

# Additional Life Science Products

*Sigma-Aldrich provides best-in-class products and innovative technologies to support every step of your workflow. Researchers can choose from a broad range of technologies to study gene silencing, to detect proteins of interest or to examine effects on your protein of choice.*

## **Mission® RNAi**

As a global supplier of leading RNA interference (RNAi) tools including siRNA through Sigma-ProLigo and the comprehensive MISSION shRNA library through participation in The RNAi Consortium (TRC). The MISSION TRC shRNA library can be used in a wide range of studies including single gene analysis, pathway clarification or even genome-wide functional screens. Whether your preference is shRNA target sets or siRNA oligos, MISSION RNAi products provide options for accurate gene silencing.

## **Antibodies**

The Antibody Explorer can assist you in further studying the effects on your protein of choice. You may even search for your antibodies by Gene ID. Whether you need primary antibodies or secondary antibodies and conjugates, we offer over 4,000 quality antibodies available with timely delivery anywhere in the world.

## **Proteomics**

Sigma offers a variety of technologies to amplify, purify and detect both native and recombinant fusion proteins. The Sigma FLAG® product line has demonstrated best in class performance for purification and detection when used with the ANTI-FLAG® antibodies. Convenient formats are also available for analyzing expression, purification and detection in high throughput applications.

# Antibodies

## Antibodies

- Over 4,000 highest quality antibodies
- Validated to the protein of interest
- Easily explored using Sigma's online search tools
- World-renowned technical service

### Primary Antibodies

- Cell Biology
- Neuroscience
- Molecular Biology
- Serum/Plasma Proteins
- Recombinant Protein Purification Detection

### Panorama® Antibody Microarrays

- XPRESS Profiler 725 Kit
- Cell Signaling Kit
- MAPK and PKC Pathways
- Gene Regulation I Kit
- p53 Pathways

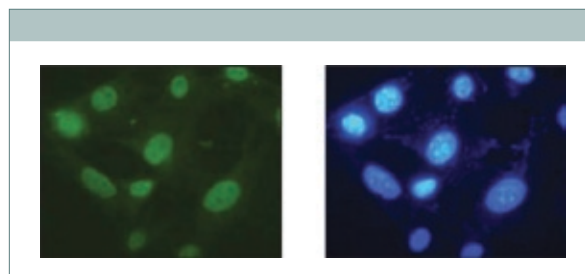
### Secondary Antibodies and Conjugates

- Chicken
- Goat/Sheep
- Human
- Mouse/Rat
- Rabbit
- Other

## Antibody Explorer

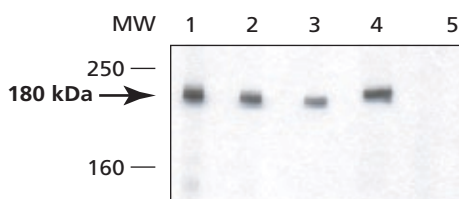


To browse our online Antibody Explorer catalog visit: [sigma.com/antibody](http://sigma.com/antibody)



Cytoplasmic staining of SNAP29 NIH 3T3 cells were fixed with paraformaldehyde and stained with Anti-SNAP29 (Cat. No. [S2069](#)) at a 1:100 dilution, followed by Goat Anti-Rabbit IgG (H+L)-FITC conjugate (Cat. No. [F9887](#)).

### Examples of Our Application Data



Immunoblotting nuclear extracts of HEK 293T cells were separated on SDS-PAGE, blotted with decreasing amounts of Rabbit Anti-DNMT1 (Cat. No. [D4692](#)), and developed with Goat anti-rabbit IgG-Peroxidase conjugate (Cat. No. [A0545](#)) using a chemiluminescent substrate.

Lane 1: Antibody 2.5 mg/ml

Lane 2: Antibody 1 mg/ml

Lane 3: Antibody 0.5 mg/ml

Lane 4: Antibody 1 mg/ml + 10 mg/ml non-relevant peptide

Lane 5: Antibody 1 mg/ml + 10 mg/ml DNMT1 immunizing peptide

## Custom Antisera Services



Contact Sigma-Genosys at [sigma.com/genosys](http://sigma.com/genosys) and they will design and develop a customized protocol for you.

# MISSION<sup>®</sup> RNAi

Sigma provides leading RNA interference (RNAi) tools for gene silencing including siRNA panels, custom siRNA, shRNA libraries and custom lentiviral services. Our goal is to provide innovative solutions to meet your functional genomics and gene silencing research needs.

