



MARKERS for the CELLULAR ORGANELLES

PRIMARY ANTIBODIES FOR  
**CELL BIOLOGY**

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# OVERVIEW OF ATLAS ANTIBODIES' PRODUCTS



## **Precise. Accurate. Targeted.**

PrecisA Monoclonals™ are mouse monoclonal primary antibodies developed against a number of carefully selected targets. Clones are selected to recognize only unique non-overlapping epitopes and isotypes. Available in **25 µL** and **100 µL** unit sizes.

The product numbers of PrecisA Monoclonals start with "**AMAbxxxxx**"



## **Atlas Antibodies Advanced Polyclonals.**

Triple A Polyclonals™ are rabbit polyclonal primary antibodies developed within the Human Protein Atlas project. IHC characterization data from 44 normal and 20 cancer tissues is available on the Human Protein Atlas portal. Available in **25 µL** and **100 µL** unit sizes.

The product numbers of TripleA Polyclonals start with "**HPAxxxxx**"

## **PrEST Antigens**

PrEST Antigens™ are the immunogens used for the generation of Triple A Polyclonals and PrecisA Monoclonals, for use as blocking agents and positive assay controls together with the corresponding antibody. The protein-specific PrEST sequences are designed to have a sequence identity as low as possible to other human proteins. The product numbers of PrEST control antigens start with "**APrEST**" and they are specified on the product pages for all antibodies under the tab "related products".

[Discover more](#)

# ENHANCED VALIDATION



At Atlas Antibodies, we extensively validate our antibodies in IHC, WB, and ICC-IF. Enhanced Validation is performed as an additional layer of security in an application and context-specific manner.

Enhanced validation offers increased security of antibody specificity in a defined context. This is ensured by using the ideal validation method for each combination of protein, sample, and application.

Enhanced Validation follows the guidelines proposed by the International Working Group for Antibody Validation (IWGAV).

*Uhlen, M., Bandrowski, A., Carr, S. et al. A proposal for validation of antibodies. Nat Methods 13, 823–827 (2016).*

[Discover more](#)

# THE HUMAN PROTEIN ATLAS



## Atlas Antibodies and the Human Protein Atlas project.

Atlas Antibodies has a very special story. The company was founded by researchers from the prestigious Human Protein Atlas (HPA) project, who wanted to make the unique antibodies used in the project available to fellow researchers worldwide.

The HPA is a Swedish-based program initiated in 2003 with the aim to map all the human proteins in cells, tissues and organs using an integration of various omics technologies, including antibody-based imaging, mass spectrometry-based proteomics, transcriptomics and systems biology.

All the data is open access to allow scientists both in academia and industry to freely access the data for exploration of the human proteome.

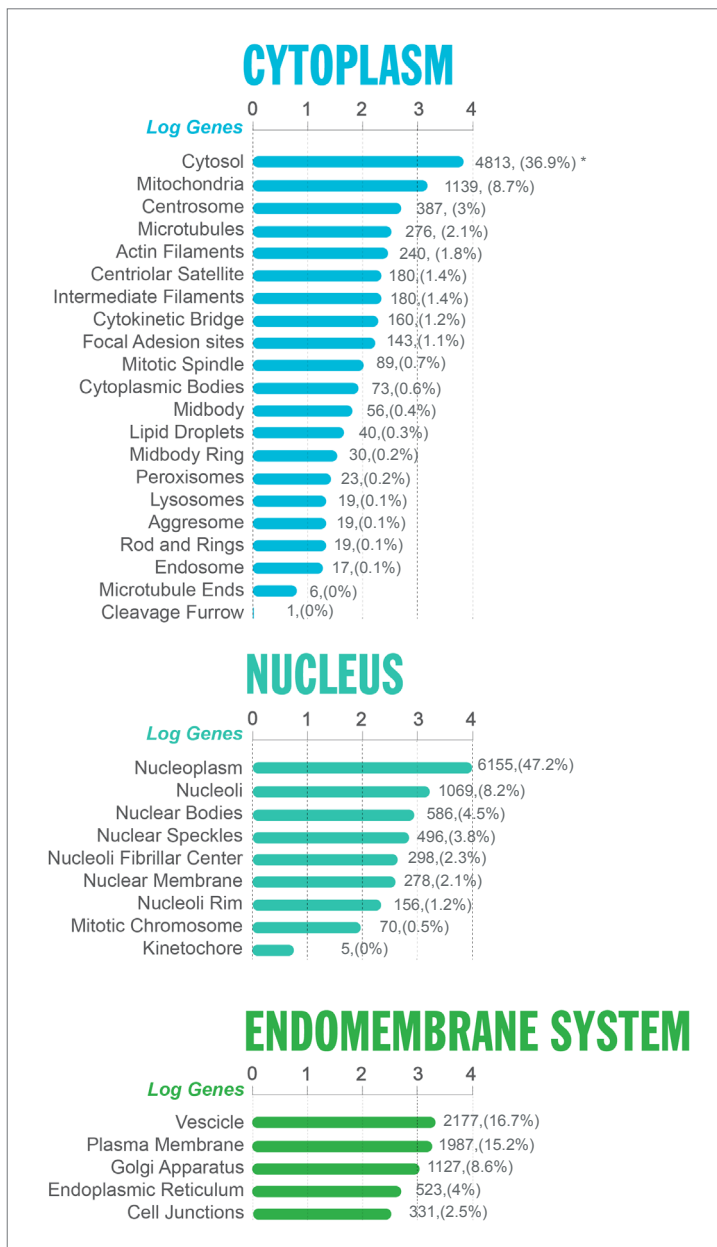
The HPA consists of 10 separate sections, each focusing on a particular aspect of the genome-wide analysis of the human proteins:

- The **Tissue section**, showing the distribution of the proteins across all major tissues and organs in the human body.
- The **Brain section**, exploring the distribution of proteins in various regions of the mammalian brain.
- The **Single Cell Type section**, showing expression of protein-coding genes in single human cell types based on scRNA-seq.
- The **Tissue Cell Type section**, showing expression of protein-coding genes in human cell types based on bulk RNAseq data.
- The **Pathology section**, showing the impact of protein levels for the survival of patients with cancer.
- The **Immune Cell section**, showing expression of protein-coding genes in immune cell types.
- The **Blood Protein section**, describing proteins detected in blood and proteins secreted by human tissues.
- The **Subcellular section**, showing the subcellular localization of proteins in single cells.
- The **Cell Line section**, showing expression of protein-coding genes in human cell lines.
- The **Metabolic section**, exploring expression of protein-coding genes in the context of the human metabolic network.

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# DISTRIBUTION AND CLASSIFICATION OF 13,041 GENES ACROSS 35 ORGANELLES AND SUBCELLULAR STRUCTURES



The Subcellular section of the Human Protein Atlas provides high-resolution insights into the expression and spatiotemporal distribution of proteins encoded by 13041 genes (65% of the human protein-coding genes).

Most proteins are found in the nucleus, followed by the cytosol and vesicles, which consist of transport vesicles as well as small membrane-bound organelles like endosomes or peroxisomes. 56% (n=7329) of the proteins were detected in more than one location (multilocalizing proteins), and 24% (n=3193) displayed single-cell variation in expression level or spatial distribution.

**\* Proteins, (%)**  
**Nr of total encoded proteins 13041 (100%)**

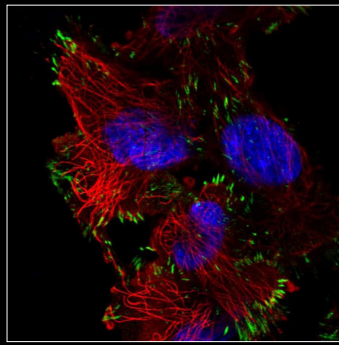
Note that one protein can localize to more than one compartment.

Source:  
*The Human Protein Atlas (proteintlas.org)*

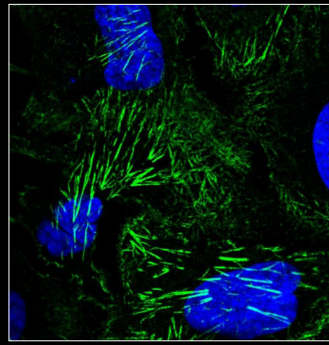
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# CYTOPLASM: ACTIN FILAMENTS - FOCAL ADHESION SITES

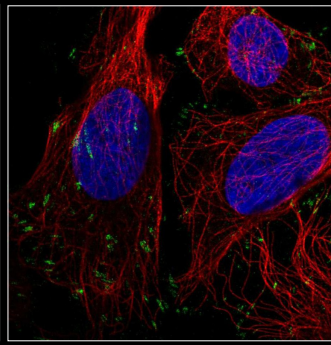
Representative stainings of actin filaments and focal adhesion sites using Atlas Antibodies' products (green).



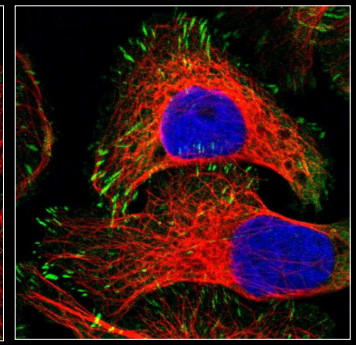
Anti-ASAH2 (HPA061171)  
U-251 MG, focal adhesion sites



Anti-SEPT9 (HPA050627)  
U-2 OS cells, actin filaments



Anti-VCL (HPA063777)  
U-2 OS cells, focal adhesion sites



Anti-ZYX (HPA004835)  
U-2 OS cells, focal adhesion sites

Actin filaments and focal adhesions are the main regulators of cellular morphology and motility.

Actin filaments, in the form of microfilaments, are one of three major cytoskeleton components. In addition, actin forms thin filaments, which are part of the contractile apparatus in muscle cells. Focal adhesions are large protein complexes that link the actin cytoskeleton to the extracellular matrix.

Actin filaments and focal adhesion sites provide a necessary structural framework and signal transduction system that plays essential roles in cell morphology and polarity, organization of organelles, motility, mitosis, cytokinesis, and cell signaling.

Dysfunction of proteins in the actin and focal adhesion proteomes have been linked to several severe diseases, including muscular disorders and cancers.

363 genes (2% of all protein-coding human genes) have been shown to encode proteins that localize to actin filaments or focal adhesion sites.

Roughly 83% (n=300) of the proteins that localize to actin filaments also localize to at least one additional cellular compartment.

2% (363 proteins) of all human proteins have been experimentally detected in the actin filaments by the Human Protein Atlas.

300 proteins in the actin filaments have multiple locations.

37 proteins in the actin filaments show a cell-to-cell variation. Of these, 34 show a variation in intensity and 3 a spatial variation.

