type="text"/>
The main application with the purified protein	<input checked="" type="radio"/> R&D reagent <input type="radio"/> Cell-based Assay <input type="radio"/> Animal Study <input type="radio"/> Other, please specify: <input type="text"/>
* Quantity (µg)	Must be greater than ? <input type="text"/>
Comments	<input type="text"/>
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* Email Address	<input type="text"/>
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* Country	<input type="text"/>
* Phone	<input type="text"/>
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### Application data #1: Purified protein bioactivity (MTOR)



MTOR (mechanistic target of rapamycin) (TP320457) activity was measured in a homogeneous time-resolved fluorescent (HTRF<sup>®</sup>) assay. MTOR is a serine/threonine protein kinase that regulates cell growth, cell survival, protein synthesis, and transcription. Varying concentrations of MTOR were added to a reaction mix containing ATP and a biotinylated kinase substrate and the reaction mixture was incubated to allow the protein to phosphorylate the substrate. HTRF detection reagents were then added, and fluorescent signal was measured as "Delta R" and is a ratio calculated from the fluorescent emission intensities of the donor and acceptor fluorors.

### Application data #2: Human cell produced protein more potent than E.coli derived protein



OriGene human recombinant Hsp70 (TP300270) was compared side-by-side with E. coli derived Hsp70 in a firefly luciferase refolding assay. Percentage of refolding is relative to an identical load of non-denatured luciferase in the reaction. The human cell produced Hsp70 is approximately 30% more active than the bacterial produced Hsp70.

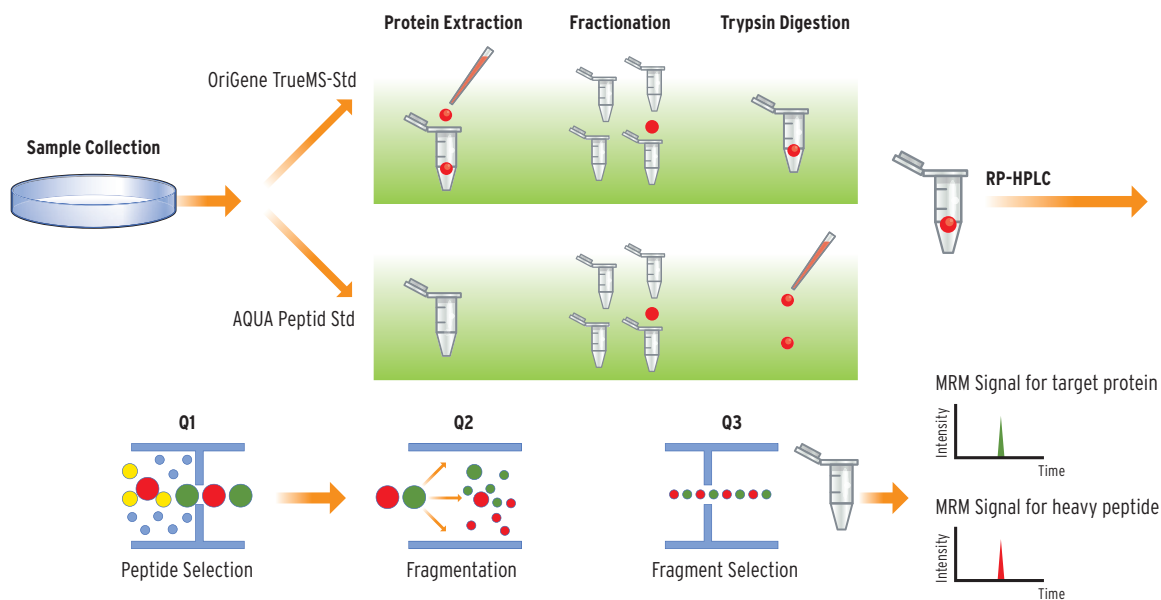
# Heavy-labeled Full-length Protein as MS Standards

## Accurate quantification of human protein biomarkers

Quantitative mass spectrometry, especially MRM-MS and SRM-MS, plays a significant role in protein biomarker discovery and validation. OriGene offers the service to generate heavy isotope labeled 6,000 proteins as MS standards.