## MISSION TRC shRNA

### Comprehensive Coverage

- Pre-cloned genome-wide libraries
- 150,000 clones targeting 15,000 human and 15,000 mouse genes
- 3-5 clones per gene

### Delivery Solution

- Lentiviral-based system for RNAi in difficult cell types, including primary and non-dividing

### Efficient Knockdown

- Ideal for long-term silencing
- Quality shRNA design by the Broad Institute

### Format Options

- Entire libraries or single gene sets offered in glycerol stock, DNA or viral formats
- Custom capabilities, including large scale lentiviral production

## MISSION siRNA

### Cutting-edge Bioinformatics

- Design technology powered by Rosetta Inpharmatics for enhanced performance

### Convenience

- Ready-to-use single strand or duplex
- Rapid turnaround time

### Efficient Knockdown

- Ideal for rapid, short-term gene silencing
- Single gene knockdown in standard cell lines

### Quality

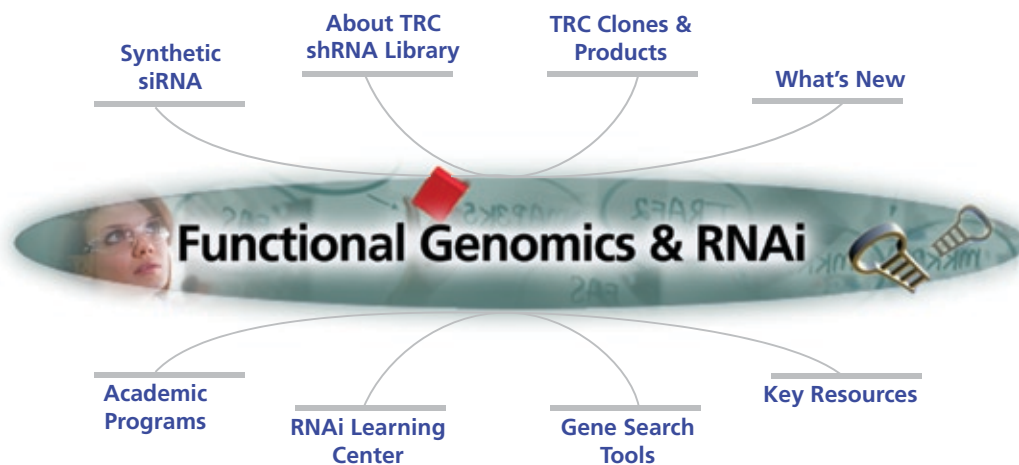
- Effective, reliable, desalted and purified siRNA
- State-of-the-art robotic synthesis through the Sigma-Proligo manufacturing plant

### Flexibility

- Single genes to panels
- µg to milligram quantities
- Modifications to enhance stability



Visit us at [sigma-aldrich.com/rnai](http://sigma-aldrich.com/rnai)





INNOVATION @ WORK



## Your comprehensive gene search tool, **NEW** from Sigma

Your Favorite Gene™ is a new search tool that matches your gene of interest against thousands of research products available from Sigma.

- **Flexible search options:**
  - Use a wide variety of terms to locate genes
  - Refine or expand your search by pathways, function & more
  - Retrieve detailed gene information
- **Unparalleled product coverage matched to your gene of interest:**
  - 150,000 shRNAs
  - 4,000 antibodies, proteins & kits
  - 1,000 bioactive small molecules
  - 725,000 siRNAs coming soon!
- **Integrated links to public databases:**
  - Compendia Bioscience, Inc.
  - Human Protein Reference Database
  - NCBI Entrez Gene
  - Cytoscape™

Search Your Favorite Gene at [sigma.com/yfgbiotech](http://sigma.com/yfgbiotech).



Our Innovation, Your Research  
Shaping the Future of Life Science

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# Proteomics

## Sigma-Aldrich Progressive Proteomics

Sigma-Aldrich provides the most progressive and comprehensive offering of innovative and enabling technologies for protein research. For over 60 years we have been working to bring protein chemists and researchers the tools they need to accelerate their work. We believe the consistency, commitment, and wisdom, earned over the many years is unmatched in protein research – *Bar None!*

Helping to define the dynamic nature of gene expression and regulation, Sigma's best-in-class technologies and products provide an integrated approach to proteomic analysis. Our products support quantitative, functional and structural proteomics for native and recombinant proteins. By combining our internal research efforts with creative collaborations along with unrivaled custom production services for peptides and antisera, we continue to provide what protein scientists need.

Sigma's ProteoPrep™ 20 technology enables the complete recovery and enrichment of selective fractions to facilitate global and targeted proteomics. The technology is based on an immunoaffinity media that specifically binds 20 highly abundant proteins in human plasma or serum thus revealing previously masked proteins. By removing the majority of overall protein mass, lower abundance proteins fall within the limits of detection. In addition, the reduced complexity of the sample allows laboratories to save days of analysis time. The ProteoPrep 20 technology is advancing and accelerating the frontier of biomarker discovery.

Sigma's Universal Proteomic Standard (the "Sigma 48") is the first and only Mass Spec Proteomic Standard of its type on the market today. The Universal Proteomic Standard was developed in collaboration with the ABRF and provides a mix of 48 HPLC purified human source and human sequence recombinant proteins. The Universal Proteomic Standard can be used to bracket critical experimental datasets, and to facilitate comparisons of mass spectrometric or other proteomic data, as well as an external reference.