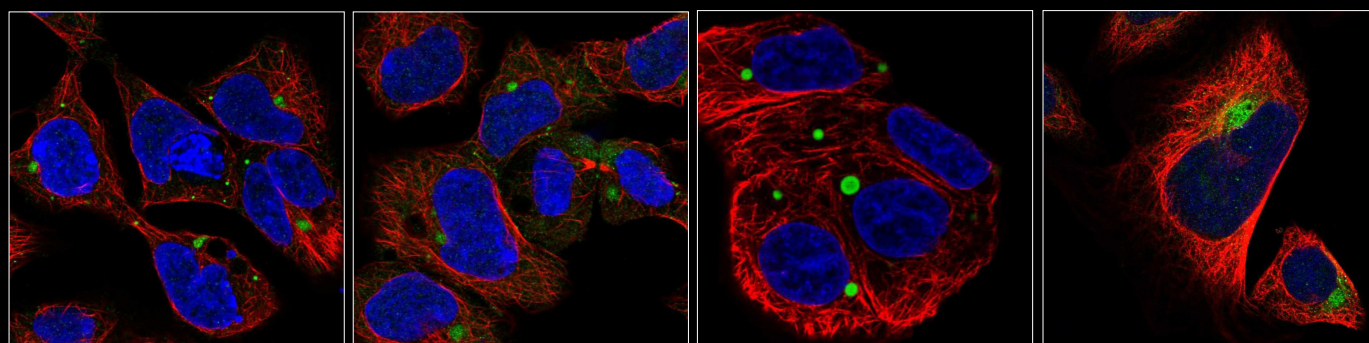
## Selection of antibodies suitable as markers for the actin filaments and focal adhesion sites.

| Product Name | Protein Name                            | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | Control Antigen |
|--------------|---|------------|-----|----|----|--------------------|------------------|-----------------|
| Anti-ASAH2   | N-acylsphingosine amidohydrolase 2      | HPA061171  | ✓   | ✓  | ✓  | 85%                | 83%              | APrEST88313     |
| Anti-CNN3    | calponin 3, acidic                      | HPA051237* | ✓   | ✓  | ✓  | 93%                | 92%              | APrEST87577     |
| Anti-FGD4    | FYVE, RhoGEF and PH domain containing 4 | HPA039235  | ✓   |    | ✓  | 53%                | 52%              | APrEST81123     |
| Anti-PXN     | paxillin                                | HPA051309  |     | ✓  | ✓  | 83%                | 84%              | APrEST89636     |
| Anti-SEPTIN9 | septin 9                                | HPA042564* | ✓   | ✓  | ✓  | 86%                | 84%              | APrEST83793     |
|              |   | HPA050627  |     |    | ✓  | 75%                | 77%              | APrEST89624     |
| Anti-TNS1    | tensin 1                                | HPA036089* | ✓   | ✓  |    | 74%                | 74%              | APrEST79566     |
| Anti-VCL     | vinculin                                | HPA063777* |     | ✓  | ✓  | 98%                | 98%              | APrEST90051     |
|              |   | HPA002131* | ✓   | ✓  |    | 99%                | 99%              | APrEST84522     |
| Anti-ZYX     | zyxin                                   | AMAb90992  | ✓   |    | ✓  | 84%                | 85%              | APrEST86861     |
|              |   | HPA004835* | ✓   |    | ✓  | 84%                | 85%              | APrEST86861     |

\* Enhanced Validation

# CYTOPLASM: AGGRESOME

Representative stainings of the aggresome in different cell lines using Atlas Antibodies' products (green).



Anti-AMH (HPA066973)  
HEK 293 cells, aggresome

Anti-CHCHD7 (HPA050783)  
HEK 293 cells, aggresome

Anti-ZNF813 (HPA056406)  
RT-4 cells, aggresome

Anti-STRADB (HPA026549)  
U-2 OS cells, aggresome

Aggresomes are structures that form in response to the accumulation of misfolded proteins in the cytosol. Aggresome formation enables the sequestration of aggregated proteins and facilitates their clearance by a selective form of autophagy, sometimes called aggrephagy, thereby protecting the cell from cytotoxic effects.

Aggresome formation is a regulated process that occurs in response to an overload of the protein folding- and degradation systems due to cellular stress or disease.

Characterizing the molecular mechanisms underlying aggresome formation and its regulation has begun to provide promising therapeutic targets that may be relevant to various diseases, such as neurodegenerative diseases.

In immunofluorescence, an aggresome can be seen as a dense cytoplasmic inclusion, usually found close to the nucleus in a region where the microtubule network is disrupted. Some cell lines are more prone to aggresome formation than others.

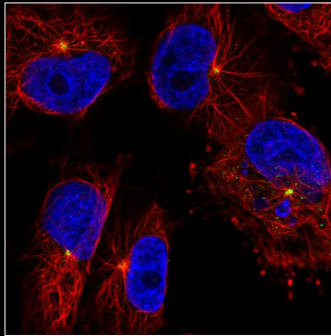
## Selection of antibodies suitable as markers for the aggresome.

| Product Name  | Protein Name   | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | Control Antigen |
|---------------|--|------------|-----|----|----|--------------------|------------------|-----------------|
| Anti-AMH      | anti-Mullerian hormone   | HPA066973  |     |    | ✓  | 66%                | 67%              | APrEST94284     |
| Anti-ARHGAP35 | Rho GTPase activating protein 35                               | HPA055184  | ✓   | ✓  |    | 96%                | 96%              | APrEST88838     |
|               |  | HPA056470  | ✓   |    | ✓  | 99%                | 99%              | APrEST88499     |
| Anti-C19orf81 | chromosome 19 open reading frame 81                            | HPA060238* | ✓   |    | ✓  | 84%                | 28%              | APrEST84962     |
| Anti-C1orf53  | chromosome 1 open reading frame 53                             | HPA065352  |     |    | ✓  | 40%                | 47%              | APrEST92560     |
| Anti-CBLC     | cbl proto-oncogene C   | HPA035266  |     |    | ✓  | 67%                | 74%              | APrEST90800     |
| Anti-CHCHD7   | coiled-coil-helix-coiled-coil-helix domain cont 7              | HPA050783  | ✓   |    | ✓  | 63%                | 63%              | APrEST76371     |
| Anti-EDEM1    | ER degradation enhan alpha-mannosidase 1                       | HPA029565  | ✓   |    | ✓  | 88%                | 88%              | APrEST71950     |
| Anti-HEY2     | Hes related family bHLH transcription factor with YRPW motif 2 | HPA074851  |     |    | ✓  | 88%                | 90%              | APrEST93252     |
| Anti-HYKK     | hydroxylysine kinase   | HPA040706  | ✓   |    |    | 66%                | 73%              | APrEST81597     |
| Anti-ITFG1    | integrin alpha FG-GAP repeat containing 1                      | HPA019728  | ✓   | ✓  | ✓  | 87%                | 86%              | APrEST72869     |
| Anti-KLHL15   | Kelch like family member 15                                    | HPA065730  | ✓   |    | ✓  | 100%               | 100%             | APrEST88158     |
| Anti-PRPF40B  | pre-mRNA processing factor 40 homolog B                        | HPA038426* | ✓   |    |    | 83%                | 83%              | APrEST80977     |
| Anti-STRADB   | STE20 related adaptor beta                                     | HPA026549  | ✓   | ✓  | ✓  | 93%                | 91%              | APrEST77822     |
| Anti-ZNF813   | zinc finger protein 813  | HPA056406  | ✓   | ✓  | ✓  | 33%                | 35%              | APrEST86124     |

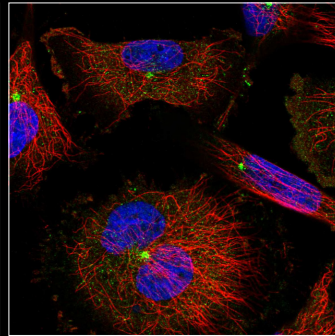
\* Enhanced Validation

# CYTOPLASM: CENTROSOME - CENTRIOLAR SATELLITE

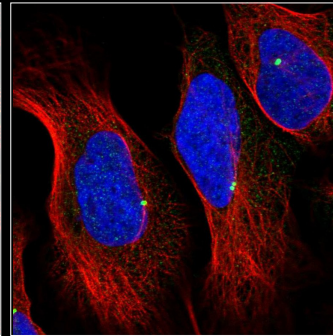
Representative stainings of the centrosome and centriolar satellite in different cell lines using Atlas Antibodies' products (green).



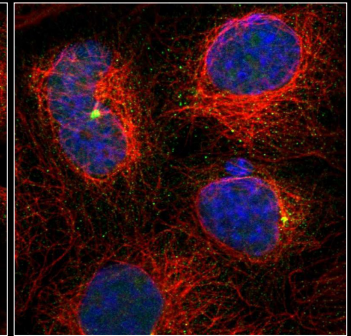
Anti-CEP350 (HPA030845)  
U-251 MG, centrosome



Anti-INPP1 (HPA036698)  
U-251 MG, centriolar satellite



Anti-MKKS (HPA044233)  
U-2 OS, centrosome



Anti-PCM1 (HPA023370)  
A-431, centrosome

The centrosome is the primary microtubule organizing center in human cells. Although the centrosome is a small organelle, it is vital for fundamental cellular functions.

Located adjacent to the nucleus, proteins localizing to the centrosome are mainly involved in intracellular organization and transport, microtubule organization, and cell cycle progression.

During cell division, the centrosome is the key organelle responsible for the correct formation and orientation of the mitotic spindle, ensuring proper segregation of sister chromatids to each daughter cell.

3% (564 proteins) of all human proteins have been experimentally detected in the centrosome by the Human Protein Atlas.

143 proteins in the centrosome are supported by experimental evidence and out of these 28 proteins are enhanced by the Human Protein Atlas.

453 proteins in the centrosome have multiple locations.

31 proteins in the centrosome show a cell-to-cell variation (30 show a variation in intensity and 1 a spatial variation).

## Selection of antibodies suitable as markers for the centrosome and centriolar satellite.

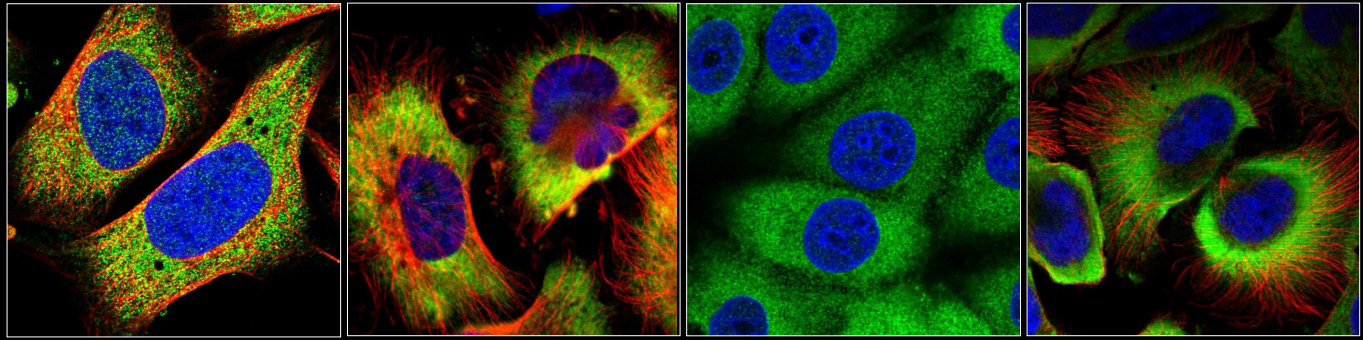
| Product Name | Protein Name                              | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|---|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-CEP131  | centrosomal protein 131kDa                | HPA024019  | ✓   | ✓  | ✓  | 76%                | 75%              | APrEST74495           |
| Anti-CEP350  | centrosomal protein 350kDa                | AMAb91164  | ✓   |    | ✓  | 81%                | 83%              | APrEST90726           |
|              |   | HPA030845  |     |    | ✓  | 81%                | 83%              | APrEST90726           |
| Anti-INPP1   | inositol polyphosphate-1-phosphatase      | HPA036698  | ✓   |    |    | 90%                | 90%              | APrEST79133           |
| Anti-MKKS    | McKusick-Kaufman syndrome                 | HPA044233* | ✓   | ✓  | ✓  | 72%                | 80%              | APrEST83099           |
| Anti-PCM1    | pericentriolar material 1                 | HPA023370* | ✓   |    | ✓  | 78%                | 78%              | APrEST76187           |
|              |   | AMAb90565* | ✓   | ✓  |    | 94%                | 95%              | APrEST76188           |
| Anti-PCNT    | pericentrin                               | HPA016820* | ✓   |    | ✓  | 64%                | 64%              | APrEST73892           |
|              |   | HPA032101  |     |    | ✓  | 60%                | 63%              | APrEST90777           |
| Anti-PIBF1   | progest immunomodulatory binding factor 1 | HPA052269  |     | ✓  | ✓  | 91%                | 91%              | APrEST89663           |
| Anti-PRKCC   | protein kinase C, theta                   | HPA065279  |     |    | ✓  | 96%                | 96%              | APrEST92552           |
| Anti-OAZ1    | ornithine decarboxylase antizyme 1        | HPA009291  | ✓   |    | ✓  | 82%                | 81%              | APrEST71204           |
| Anti-ODF2    | outer dense fiber of sperm tails 2        | HPA048841  |     |    | ✓  | 93%                | 93%              | APrEST91164           |
| Anti-ZMYM1   | zinc finger, MYM-type 1                   | HPA064019  |     |    | ✓  | 67%                | 64%              | APrEST92426           |

