A. LAMA5/LAMB2/LAMC1
B. LAMA5
C. LAMB2
D. LAMC1

Laminin Marker Panel

ATLAS ANTIBODIES

ATLAS ANTIBODIES

Laminin proteins are the major component of the basement membrane. They are crucial for a wide variety of biological processes, including cell adhesion, migration, differentiation and phenotype stability, embryonic development and angiogenesis. Laminins are heterotrimeric proteins that contain one alpha-, one beta- and one gamma-chain, found in five, four, and three genetic variants, respectively.

Laminin subunit-specific antibodies

The Laminin Marker Panel includes ours PrecisA Monoclonal ™ antibodies that selectively recognize 12 subunits of laminins such as: subunit 111, 121, 211, 221, 311, 321, 332, 411, 421, 511, 521 and laminin subunit 522.

ELISA, WB and IHC validation studies have been performed in order to select the clones with high specificity and no cross-reactivity to other subunits.

Laminin antibodies can therefore be used as tools to identify the specific laminin subunits present in cell lines or tissue of interest (**Figures 1-3**).

Laminin antibodies may further contribute to understanding the roles and expression patterns of different laminins.

Here you can find the list of our PrecisA monoclonal antibodies targetin laminin subunits and the related PrEST control antigens.

The antibodies are also listed in Table 1 together with the ID number, antigene sequence, isotype and enhanced validation for indicated applications.

The monoclonal antibodies within the Laminin Marker Panel have been developed in collaboration with BioLamina, using the same stringent conditions as for all PrecisA monoclonal antibodies, which guarantees a secured continuity and stable supply.
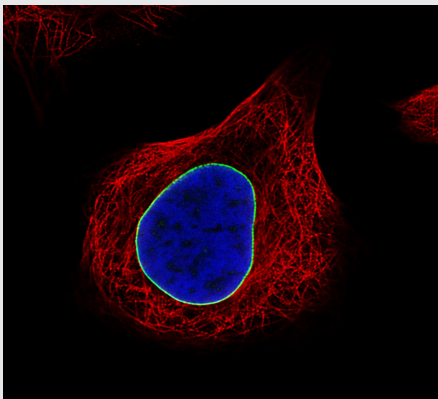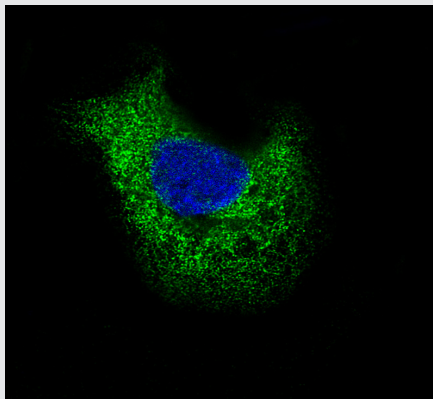
A: LAMB1   B: LAMB3

LAMA1

Figure 1
(**A**) Immunofluorescence staining of U-251 cells using the Anti-LAMB1 monoclonal antibody (AMAb91251) showing specific staining of the nuclear membrane in green.
(**B**) Immunofluorescence staining of A-431 cells using the Anti-LAMB3 monoclonal antibody (AMAb91160) showing specific staining in the endoplasmic reticulum in green. Microtubules and nuclei are visualized in red and blue, respectively.
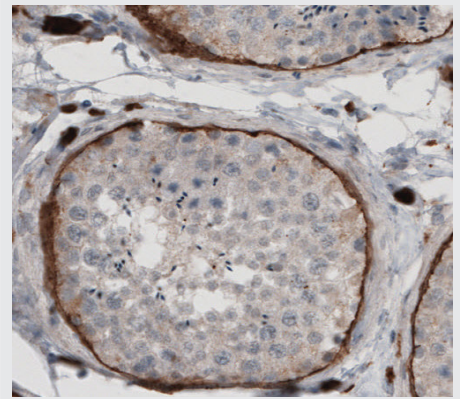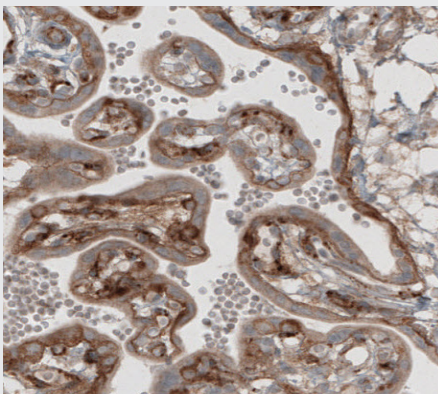
Figure 2
Immunohistochemical staining of human testis using the Anti-LAMA1 AMAb91091 monoclonal antibody shows strong immunoreactivity in basement membrane of seminiferous tubules, in brown.
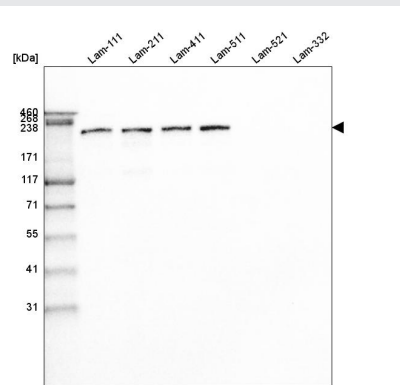
A: LAMB1   B: LAMB1