Sigma's FLAG® Protein Expression Technology is a proven method for the expression, purification and detection of recombinant fusion proteins. The small hydrophilic tag in conjunction with corresponding FLAG antibodies improves the specificity of protein purification and the sensitivity of detection techniques, such as Western blotting, immunocytochemistry, immunoprecipitation, and flow cytometry. Complete systems incorporating vectors, peptides, antibodies, antibody conjugates, plates and kits are available to enhance your protein research workflow. The FLAG Trademark is available to license for product marketing applications.

Sigma's Panorama™ Antibody Array – XPRESS Profiler725 offers a high-throughput tool for multiplex protein expression screening of serum, cell or tissue extracts. Containing 725 highly specific antibodies arrayed in duplicate on nitrocellulose slides, Panorama antibody arrays enable researchers to profile expression changes in large numbers of proteins in significantly less time than it would take using conventional protein detection methodology. The array antibodies detect human, mouse, and rat proteins associated with a variety of key cell signaling and gene regulation pathways. Targeted-content subsets of antibodies to Mitogen-Activated Protein Kinase (MAPK), Protein Kinase C (PKC) and p53 protein families are also represented on the array.

Sigma's Custom AQUA peptides provide the stable isotope internal reference necessary to harness the power of true Protein-AQUA™. It is a powerful, enabling technology that facilitates focused, quantitative studies of specific protein expression.

Sigma's innovative tools for structural Proteomic research: GlycoProfile™ In-Gel, Solution Enzymatic Deglycosylation and Chemical Deglycosylation kits, PhosphoProfile 1™, a phosphopeptide enrichment technology that enables researchers to analyze post-translational modifications and stable isotope labeled amino acids permit peptide structure analysis via Biomolecular NMR.

Sigma's Peptides and Antisera products offer unmatched quality. Through our Sigma-Genosys brand, we offer extensive custom services under ISO guidelines with products supplied in various formats. Sigma-Genosys provides a comprehensive custom service program to assist customers in design and decisions for applications requiring custom peptides, peptide libraries, peptide arrays and antibodies. Our signature product, PEPscreen®, is an enabling technology for finding peptide-binding regions quickly and affordably, especially for epitope mapping.

Custom Services for Nucleic Acids and Proteins – Integrity, Quality, and Reliability define our custom Sigma-Genosys business. Sigma provides innovation through novel products, a commitment to partnership through expert application support, and a continuous passion for quality manufacturing in all of our services provided globally. We apply the same exacting standards of quality manufacturing to our DNA, RNA, siRNA, peptide and antisera production as we do to our libraries and arrays. Whether you are performing Genomics or Proteomics research, Sigma-Genosys has the design, synthesis and support services you need.

**Progressive Proteomic Products from Sigma-Aldrich**  
*Let us know your needs, we are here to listen.*

## Innovative Technologies from Sigma

### FLAG® Expression, Purification and Detection System

Trusted system for recombinant protein expression, purification and detection.

- Proven: Cited in over 2,000 publications
- Ultrasensitive: Antibodies detect as little as 100 femtomoles of protein
- Comprehensive: Complete systems in multiple formats

### MAT™-Tag Protein Expression System

Combine the versatility of IMAC Technology with superior detection antibodies

- Dual Fusion Tag Vectros, available with FLAG and MAT
- N- or C-terminal tagging configurations for mammalian, bacterial or baculovirus expression systems
- Compatible to Nickel and Cobalt affinity resins, such as HIS-Select®
- Superior antibody detection with the FLAG® or MAT monoclonal antibodies

### HIS-Select™ One-Step Purification System

Superior selectivity and binding capacity for your HIS-tagged or MAT-tagged protein

- Highly pure tetradentate chelate feature of the resin aids in reducing non-specific binding and higher binding capacity
- Tetradentate chelates hold the metal ion at four coordination points opposed to three points like IDA type chelates resulting in less metal leaching from the affinity gel

### Integrated Lysis & Affinity Purification (iLAP®) Technology

Perform efficient cell lysis and histidine-tagged protein extraction in one simple step

- Lysis/extraction reagent tablets include all the necessary detergents and enzymes needed
- Purified protein is suitable for use with many downstream applications

### EZview™ Enhanced Visibility Resin

Eliminate the guesswork in immunoprecipitations.

- Increase gel visibility
- Maximize yields by avoiding sample loss
- Small-scale affinity capture with confidence and efficiency

### CellLytic™ Cell Lysis and Protein Extraction Formulations

Formulation for cell lysis of bacterial, mammalian, yeast and plant cells

- Wide range of convenience formats available
- Result in rapid and efficient extraction of proteins that are suitable for affinity purification and analysis
- CellLytic products are the method of choice for recombinant protein extraction and purification from *E. coli* cells.