\* Enhanced Validation



# CYTOPLASM: CYTOSOL

Representative stainings of the cytosol in different cell lines using Atlas Antibodies' products (green).



Anti-AIMP1 (HPA018476)  
U-2 OS cells, cytosol

Anti-G3BP1 (HPA004052)  
U-251 MG cells, cytosol

Anti-MTHFS (HPA054177)  
MCF7 cells, cytosol

Anti-SERBP1 (HPA020559)  
U-2 OS cells, cytosol

The cytosol is a semi-fluid matrix that fills the space between the plasma and nuclear membranes, embedding various organelles and cellular substructures.

Rather than being a uniform liquid, the cytosol is a highly complex and crowded solution of water-soluble ions, small molecules, and macromolecules organized into concentration gradients, complexes, and cytoplasmic bodies.

The cytosol provides structural support to the cell and the organelles. It is also the site for many cellular processes, including metabolic pathways, protein biosynthesis, intracellular transport, and signal transduction pathways.

Immunofluorescent staining of the cytosol extends from the plasma membrane to the nuclear membrane. Staining patterns of the cytosol vary from smooth to granular, and the staining is often stronger close to the nucleus.

24% (4889 proteins) of all human proteins have been experimentally detected in the cytosol by the Human Protein Atlas.

3865 proteins in the cytosol have multiple locations.

696 proteins in the cytosol show a cell-to-cell variation (615 in intensity and 101 in spatial variation).

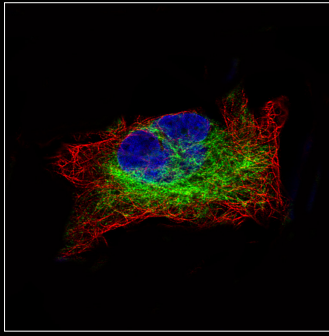
## Selection of antibodies suitable as markers for the cytosol

| Product Name | Protein Name   | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | Control Antigen |
|--------------|--|------------|-----|----|----|--------------------|------------------|-----------------|
| Anti-ADSL    | adenylosuccinate lyase   | HPA000525* | ✓   | ✓  | ✓  | 92%                | 92%              | APrEST73412     |
| Anti-AIMP1   | aminoacyl tRNA synthetase complex interacting multifunctional protein 1          | HPA018476* | ✓   | ✓  | ✓  | 96%                | 97%              | APrEST74085     |
| Anti-AMPD2   | adenosine monophosp. deaminase 2   | HPA045760* | ✓   | ✓  | ✓  | 99%                | 99%              | APrEST76590     |
| Anti-ATXN2   | ataxin 2   | HPA018295* | ✓   | ✓  | ✓  | 97%                | 96%              | APrEST73804     |
|              |  | HPA020339* | ✓   |    |    | 93%                | 95%              | APrEST73802     |
|              |  | HPA021146* | ✓   | ✓  |    | 90%                | 91%              | APrEST73803     |
| Anti-ATXN2L  | ataxin 2 like  | HPA041506* | ✓   | ✓  | ✓  | 88%                | 89%              | APrEST82311     |
|              |  | HPA071955  |     |    | ✓  | 98%                | 99%              | APrEST90363     |
| Anti-CCDC43  | coiled-coil domain containing 43   | HPA023078* | ✓   |    |    | 90%                | 88%              | APrEST94564     |
|              |  | HPA023391  | ✓   | ✓  | ✓  | 87%                | 92%              | APrEST75886     |
| Anti-G3BP1   | GTPase activating protein (SH3 domain) binding protein 1                         | HPA004052* | ✓   | ✓  | ✓  | 88%                | 87%              | APrEST86718     |
| Anti-G3BP2   | GTPase activating protein (SH3 domain) binding protein 2                         | HPA018304* | ✓   |    | ✓  | 97%                | 97%              | APrEST73969     |
|              |  | HPA018425* | ✓   |    |    | 94%                | 92%              | APrEST73970     |
| Anti-MTHFS   | 5,10-methenyltetrahydrofolate synthetase (5-formyltetrahydrofolate cyclo-ligase) | HPA008067  | ✓   | ✓  |    | 86%                | 86%              | APrEST71217     |
|              |  | HPA054177  | ✓   | ✓  | ✓  | 79%                | 79%              | APrEST89717     |
| Anti-RABGAP1 | RAB GTPase activating protein 1  | HPA064860  |     |    | ✓  | 97%                | 97%              | APrEST92507     |
| Anti-SERBP1  | serpine1 mRNA binding protein 1  | HPA020559  | ✓   | ✓  | ✓  | 97%                | 99%              | APrEST77470     |

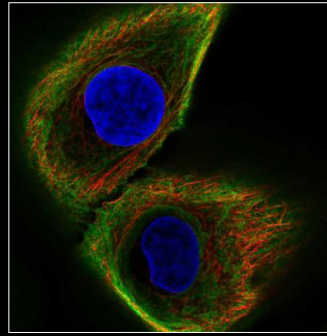
\* Enhanced Validation

# CYTOPLASM: INTERMEDIATE FILAMENTS

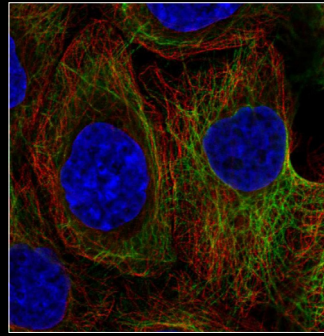
Representative stainings of cytoplasmic and nuclear intermediate filaments in different cell lines using Atlas Antibodies' products (green).



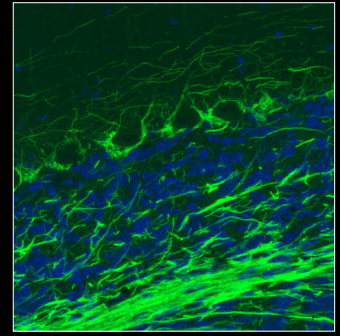
Anti-DES (AMAb91302)  
RH-30 cells, intern. filaments



Anti-KRT17 (HPA000452)  
hTCEpi cells, intern. filaments



Anti-KRT80 (HPA077836)  
A-431, intern. filaments



Anti-NEFM (AMAb91028)  
rat cerebellum, intern. filaments

Intermediate filaments (IFs) make up one of three cytoskeletal systems in human cells. This family of proteins includes intermediate cytoplasmic filaments, which form an extensive network through the cytosol, and intermediate nuclear filaments, which form the thin nuclear lamina underlying the nuclear membrane.

In the Subcellular Section of the Human Protein Atlas project, 180 genes (1% of all protein-coding human genes) have been shown to encode proteins that localize to intermediate filaments.

About 69% (n=125) of the proteins localized to intermediate filaments are also detected in additional cellular compartments, the most common ones being the cytosol and the nucleus.

125 proteins in the intermediate filaments have multiple locations.

80 proteins in the intermediate filaments show a cell-to-cell variation (77 in intensity and 3 in spatial variation).

Selection of antibodies suitable as markers for the intermediate filaments.

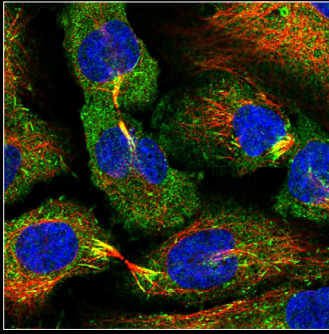
| Product Name | Protein Name                              | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | Control Antigen |
|--------------|---|------------|-----|----|----|--------------------|------------------|-----------------|
| Anti-DES     | desmin                                    | AMAb91302  |     | ✓  | ✓  | 100%               | 100%             | -               |
|              |   | AMAb91303  |     | ✓  | ✓  | 100%               | 100%             | -               |
|              |   | HPA018803* | ✓   | ✓  | ✓  | 98%                | 98%              | APrEST74605     |
| Anti-ITFG1   | integrin alpha FG-GAP repeat containing 1 | HPA019728  | ✓   | ✓  | ✓  | 87%                | 86%              | APrEST72869     |
| Anti-KRT4    | keratin 4                                 | HPA034881  | ✓   | ✓  | ✓  | 59%                | 60%              | APrEST77907     |
| Anti-KRT13   | keratin 13                                | HPA030877* | ✓   | ✓  | ✓  | 81%                | 81%              | APrEST87028     |
|              |   | HPA069771* |     | ✓  | ✓  | 37%                | 37%              | APrEST94323     |
| Anti-KRT17   | keratin 17                                | HPA000452* | ✓   | ✓  | ✓  | 94%                | 94%              | APrEST79736     |
|              |   | HPA045062* | ✓   | ✓  | ✓  | 92%                | 92%              | APrEST8744      |
| Anti-KRT19   | keratin 19                                | HPA002465* | ✓   |    | ✓  | 79%                | 74%              | APrEST86570     |
| Anti-KRT80   | keratin 80                                | HPA077836  |     |    | ✓  | 70%                | 71%              | APrEST90430     |
|              |   | HPA077918* |     | ✓  | ✓  | 75%                | 81%              | APrEST93399     |
| Anti-NEFM    | neurofilament medium                      | AMAb91027  | ✓   | ✓  |    | 98%                | 98%              | APrEST76207     |
|              |   | AMAb91028  | ✓   | ✓  |    | 98%                | 98%              | APrEST76207     |
|              |   | HPA022845* | ✓   | ✓  | ✓  | 74%                | 77%              | APrEST76206     |
| Anti-NES     | nestin                                    | AMAb90556* | ✓   | ✓  | ✓  | 47%                | 42%              | APrEST70691     |
|              |   | HPA006286  |     |    | ✓  | 47%                | 42%              | APrEST7069      |
|              |   | HPA007007* | ✓   | ✓  |    | 47%                | 42%              | APrEST70691     |
| Anti-PJA2    | praja ring finger ubiquitin ligase 2      | HPA040347* | ✓   |    | ✓  | 66%                | 64%              | APrEST80143     |
|              |   | HPA057636  |     | ✓  | ✓  | 73%                | 72%              | APrEST89821     |
| Anti-VIM     | vimentin                                  | AMAb90516* | ✓   | ✓  |    | 99%                | 99%              | APrEST85020     |
|              |   | HPA001762* | ✓   | ✓  | ✓  | 99%                | 99%              | APrEST85020     |