Figure 3
(**A**) Immunohistochemical staining of human placenta using the Anti-LAMB1 AMAb91092 monoclonal antibody shows moderate immunoreactivity in basement membrane of trophoblast and in endothelium, in brown.
(**B**) Western blot analysis of purified human recombinant Laminin-111, Laminin-211, Laminin-411, Laminin-511, Laminin-521 and Laminin-332.

Cover image:
*IHC-IF. (**A**) An overlay image visualizing the three laminin subunits, including LAMA5, LAMB2 and LAMC1 in human kidney. Arrows indicate the laminin-521 expression in the glomerular basement membrane. The individual images (**B-D**) show basement membranes staining using Anti-LAMA5 (AMAb91124) in blue (**B**), Anti-LAMB2 (AMAb91097) in green (**C**) and Anti-LAMC1 (AMAb91138) in red (**D**). Note that all three subunits are present in the basement membrane of glomerulus, while renal tubules express LAMA5 and LAMC1, but not LAMB2 subunit.*

Example: The Anti-LAMA5-, LAMB2- and LAMC1-specific antibodies

The Laminin antibodies have been carefully selected to recognize only one laminin subunit, allowing to use them as a tool to detect expression of specific laminins.

The example image in the front cover shows the Anti-LAMA5 (AMAb91124), Anti-LAMB2 (AMAb91097) and Anti-LAMC1 (AMAb91138) antibodies, targeting laminin alpha 5, beta 2 and gamma 1 chains, respectively.

ELISA based functional characterization screen

All our laminin antibodies have been tested using ELISA to select and confirm that they are specific for only the corresponding laminin subunit and do not cross-react with other subunits. This has been performed using ELISA-plates coated with human recombinantly expressed laminins (not shown).

Subunit specificity confirmed by Western Blot

We have then further confirmed the subunit specificity in Western Blot using human recombinantly expressed laminins. **Figure 4** shows that the Anti-LAMA5 (AMAb91124), Anti-LAMB2 (AMAb91097) and Anti-LAMC1 (AMAb91138) only detect their specific subunits and do not display any cross-reactivity.

IHC to confirm protein expression in relevant tissues

Finally, the antibodies were tested by immunohistochemistry to confirm protein expression in relevant tissues and the absence of non-specific staining. Positive IHC staining with Anti-LAMA5 (AMAb91124), Anti-LAMB2 (AMAb91097), Anti-LAMC1 (AMAb91138; AMAb91140), and Anti-LAMC2 (AMAb91098) on various human tissues is shown in **Figures 5,6**.

Verification of subunit composition of laminins in tissue using multiplexed IHC

Laminin-521 is one of the first extracellular proteins expressed already by the pluripotent stem cells of the human embryo[1,2]. Laminin-521 is crucially important for the development and function of several tissues, including heart muscle[3], retinal epithelium[4] and kidney[5].

In adult kidney, laminin-521 is a key component of the glomerular basement membrane[5].