- Spiking at the early stage of sample process for accurate quantification
- Identify the best SRM and MRM transitions through experimental data
- Authentic post-translational modifications by using HEK293T cells
- Higher data consistency than synthetic peptide internal standard

### Heavy Isotope Labeled Full Length Protein Standard – A Better Solution for Quantitative Mass Spectrometry



OriGene and the Institute for Systems Biology work together to create a proteotypic PeptideAtlas and SRM/MRM mass spectrometry standard database for 5,000 human proteins, greatly accelerate quantitative protein biomarker discovery.



# Cancer Tissue Lysate Arrays (Reverse-Phase Protein Arrays)

## Large scale, quantitative tools for protein biomarker research

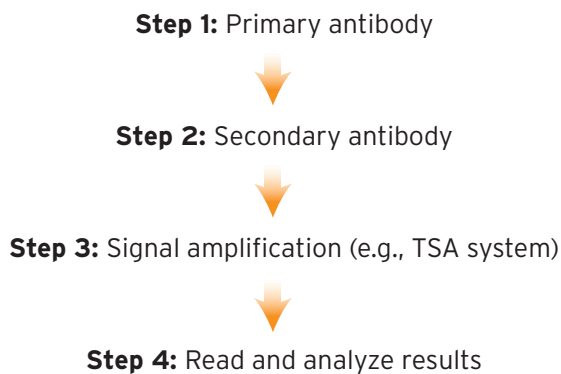
ProteoScan Cancer Lysate Arrays are high-density reverse-phase protein arrays (RPPA, or RPA) assembled from 432 cancer and normal tissue protein lysates. With protein-specific antibodies, ProteoScan Cancer Lysate Arrays enable quantitative identification and validation of protein expression profiles and post-translation modifications associated with 11 types of cancer.

### UTILITIES

- High density arrays for quantitative analysis of protein expression and post-translational modifications
- Identify cancer associated protein expression with lysates from 432 tissues covering 11 types of cancer
- Easy to follow protocols for enhanced colorimetric or fluorescence assays

### SIMPLE PROTOCOL

If you can do Western blot, you can do RPPA easily.



**Figure 1**

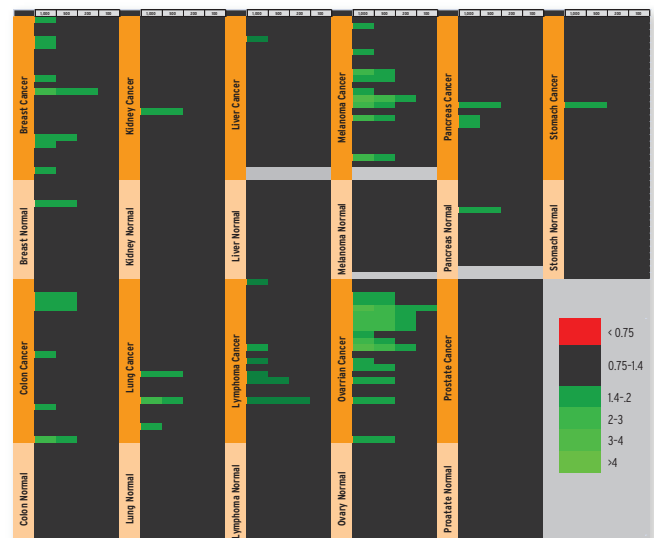
Anti TP53 reactivity with cancer RPPAs tested with colorimetric TSA enhancement protocol.



**Figure 2**

Simple analysis of cancer differential expression index (sample readout divided by median of the tissue normal samples) for four different proteins presented in heat map format.

Column 1 ERBB2, Column 2 BIRC5, Column 3 TP53, Column 4, Phospho cMyc



# OriGene, Your Partner in Gene Research and Beyond

## KEY TECHNOLOGIES AND PRODUCTS

- Full-length cDNA clones, ORF clones in expression-ready vectors
- Gene synthesis: any gene, any variant, any vector
- RNAi research reagents: shRNA, siRNA, and miRNA function and detection
- SYBR Green qPCR assays for mRNA and miRNA detection, primer panels
- Recombinant human proteins and over-expression lysates
- TrueMAB™ monoclonal antibodies
- Luminex multiplex immunoassays
- Cancer tissue biorepository, TMA, RPPA, and TissueScan qPCR arrays
- UltraMAB™ validated IHC antibodies



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