\* Enhanced Validation

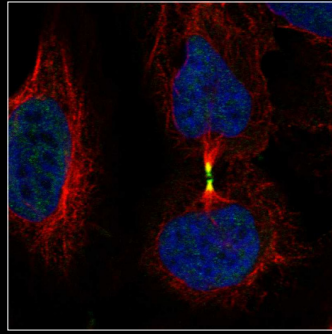


# CYTOPLASM: MICROTUBULES - MITOTIC SPINDLE - MICROTUBULES ENDS - MIDBODY

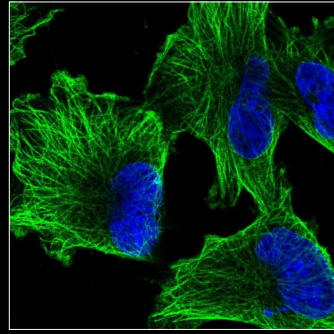
Representative stainings of microtubules and substructures sites in different cell lines using Atlas Antibodies' products (green).



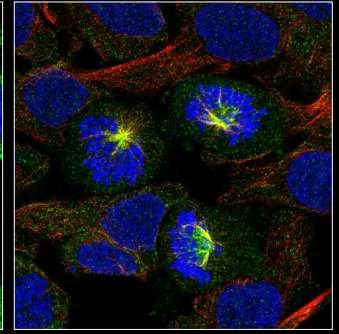
Anti-CAMSAP2 (HPA026511)  
U-2 OS, cytosol, microtubule ends



Anti-AURKB (HPA037708)  
U-2 OS, midbody



Anti-TUBA1A (HPA039247)  
U-251 MG, microtubules



Anti-FAM83D (HPA060854)  
A-431, mitotic spindle

Microtubules make up one of three major parts of the cytoskeleton. Similar to other cytoskeletal filaments, they play a significant role in structural organization and cell shape. Still, they are crucial in several cellular processes, such as cell division, cell motility, and intracellular transport.

Proteins localizing to microtubules are mainly involved in the organization of the cytoskeleton, cytoskeletal transport, protein folding, and cell division.

Substructures of the microtubules include microtubule ends, cytokinetic bridge, midbody, midbody ring, and mitotic spindle

2% (479 proteins) of all human proteins have been experimentally detected in the microtubules by the Human Protein Atlas.

97 proteins in the microtubules are supported by experimental evidence, and out of these, 16 proteins are enhanced by the Human Protein Atlas.

375 proteins in the microtubules have multiple locations.

271 proteins in the microtubules show a cell-to-cell variation. All of them show a variation in intensity.

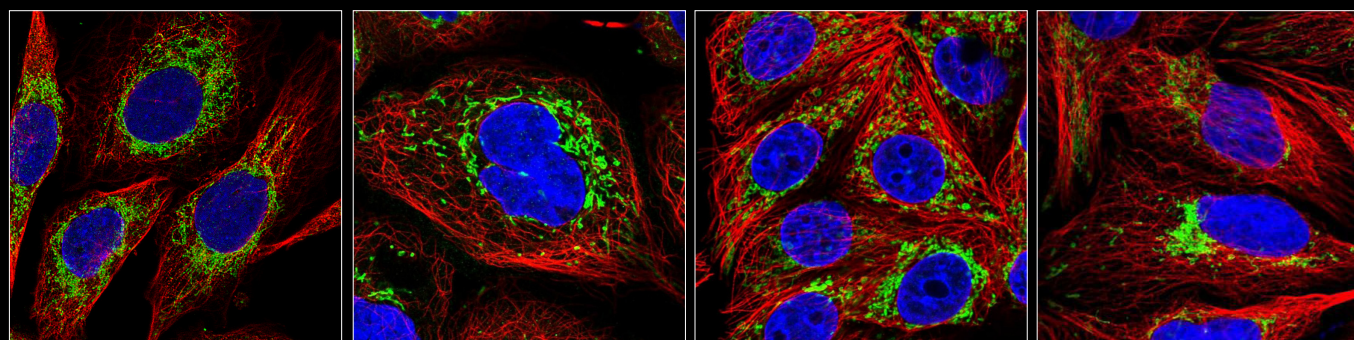
## Selection of antibodies suitable as markers for microtubules and substructures.

| Product Name | Protein Name                                 | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | Control Antigen |
|--------------|--|------------|-----|----|----|--------------------|------------------|-----------------|
| Anti-APC2    | adenomatosis polyposis coli 2                | HPA078002  |     |    | ✓  | 67%                | 77%              | APrEST81873     |
| Anti-BIRC5   | baculoviral iap repeat containing 5          | AMAb91761  |     | ✓  |    | 95%                | 91%              | -               |
|              |  | HPA002830* | ✓   | ✓  |    | 86%                | 88%              | APrEST86238     |
| Anti-CAMSAP2 | calmodulin reg spectrin associated protein 2 | HPA026304* | ✓   |    |    | 81%                | 77%              | APrEST76668     |
|              |  | HPA026511* | ✓   |    | ✓  | 92%                | 93%              | APrEST76669     |
|              |  | HPA027302* | ✓   |    |    | 95%                | 98%              | APrEST76667     |
| Anti-DCTN1   | dynactin subunit 1                           | HPA034635  | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST79255     |
|              |  | HPA071875  |     |    | ✓  | 95%                | 95%              | APrEST95096     |
| Anti-DTNBP1  | dystrobrevin binding protein 1               | HPA028053  | ✓   | ✓  | ✓  | 76%                | 73%              | APrEST77271     |
|              |  | HPA029615* | ✓   | ✓  | ✓  | 92%                | 90%              | APrEST77270     |
|              |  | HPA029616* | ✓   | ✓  |    | 51%                | 54%              | APrEST77272     |
| Anti-FAM83D  | family with sequence similarity 83 member D  | HPA060854  |     |    | ✓  | 61%                | 64%              | APrEST94809     |
| Anti-TUBA1A  | tubulin alpha 1a                             | HPA039247* | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST88952     |
|              |  | HPA043684* | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST89001     |

\* Enhanced Validation

# CYTOPLASM: MITOCHONDRIA

Representative stainings of mitochondria in different cell lines using Atlas Antibodies' products (green).



Anti-CS (AMAb91008)  
PC3 cells, mitochondria

Anti-TIMM4 (HPA043052)  
A-431 cells, mitochondria

Anti-TRAP1 (HPA041082)  
MCF7 cells, mitochondria

Anti-LRPPRC (HPA036409)  
U-2 OS cells, mitochondria

Mitochondrial proteins are mainly involved in cellular respiration and mitochondrial organization, gene expression, and metabolic processes. The number of mitochondria varies with cell type and according to the energy needs of individual cells.

Mitochondria are continuously undergoing fission and fusion, which allows for regulation of the number of mitochondria as well as communication and exchange of mitochondrial components between individual mitochondria.

6% (1139 proteins) of all human proteins have been experimentally detected in the mitochondria by the Human Protein Atlas.

552 proteins in the mitochondria have multiple locations.

354 proteins in the mitochondria show a cell-to-cell variation (340 show a variation in intensity and 20 a spatial variation).

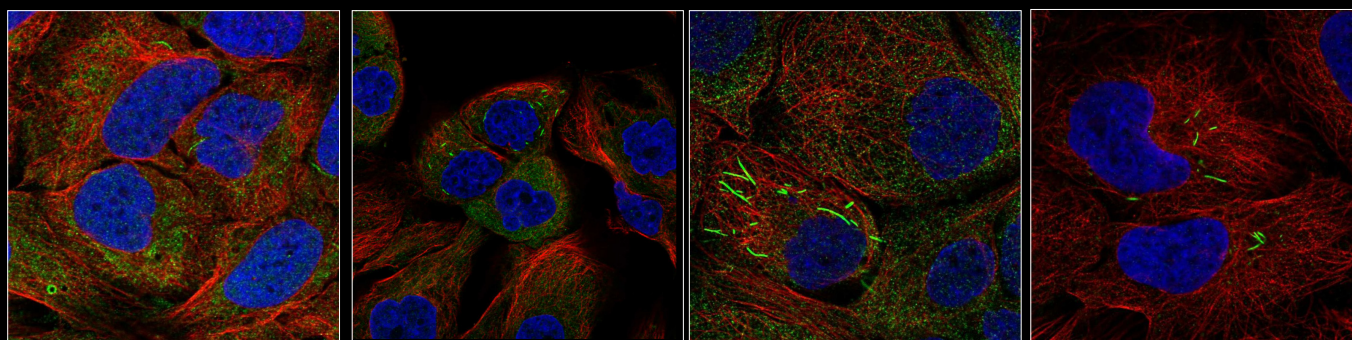
## Selection of antibodies suitable as markers for the mitochondria.

| Product Name  | Protein Name                                | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | Control Antigen |
|---------------|---|------------|-----|----|----|--------------------|------------------|-----------------|
| Anti-CHCHD3   | coiled-coil-helix-domain containing 3       | HPA042935* | ✓   | ✓  | ✓  | 92%                | 91%              | APrEST74935     |
| Anti-CS       | citrate synthase                            | AMAb91005  | ✓   | ✓  | ✓  | 93%                | 94%              | APrEST80947     |
|               |   | AMAb91008  | ✓   | ✓  | ✓  | 93%                | 94%              | APrEST80947     |
|               |   | HPA038460* | ✓   |    | ✓  | 98%                | 97%              | APrEST80948     |
| Anti-GCDH     | glutaryl-CoA dehydrogenase                  | HPA043252* | ✓   | ✓  | ✓  | 87%                | 88%              | APrEST82600     |
|               |   | HPA048492* | ✓   |    |    | 94%                | 95%              | APrEST82599     |
| Anti-IMMT     | inner membrane protein                      | HPA036164* | ✓   | ✓  | ✓  | 97%                | 95%              | APrEST87160     |
|               |   | HPA036165* | ✓   | ✓  | ✓  | 90%                | 87%              | APrEST87161     |
| Anti-LRPPRC   | leucine rich pentatricopept repeat cont     | HPA036408* | ✓   | ✓  | ✓  | 92%                | 88%              | APrEST79080     |
|               |   | HPA036409* | ✓   | ✓  | ✓  | 89%                | 91%              | APrEST87178     |
| Anti-PCK2     | phosphoenolpyruvate carboxykinase 2         | HPA051162* | ✓   | ✓  | ✓  | 79%                | 80%              | APrEST85333     |
| Anti-PGAM5    | phosphoglycerate mutase family member 5     | AMAb90803  | ✓   | ✓  |    | 94%                | 92%              | APrEST78615     |
|               |   | HPA036978  | ✓   | ✓  | ✓  | 94%                | 92%              | APrEST78615     |
| Anti-PHB2     | prohibitin 2                                | HPA039874  | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST81272     |
| Anti-PYCR2    | pyrroline-5-carboxylate reductase 2         | HPA056873  | ✓   | ✓  | ✓  | 82%                | 79%              | APrEST86151     |
| Anti-SLC25A24 | solute carrier family 25 member 24          | HPA028519* |     | ✓  | ✓  | 95%                | 93%              | APrEST76553     |
|               |   | HPA063636* | ✓   | ✓  | ✓  | 91%                | 89%              | APrEST90029     |
| Anti-TIMM44   | translocase inner mitochondrial membrane 44 | HPA043052* | ✓   | ✓  | ✓  | 87%                | 87%              | APrEST82566     |
|               |   | HPA073108  |     | ✓  | ✓  | 93%                | 94%              | APrEST95146     |
| Anti-TRAP1    | TNF receptor associated protein 1           | HPA041082* | ✓   | ✓  | ✓  | 90%                | 91%              | APrEST82179     |
|               |   | HPA044227* | ✓   | ✓  | ✓  | 74%                | 71%              | APrEST82180     |
| Anti-ZNF211   | zinc finger protein 211                     | HPA049967  |     |    | ✓  | 33%                | 36%              | APrEST91220     |

\* Enhanced Validation

## CYTOPLASM: RODS & RINGS

Representative stainings of rods and rings in different cell lines using Atlas Antibodies' products (green).