The **cover image** well represents how our monoclonal antibodies against laminin alpha 5, beta 2 and gamma 1 subunits can be used to detect the presence of laminin-521 in kidney. The monoclonal antibodies used for this staining belong to different IgG isotypes, including IgG1, IgG2a and IgG2b. This enables multiplexed IHC with isotype-specific secondary antibodies to detect native laminin-521 on the same tissue section.
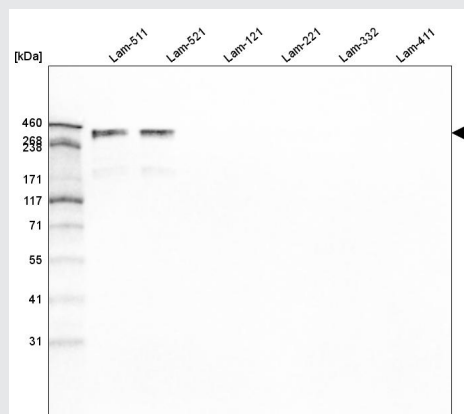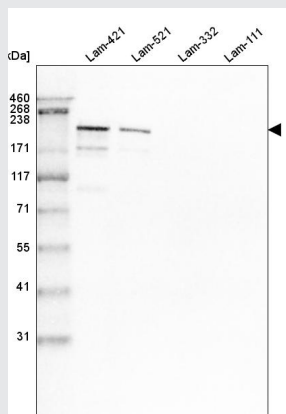
A: LAMA5   **B: LAMB2**   **C: LAMC1**
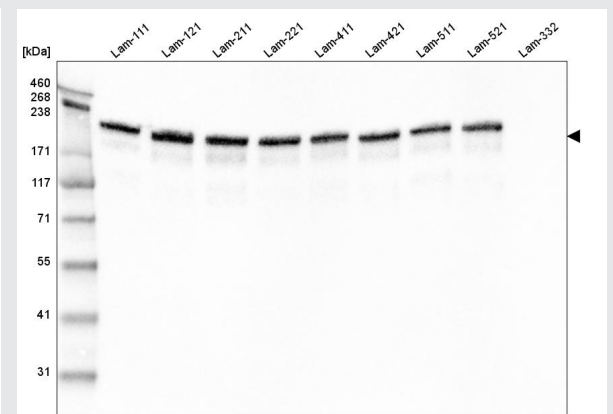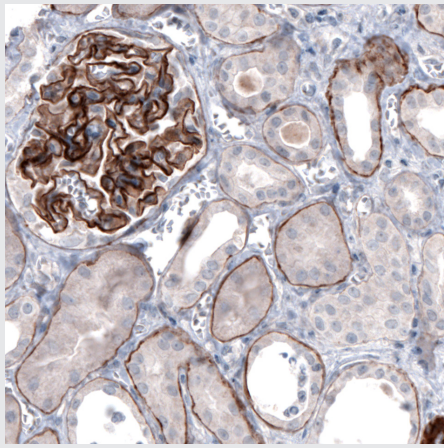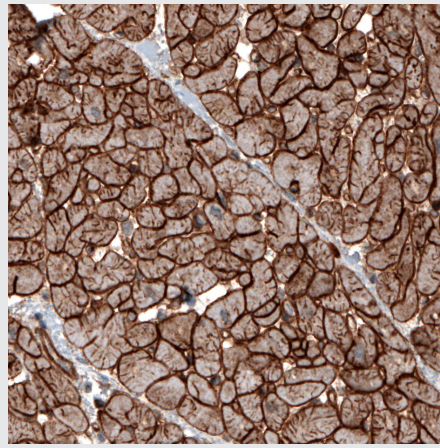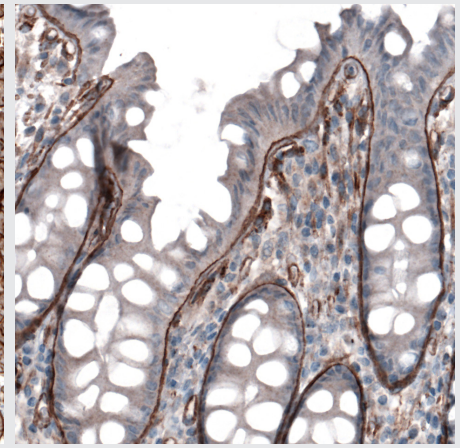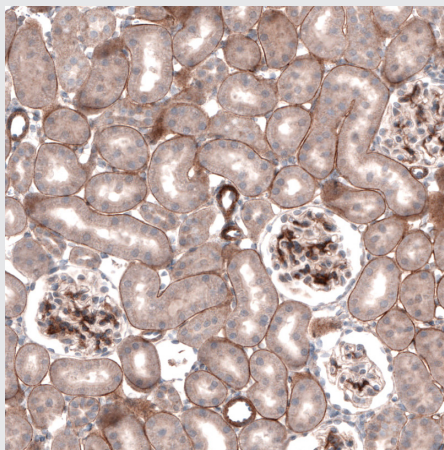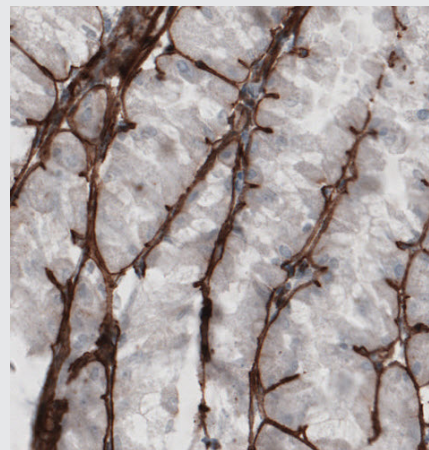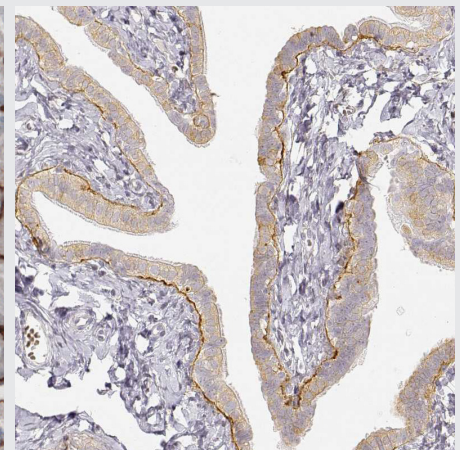
Figure 4
Western blot loaded with recombinantly expressed human laminins as indicated, showing the specificity of (**A**) Anti-LAMA5 (AMAb91124); (**B**), Anti-LAMB2 (AMAb91097); and (**C**) and Anti-LAMC1 (AMAb91138).