Anti-AGPAT1 (HPA048478)  
U-2 OS cells, rods & rings

Anti-ITGB2 (HPA016894)  
EFO-21 cells, rods & rings

Anti-IMPDH2 (HPA001400)  
A-431 cells, rods & rings

Anti-ISL2 (HPA075192)  
U-2 OS cells, rods & rings

Rods and rings (RRs) are poorly characterized fibrous cytoplasmic structures, shaped as a mixture of circular rings and linear rods, that have been observed in cultured human cell lines. Rods and rings were named after their rod and ring-like shapes. They can be seen in the cytosol but vary in size and number.

Several other proteins have also been found to localize to rods and rings, suggesting a more complex structure and perhaps also the regulation of rods and rings.

Rods and rings are commonly shown to contain inosine monophosphate dehydrogenase (IMPDH) and/or cytidine triphosphate synthetase (CTPS), suggesting a role related to synthesizing nucleotides.

### Selection of antibodies suitable as markers for rods & rings.

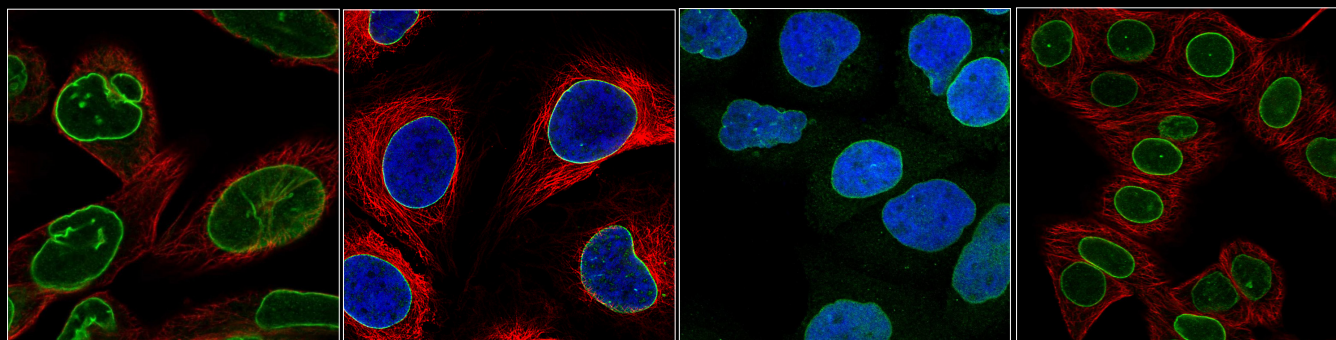
| Product Name | Protein Name                                   | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|--|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-AGPAT1  | 1-acylglycerol 3-phosphate O-acyltransferase-1 | HPA048478  |     |    | ✓  | 89%                | 93%              | APrEST90396           |
| Anti-CTPS1   | CTP synthase 1                                 | HPA051322* | ✓   |    | ✓  | 94%                | 94%              | APrEST89638           |
| Anti-CTPS2   | CTP synthase 2                                 | HPA075930  |     |    | ✓  | 80%                | 78%              | APrEST95348           |
| Anti-GLYCTK  | glycerate kinase                               | HPA006913  | ✓   | ✓  |    | 94%                | 94%              | APrEST71033           |
| Anti-IMPDH2  | inosine monophosphate dehydrogenase 2          | HPA001400* | ✓   | ✓  | ✓  | 98%                | 98%              | APrEST83044           |
| Anti-ISL2    | ISL LIM homeobox 2                             | HPA075192  |     |    | ✓  | 100%               | 100%             | APrEST93272           |
| Anti-ITGB2   | integrin subunit beta 2                        | HPA016894* | ✓   | ✓  | ✓  | 89%                | 86%              | APrEST70101           |
| Anti-SARAF   | store-operated calcium entry assoc reg factor  | HPA040400  |     |    | ✓  | 75%                | 70%              | APrEST90912           |
| Anti-SCARB1  | scavenger receptor class B member 1            | HPA066285  |     |    | ✓  | 78%                | 76%              | APrEST88719           |
| Anti-STK3    | serine/threonine kinase 3                      | HPA007120  | ✓   | ✓  | ✓  | 89%                | 95%              | APrEST70211           |
| Anti-UBE3D   | ubiquitin protein ligase E3D                   | HPA027231  | ✓   |    | ✓  | 74%                | 73%              | APrEST77393           |
| Anti-ZNF266  | zinc finger protein 266                        | HPA026836  | ✓   |    | ✓  | 55%                | 52%              | APrEST73750           |

\* Enhanced Validation



# NUCLEUS: NUCLEAR MEMBRANE

Representative stainings of the nuclear membrane in different cell lines using Atlas Antibodies' products (green).



Anti-LBR (HPA062236)  
RH-30 cells, nuclear membrane

Anti-LMNB1 (AMAb91251)  
MCF7 cells, nuclear membrane

Anti-SUN1 (HPA008346)  
A-431 cells, nuclear membrane

Anti-TOR1AIP1 (HPA050546)  
MCF7 cells, nuclear membrane

The nuclear membrane is a lipid bilayer enclosing the nucleus and physically isolating it from the rest of the cell. This enables essential molecular processes to occur in the nucleus without interference from the cytoplasm. Nuclear membrane proteins are mainly involved in the organization of the nucleus and nucleocytoplasmic transport.

**278 genes (1% of all protein-coding human genes) have been shown to encode proteins that localize to the nuclear membrane.**

About 86% (n=238) of the nuclear membrane proteins localize to other cellular compartments in addition to the nuclear membrane, with 28% (n=79) also localizing to other substructures within the nuclear meta compartment.

The most common additional localization apart from the nucleoplasm is vesicles.

70 proteins in the nuclear membrane are supported by experimental evidence, and out of these 17 proteins are enhanced by the Human Protein Atlas.

238 proteins in the nuclear membrane have multiple locations.

41 proteins in the nuclear membrane show a cell-to-cell variation. Of these 38 show a variation in intensity and 4 a spatial variation.

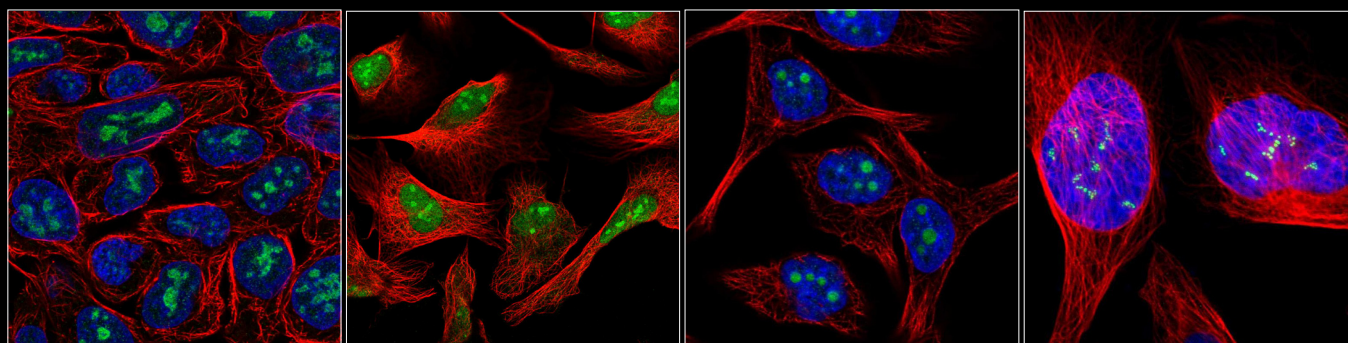
## Selection of antibodies suitable as markers for the nuclear membrane.

| Product Name  | Protein Name                          | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|---------------|---------------------------------------|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-LBR      | lamin B receptor                      | HPA062236* |     | ✓  | ✓  | 62%                | 38%              | APrEST89987           |
|               |                                       | HPA049840* | ✓   |    |    | 87%                | 89%              | APrEST83587           |
| Anti-LEMED2   | LEM domain nuclear envelope protein 2 | HPA017340  | ✓   | ✓  | ✓  | 92%                | 90%              | APrEST71105           |
| Anti-LMNB1    | lamin B1                              | HPA050524* | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST88562           |
|               |                                       | AMAb91251  | ✓   | ✓  | ✓  | 100%               | 100%             | -                     |
| Anti-LMNB2    | lamin B2                              | HPA062477  |     |    | ✓  | 71%                | 71%              | APrEST88264           |
| Anti-SUN1     | sad1 and UNC84 domain containing 1    | HPA008346* | ✓   |    | ✓  | 59%                | 58%              | APrEST71108           |
| Anti-SUN2     | sad1 and UNC84 domain containing 2    | HPA001209* | ✓   | ✓  | ✓  | 80%                | 78%              | APrEST73388           |
| Anti-TMPO     | thymopoietin                          | HPA008150* | ✓   | ✓  | ✓  | 96%                | 93%              | APrEST71860           |
| Anti-TOR1AIP1 | torsin 1A interacting protein 1       | HPA050546* | ✓   | ✓  | ✓  | 46%                | 47%              | APrEST83561           |
| Anti-TPR      | translocated promoter region          | HPA019661* | ✓   | ✓  | ✓  | 88%                | 90%              | APrEST73940           |

\* Enhanced Validation

# NUCLEUS: NUCLEOLI - NUCLEOLI FIBRILLAR CENTER - NUCLEOLI RIM

Representative stainings of the nucleoli and substructures in different cell lines using Atlas Antibodies' products (green).



Anti-ACSL3 (HPA071021)  
RT4 cells, nucleoli

Anti-GON7 (HPA051832)  
U-2 OS, nucleoplasm, nucleoli rim

Anti-RPF1 (HPA024642)  
SK-MEL-30 cells, nucleoli

Anti-UBTF (HPA006385)  
U-2 OS cells, nucl fibrillar center

The nucleolus is a nuclear sub-compartment that varies in size and number depending on cell type. Nucleolar proteins are mainly involved in rRNA processing. The primary function of the nucleolus is to synthesize and assemble ribosomes for later transport to the cytoplasm, where translation takes place. The nucleolus is also involved in cell cycle regulation and cellular stress responses.

The nucleolar fibrillar center (FC) is a subcompartment of the nucleolus with a clear fibrillar structure assembled around active nucleolar organizing regions at specific chromosomal loci.

The nucleoli rim is a potential subcompartment of the nucleoli, but its function is still unknown. The proteins localizing here might be associated with the perinucleolar heterochromatin, where they could aid the tethering of the

chromatin to the nucleoli. A large fraction of the proteins that localize to the rim of nucleoli also localizes to the perichromosomal layer of mitotic chromosomes.

7% (1410 proteins) of all human proteins have been experimentally detected in the nucleoli by the Human Protein Atlas.

436 proteins in the nucleoli are supported by experimental evidence, and out of these, 120 proteins are enhanced by the Human Protein Atlas.

1245 proteins in the nucleoli have multiple locations.

358 proteins in the nucleoli show a cell-to-cell variation. Of these, 316 show a variation in intensity and 56 a spatial variation.

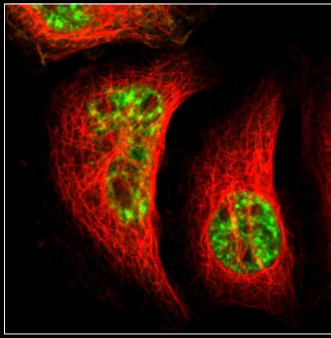
## Selection of antibodies suitable as markers for the nucleoli and its substructures.

| Product Name | Protein Name                              | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|---|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-ACSL3   | acyl-CoA synthetase long-chain member 3   | HPA071021  |     |    | ✓  | 89%                | 89%              | APrEST92972           |
| Anti-DDX47   | DEAD (Asp-Glu-Ala-Asp) box polypeptide 47 | HPA014855  | ✓   | ✓  | ✓  | 94%                | 94%              | APrEST73083           |
| Anti-FTSJ3   | ftsJ RNA 2'-O-methyltransferase 3         | HPA055544  | ✓   |    | ✓  | 97%                | 95%              | APrEST75559           |
|              |   | HPA062628  |     |    | ✓  | 69%                | 67%              | APrEST92279           |
| Anti-GON7    | KEOPS complex subunit homolog, C14orf142  | HPA051832  | ✓   |    | ✓  | 64%                | 62%              | APrEST84122           |
| Anti-LYAR    | ly1 antibody reactive                     | HPA035881* | ✓   |    | ✓  | 70%                | 67%              | APrEST79771           |
| Anti-NIN     | ninein (GSK3B interacting protein)        | HPA070691  |     |    | ✓  | 59%                | 56%              | APrEST92944           |
| Anti-NOL10   | nucleolar protein 10                      | HPA035286  |     | ✓  | ✓  | 99%                | 100%             | APrEST89338           |
| Anti-RPF1    | ribosome production factor 1 homolog      | HPA024642  | ✓   | ✓  | ✓  | 90%                | 85%              | APrEST76632           |
| Anti-UBTF    | upstream binding transcription factor     | HPA006385* | ✓   | ✓  | ✓  | 98%                | 90%              | APrEST70888           |
| Anti-UTP6    | UTP6 small subunit processome component   | HPA025936* | ✓   | ✓  | ✓  | 88%                | 86%              | APrEST75561           |
|              |   | HPA055806  |     | ✓  | ✓  | 87%                | 84%              | APrEST89757           |

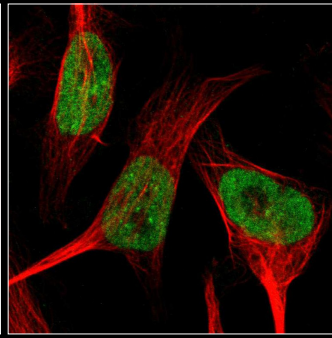
\* Enhanced Validation

# NUCLEUS: NUCLEOPLASM - NUCLEAR BODIES - NUCLEAR SPECKLES

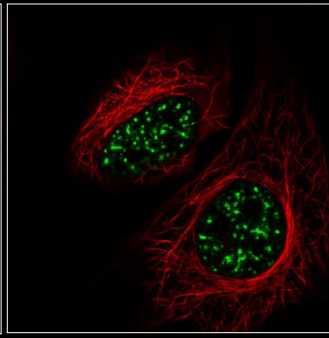
Representative stainings of the nucleoli and substructures in different cell lines using Atlas Antibodies' products (green).



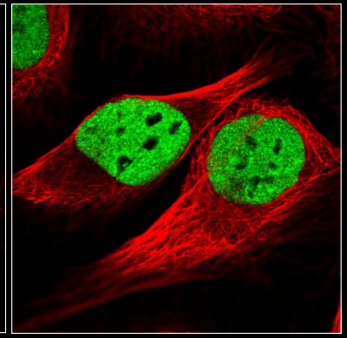
Anti-RBM25 (HPA003025)  
A-431 cells, nuclear speckles



Anti-SMARCAD1 (HPA016737)  
U-251 MG cells, nucleoplasm



Anti-SRRM2 (HPA066181)  
HeLa cells, nuclear speckles



Anti-TAF15 (HPA052059)  
HeLa cells, nucleoplasm

The nucleoplasm contains several non-membrane-bound substructures, such as nuclear bodies and nuclear speckles.

Proteins localizing to the nucleoplasm are mainly involved in RNA processing, transcription, chromatin modification and DNA repair, differentiation and development.

The nucleoplasm can be visualized by staining with the fluorescent stain 4',6-diamidino-2-phenylindole (DAPI), which binds strongly to AT-rich regions of DNA. However, nucleoli usually display much weaker staining with DAPI, because of the lower amount of DNA in these regions.

34% (6784 proteins) of all human proteins have been experimentally detected in the nucleoplasm by the Human Protein Atlas.

2796 proteins in the nucleoplasm are supported by experimental evidence and out of these 838 proteins are enhanced by the Human Protein Atlas.

4538 proteins in the nucleoplasm have multiple locations.

1338 proteins in the nucleoplasm show a cell-to-cell variation. Of these 1238 show a variation in intensity and 149 a spatial variation.

## Selection of antibodies suitable as markers for the nucleus or its substructures.

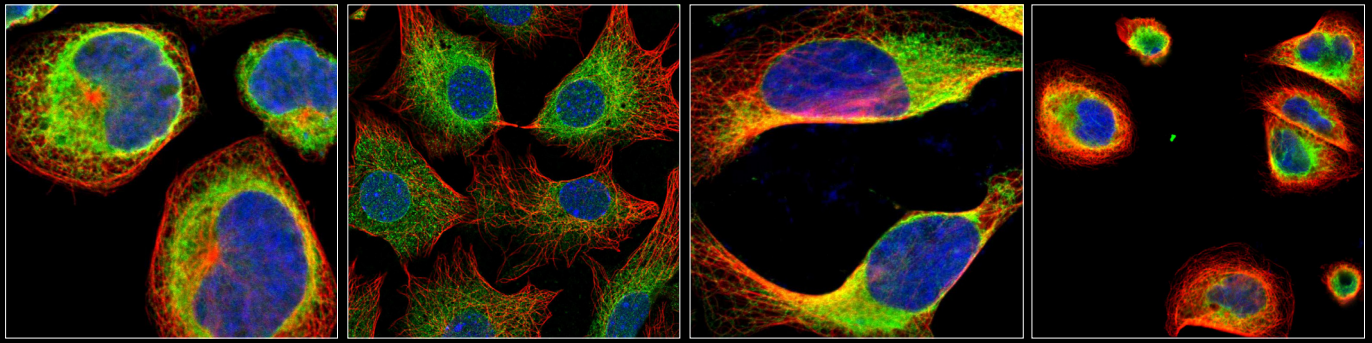
| Product Name  | Protein Name  | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|---------------|---|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-MKI67    | marker of proliferation Ki-67   | AMAb90870  | ✓   |    | ✓  | 68%                | 68%              | APrEST79721           |
|               |   | HPA000451* | ✓   |    | ✓  | 66%                | 67%              | APrEST79727           |
|               |   | HPA001164* | ✓   |    | ✓  | 68%                | 68%              | APrEST79721           |
| Anti-PDS5A    | regulator of cohesion maintenance, homolog A  | HPA036661* | ✓   | ✓  | ✓  | 90%                | 89%              | APrEST87191           |
|               |   | HPA036662* | ✓   | ✓  | ✓  | 86%                | 85%              | APrEST79732           |
| Anti-RBM25    | RNA binding motif protein 25  | HPA003025  | ✓   | ✓  | ✓  | 100%               | 99%              | APrEST70612           |
|               |   | HPA070713  |     |    | ✓  | 99%                | 99%              | APrEST92949           |
| Anti-RSL1D1   | ribosomal L1 domain containing 1  | HPA043483  | ✓   |    | ✓  | 35%                | 38%              | APrEST84670           |
| Anti-SMARCAD1 | SWI/SNF-related, matrix-associated actin-dependent reg of chromatin, subfamily a, containing DEAD/H box 1 | HPA016737* | ✓   | ✓  | ✓  | 86%                | 85%              | APrEST73768           |
| Anti-SRRM2    | serine/arginine repetitive matrix 2   | HPA041411  | ✓   |    | ✓  | 60%                | 60%              | APrEST82293           |
|               |   | HPA066181  |     |    | ✓  | 96%                | 97%              | APrEST90166           |
| Anti-TAF15    | TATA-box binding protein associated factor 15   | HPA052059* | ✓   |    | ✓  | 97%                | 94%              | APrEST85748           |
|               |   | HPA063647* |     | ✓  | ✓  | 84%                | 84%              | APrEST92386           |
| Anti-TP53BP1  | tumor protein p53 binding protein 1   | HPA008788  |     | ✓  | ✓  | 100%               | 100%             | APrEST70850           |
|               |   | HPA022133* | ✓   | ✓  | ✓  | 85%                | 86%              | APrEST70849           |

\* Enhanced Validation



# ENDOMEMBRANE SYSTEM: ENDOPLASMIC RETICULUM

Representative stainings of the endoplasmic system in different cell lines using Atlas Antibodies' products (green).



Anti-CANX (HPA009696)  
A-431, endoplasmic reticulum

Anti-CYP51A1 (HPA043508)  
NIH 3T3, endoplasmic reticulum

Anti-HSP90B1 (HPA003901)  
U-2 OS, endoplasmic reticulum

Anti-PDIA3 (HPA003230)  
U-251 MG, endoplasmic reticulum

The endoplasmic reticulum (ER) is a delicate membranous network composed of sheets and tubules that spread throughout the cytoplasm and are contiguous with the nuclear membrane. Proteins localizing to the ER are mainly involved in protein synthesis, folding, modification, mRNA degradation, and metabolic processes.

In immunofluorescent staining, the ER is recognized by a network-like staining in the cytosol, which is usually stronger close to the nucleus and weaker close to the edges of the cell. As the ER is continuous with the outer nuclear membrane, staining is often seen around the nucleus.

3% (523 proteins) of all human proteins have been experimentally detected in the endoplasmic reticulum by the Human Protein Atlas.

246 proteins in the endoplasmic reticulum are supported by experimental evidence; 54 proteins are also enhanced by the Human Protein Atlas.

282 proteins in the endoplasmic reticulum have multiple locations.

72 proteins in the endoplasmic reticulum show a cell-to-cell variation. Of these 70 show a variation in intensity and 2 a spatial variation.

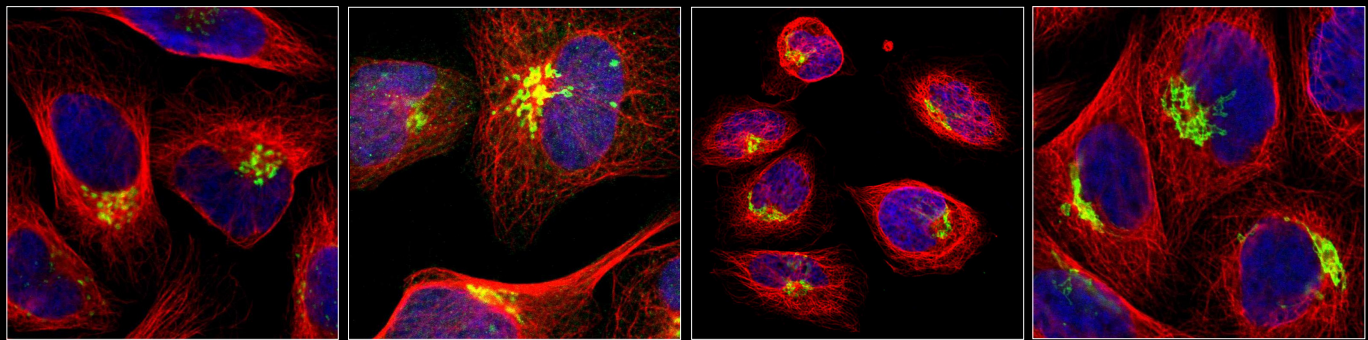
## Selection of antibodies suitable as markers for the endoplasmic reticulum.

| Product Name | Protein Name                                  | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|---|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-CANX    | calnexin                                      | HPA009433* | ✓   |    | ✓  | 88%                | 89%              | APrEST71909           |
|              |   | HPA009696* | ✓   |    | ✓  | 84%                | 87%              | APrEST71910           |
| Anti-CYP51A1 | cytochrome P450 family 51 subfamily A1        | HPA041325* | ✓   | ✓  | ✓  | 88%                | 92%              | APrEST81763           |
|              |   | HPA043508* | ✓   |    | ✓  | 93%                | 95%              | APrEST81764           |
| Anti-ELOVL5  | ELOVL fatty acid elongase 5                   | HPA047752* | ✓   | ✓  | ✓  | 88%                | 79%              | APrEST84558           |
| Anti-HSP90B1 | heat shock protein 90 beta family member 1    | AMAb91019* | ✓   | ✓  | ✓  | 90%                | 87%              | APrEST86672           |
|              |   | HPA003901* | ✓   | ✓  | ✓  | 90%                | 87%              | APrEST86672           |
|              |   | HPA008424* | ✓   | ✓  | ✓  | 98%                | 95%              | APrEST86673           |
| Anti-KTN1    | kinectin 1 (kinesin receptor)                 | HPA003178* | ✓   | ✓  | ✓  | 80%                | 75%              | APrEST70565           |
|              |   | HPA017876* | ✓   |    |    | 62%                | 57%              | APrEST70517           |
| Anti-LRRC59  | leucine rich repeat containing 59             | HPA030827* | ✓   | ✓  | ✓  | 93%                | 93%              | APrEST78469           |
|              |   | HPA030829* | ✓   | ✓  | ✓  | 96%                | 93%              | APrEST78468           |
| Anti-PDIA3   | protein disulfide isomerase family A member 3 | AMAb90988* | ✓   | ✓  | ✓  | 91%                | 91%              | APrEST86567           |
|              |   | AMAb90991  | ✓   | ✓  |    | 91%                | 91%              | APrEST86567           |
|              |   | HPA003230* | ✓   | ✓  | ✓  | 91%                | 91%              | APrEST86567           |
| Anti-RCN1    | reticulocalbin 1, EF-hand calcium bind domain | HPA038474* | ✓   | ✓  | ✓  | 92%                | 92%              | APrEST80493           |
| Anti-RCN2    | reticulocalbin 2, EF-hand calcium bind domain | HPA030694* | ✓   | ✓  | ✓  | 91%                | 90%              | APrEST78491           |
| Anti-RRBP1   | ribosome binding protein 1                    | HPA009026* | ✓   | ✓  | ✓  | 85%                | 86%              | APrEST71890           |
| Anti-SEC61B  | sec61 beta subunit                            | HPA049407  | ✓   |    | ✓  | 100%               | 100%             | APrEST79615           |
| Anti-SOAT1   | sterol O-acyltransferase 1                    | HPA047171* | ✓   |    | ✓  | 59%                | 67%              | APrEST83563           |
| Anti-VAPA    | VAMP-associated protein A                     | HPA009174  | ✓   | ✓  | ✓  | 60%                | 84%              | APrEST71717           |

\* Enhanced Validation

# ENDOMEMBRANE SYSTEM: GOLGI APPARATUS

Representative stainings of the Golgi apparatus in different cell lines using Atlas Antibodies' products (green).



Anti-GALNT2 (HPA011222)  
U-2 OS cells, Golgi apparatus

Anti-GOLGA5 (HPA000992)  
U-2 OS cells, Golgi apparatus

Anti-GOLGB1 (HPA011008)  
A-431 cells, Golgi apparatus

Anti-GOLM1 (HPA010638)  
A-431 cells, Golgi apparatus

The Golgi apparatus is the key organelle in the secretory pathway and essential for the intracellular trafficking of proteins and membranes. Most newly synthesized proteins that enter the secretory pathway move from the ER through the Golgi apparatus to their final destination. Proteins localizing to the Golgi apparatus are mainly involved in the transport and modification of proteins.

During transit through the Golgi apparatus, they are heavily modified by post-translational modifications mediated by Golgi-resident proteins. These modifications include but are not limited to, glycosylation, sulfation, phosphorylation, and proteolytic cleavage.

Therefore, it is not surprising that malfunctions of Golgi-associated proteins that affect the morphology of the Golgi apparatus, or the trafficking or post-translational

modifications (especially glycosylation) that occur in the compartment, can lead to human diseases such as Congenital Disorder of Glycosylation (CDG).

6% (1127 proteins) of all human proteins have been experimentally detected in the Golgi apparatus by the Human Protein Atlas.

271 proteins in the Golgi apparatus are supported by experimental evidence and out of these 72 proteins are enhanced by the Human Protein Atlas.

853 proteins in the Golgi apparatus have multiple locations.

156 proteins in the Golgi apparatus show a cell-to-cell variation. Of these 151 show a variation in intensity and 5 a spatial variation.

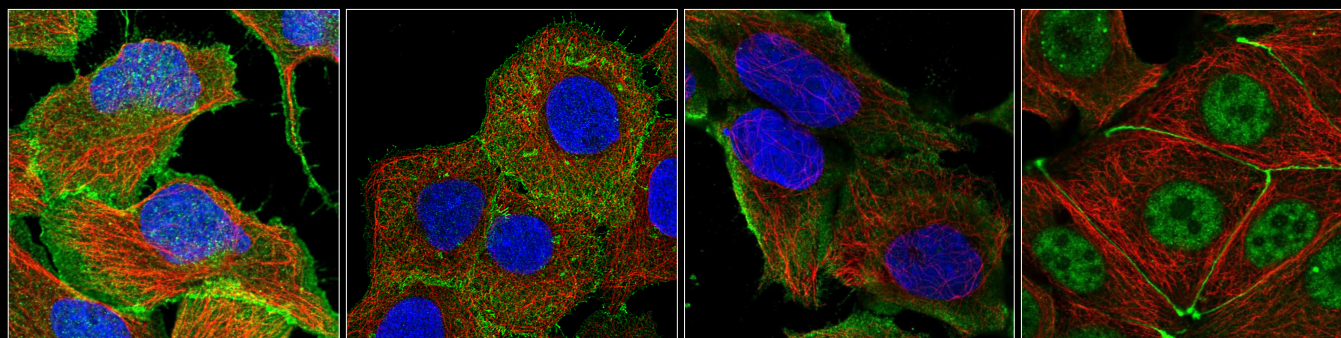
## Selection of antibodies suitable as markers for the Golgi apparatus.

| Product Name | Protein Name                                   | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|--|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-GALNT2  | polypeptide N-acetylgalactosaminyltransferase2 | HPA011222* | ✓   | ✓  | ✓  | 96%                | 96%              | APrEST72034           |
| Anti-GOLGA5  | golgin A5                                      | HPA000992* | ✓   | ✓  | ✓  | 70%                | 76%              | APrEST70366           |
| Anti-GOLGB1  | golgin B1                                      | HPA011008* | ✓   |    | ✓  | 60%                | 63%              | APrEST72216           |
|              |  | HPA011555* | ✓   |    | ✓  | 69%                | 67%              | APrEST72215           |
| Anti-GOLIM4  | Golgi integral membrane protein 4              | HPA001677* | ✓   |    | ✓  | 71%                | 70%              | APrEST85129           |
|              |  | HPA002315* | ✓   |    |    | 81%                | 82%              | APrEST85128           |
| Anti-GOLM1   | Golgi membrane protein 1                       | HPA010638* | ✓   | ✓  | ✓  | 46%                | 45%              | APrEST71956           |
| Anti-GORASP2 | Golgi reassembly stacking protein 2            | AMAb91016* | ✓   | ✓  | ✓  | 68%                | 68%              | APrEST87115           |
|              |  | HPA035274* | ✓   | ✓  | ✓  | 67%                | 67%              | APrEST87115           |
| Anti-OSBP    | oxysterol binding protein                      | HPA039227* |     | ✓  | ✓  | 96%                | 97%              | APrEST80518           |
| Anti-SLC30A6 | solute carrier family 30 (zinc transporter) 6  | HPA055032  |     |    | ✓  | 89%                | 89%              | APrEST91608           |
| Anti-USO1    | USO1 vesicle transport factor                  | HPA038282* |     | ✓  | ✓  | 98%                | 96%              | APrEST89370           |
| Anti-ZFPL1   | zinc finger protein like 1                     | HPA014909* | ✓   | ✓  | ✓  | 83%                | 83%              | APrEST72298           |
|              |  | HPA017347* | ✓   |    | ✓  | 97%                | 97%              | APrEST72297           |
| Anti-YIPF3   | yip1 domain family, member 3                   | HPA014859  | ✓   | ✓  | ✓  | 88%                | 86%              | APrEST73063           |

\* Enhanced Validation

# ENDOMEMBRANE SYSTEM: PLASMA MEMBRANE - CELL JUNCTIONS

Representative stainings of the plasma membrane in different cell lines using Atlas Antibodies' products (green).



Anti-CTNNB1 (HPA029159)  
U-2 OS cells, plasma membrane

Anti-EZR (AMAb90979)  
A-431 cells, plasma membrane

Anti-SLC41A3 (HPA045847)  
HEK 293 cells, plasma membrane

Anti-TJP3 (HPA046863)  
MCF7 cells, plasma membrane

The plasma membrane, also known as the cell membrane or cytoplasmic membrane, is the barrier that encloses the cell and protects the intracellular components from the surroundings. The plasma membrane is a thin, semi-permeable membrane consisting of a lipid bilayer and associated proteins, each constituting about 50% of the total mass of the cell membrane.

Proteins of the plasma membrane are mainly involved in endocytosis and cellular response to extracellular stimuli, cell signaling, transport, cell structure, and cell adhesion.

A rupture in the plasma membrane leads to the impairment of cell integrity and function, resulting in cell lysis and cell death unless rapidly repaired. Moreover, mutations in genes encoding proteins that localize to the plasma membrane have been associated with numerous human diseases. For example, mutations in genes encoding channel- and

transporter proteins have been linked to various diseases, including cystic fibrosis, cardiac arrhythmia, diabetes, skeletal muscle defects, and neurological disorders.

**11% (2202 proteins) of all human proteins have been experimentally detected in the plasma membrane by the Human Protein Atlas.**

790 proteins in the plasma membrane are supported by experimental evidence, and out of these 126 proteins are enhanced by the Human Protein Atlas.

1776 proteins in the plasma membrane have multiple locations.

259 proteins in the plasma membrane show a cell-to-cell variation. Of these, 252 show a variation in intensity and 9 a spatial variation.

## Selection of antibodies suitable as markers for the plasma membrane & cell junctions.

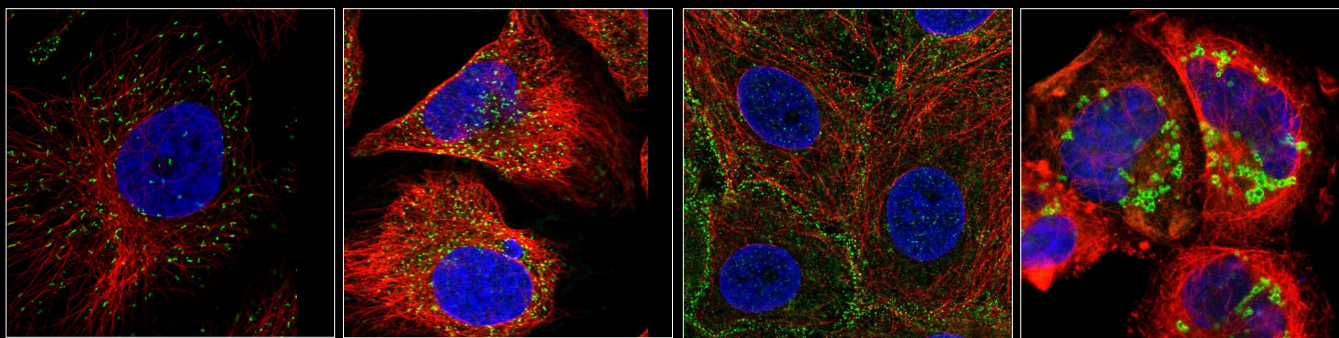
| Product Name | Protein Name                                 | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|--|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-ANK3    | ankyrin 3, node of Ranvier (ankyrin G)       | HPA038455  |     | ✓  | ✓  | 82%                | 83%              |                       |
| Anti-CDH17   | cadherin 17, LI cadherin (liver-intestine)   | HPA023614* | ✓   | ✓  |    | 83%                | 83%              | APrEST76190           |
| Anti-CTNNB1  | catenin beta 1                               | AMAb91209  | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST78098           |
|              |  | HPA029159* | ✓   | ✓  | ✓  | 100%               | 100%             | APrEST78098           |
| Anti-EGFR    | epidermal growth factor receptor             | AMAb90816  | ✓   | ✓  |    | 90%                | 91%              | APrEST78874           |
|              |  | HPA018530* | ✓   | ✓  | ✓  | 84%                | 82%              | APrEST78873           |
| Anti-EPB41L3 | erythrocyte membrane protein band 4.1 like 3 | HPA028605* | ✓   | ✓  | ✓  | 58%                | 58%              | APrEST75465           |
| Anti-EZR     | ezrin  | AMAb90975  | ✓   | ✓  | ✓  | 93%                | 93%              | APrEST85223           |
|              |  | AMAb90979  | ✓   | ✓  | ✓  | 93%                | 93%              | APrEST85223           |
|              |  | HPA021616* | ✓   | ✓  | ✓  | 93%                | 93%              | APrEST85223           |
| Anti-GJB6    | gap junction protein beta 6                  | AMAb91305  |     |    | ✓  | 85%                | 85%              |                       |
| Anti-HTRA1   | HtrA serine peptidase 1                      | HPA036655  |     |    | ✓  | 91%                | 91%              | APrEST79654           |
| Anti-SLC16A1 | solute carrier family 16 member 1            | HPA003324* | ✓   | ✓  | ✓  | 66%                | 65%              | APrEST86072           |
|              |  | HPA071055  |     |    | ✓  | 62%                | 52%              | APrEST90318           |
| Anti-SLC41A3 | solute carrier family 41 member 3            | HPA045847  | ✓   | ✓  | ✓  | 53%                | 56%              | APrEST79330           |
| Anti-STX4    | syntaxin 4                                   | HPA001330* | ✓   | ✓  | ✓  | 86%                | 86%              | APrEST78890           |
| Anti-TJP3    | tight junction protein 3                     | HPA046863  |     | ✓  | ✓  | 56%                | 59%              | APrEST89533           |

\* Enhanced Validation



# ENDOMEMBRANE SYSTEM: VESICLES

Representative stainings of the vesicle and substructures in different cell lines using Atlas Antibodies' products (green).



Anti-ABCD3 (AMAb90995)  
HeLa cells, peroxisomes

Anti-AGPS (HPA030209)  
U-2 OS cells, peroxisomes

Anti-EPS15L1 (HPA055309)  
MCF7 cells, vesicles

Anti-PLIN3 (HPA006427)  
A-431 cells, lipid droplets

Vesicles is a collective term for cytoplasmic organelles that are often too small to have distinct features when imaged by light microscopy. The general structure of organelles annotated as vesicles is a round membrane-enclosed lumen less than 1 µm in diameter.

The majority of the vesicles are membrane-bound organelles. However, large protein complexes and cytosolic bodies can also fall under this category, as they are difficult to distinguish.

Examples of organelles with a vesicle annotation are the members of the endolysosomal pathway, transport vesicles, peroxisomes, and lipid droplets.

Proteins are mainly involved in lipid metabolism, organization of vesicle organelles such as endosomes,

vacuoles and peroxisomes, protein transport, endocytosis, and exocytosis.

11% (2247 proteins) of all human proteins have been experimentally detected in the vesicles by the Human Protein Atlas.

514 proteins in the vesicles are supported by experimental evidence, and out of these 122 proteins are enhanced by the Human Protein Atlas.

1511 proteins in the vesicles have multiple locations.

330 proteins in the vesicles show a cell-to-cell variation (315 intensity and 18 a spatial variation).

## Selection of antibodies suitable as markers for the vesicles.

| Product Name | Protein Name  | Product ID | IHC | WB | IF | Mouse seq homology | Rat seq homology | PrEST Control Antigen |
|--------------|---|------------|-----|----|----|--------------------|------------------|-----------------------|
| Anti-ABCD3   | ATP-binding cassette, sub-family D, member 3                | HPA032026* | ✓   |    | ✓  | 86%                | 88%              | APrEST87065           |
|              |   | AMAb90995* | ✓   |    | ✓  | 86%                | 87%              | APrEST87065           |
| Anti-AGPS    | alkylglycerone phosphate synthase                           | HPA030209  | ✓   |    | ✓  | 80%                | 81%              | APrEST78904           |
| Anti-ANKFY1  | ankyrin repeat and FYVE domain containing 1                 | HPA065849  |     |    | ✓  | 95%                | 96%              | APrEST92600           |
| Anti-EPS15L1 | EGF- receptor pathway substrate 15-like 1                   | HPA055309  |     |    | ✓  | 88%                | 86%              | APrEST91635           |
|              |   | HPA019237* | ✓   | ✓  |    | 94%                | 94%              | APrEST74696           |
| Anti-LAMTOR4 | late endosomal/lysosomal adaptor, MAPK and MTOR activator 4 | HPA020998* | ✓   | ✓  | ✓  | 96%                | 97%              | APrEST75116           |
| Anti-PLIN3   | perilipin 3   | HPA006427* | ✓   | ✓  | ✓  | 71%                | 71%              | APrEST70468           |
| Anti-RAB5C   | RAB5C, member RAS oncogene family                           | HPA003426* |     | ✓  |    | 95%                | 97%              | APrEST86406           |
|              |   | HPA004167  |     |    | ✓  | 95%                | 97%              | APrEST86406           |
| Anti-RAB7A   | RAB7A, member RAS oncogene family                           | HPA006964* | ✓   | ✓  | ✓  | 100%               | 99%              | APrEST71095           |

\* Enhanced Validation

## VERY RELIABLE ANTIBODIES

Atlas Antibodies manufactures and provides over 21,000 highly validated monoclonal and polyclonal primary antibodies and control antigens targeting the majority of human proteins for tissue and cell analysis to explore and accelerate research in biology, pathology, and medicine. The portfolio covers different research areas such as neuroscience, cancer, cell biology, stem cell & development. All our products are rigorously evaluated for specificity, reproducibility, and performance and characterized for use in IHC, WB, and ICC-IF. Enhanced validation is applied as an extra level of security of antibody specificity in a defined context. Available in 25 µL and 100 µL unit sizes.



### Atlas Antibodies Advanced Polyclonals.

Triple A Polyclonals™ are rabbit polyclonal primary antibodies developed within the Human Protein Atlas project. IHC characterization data from 44 normal and 20 cancer tissues is available on the Human Protein Atlas portal.

## CREATED BY THE HUMAN PROTEIN ATLAS

With our roots in the Human Protein Atlas project, an integration of antibody-based imaging, proteomics, and transcriptomics, our antibodies are affinity-purified, reproducible, selective, and specific for their target proteins through our enhanced validation process. Our Triple A Polyclonals™ are developed within the Human Protein Atlas project.



### Precise. Accurate. Targeted.

PrecisA Monoclonals™ are mouse monoclonal primary antibodies developed against a number of carefully selected targets. Clones are selected to recognize only unique non-overlapping epitopes and isotypes.

## VALIDATED BY ENHANCED VALIDATION

We take great care to validate our antibodies in IHC, WB, and ICC-IF. Our antibodies are validated in all major human tissues and organs and 20 cancer tissues. Over 500 staining images support each antibody. As an additional layer of security, we perform Enhanced Validation. By using 5 different enhanced validation methods, we validate our antibodies for each combination of protein, sample, and application. Discover our Triple A Polyclonals™ and PrecisA Monoclonals™ antibodies targeting the majority of human proteins in cells, tissues, and organs.

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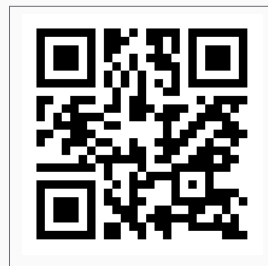
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