A: LAMA5   **B: LAMB2**   **C: LAMC1**

Figure 5

(**A**) The Anti-LAMA5 monoclonal antibody (AMAb91124) used for IHC staining of human kidney shows distinct staining of basement membranes in renal tubules and glomerulus. (**B**) IHC staining of human heart with Anti-LAMB2 monoclonal antibody (AMAb91097) shows strong membranous immunoreactivity in cardiomyocytes. (**C**) The Anti-LAMC1 monoclonal antibody (AMAb91138) shows positivity in basement membrane of glandular epithelium in human colon.

A: LAMC1   **B: LAMC1**   **C: LAMC2**

Figure 6

(**A**) The IHC staining of rat kidney using the Anti-LAMC1 (AMAb91138) monoclonal antibody shows moderate positivity in basement membrane of cells in tubules and glomeruli, in brown. (**B**) The IHC staining of human stomach using the Anti-LAMC1 (AMAb91140) shows strong immunoreactivity in basement membrane of glandular epithelium, in brown. (**C**) The IHC staining of human fallopian tube using the Anti-LAMC2 (AMAb91098) monoclonal antibody shows moderate positivity in basement membrane of glandular cells, in brown.
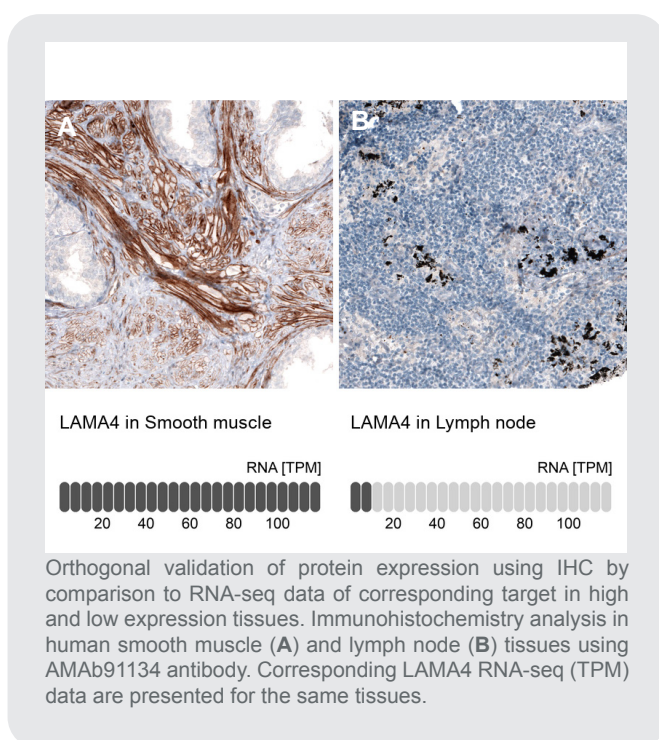
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Table 1.
PrecisA Monoclonals Laminin Marker Panel

Product Name	Product Number	Validated Applications	Isotype	Antigen sequence identity to mouse / rat
Anti-LAMA1	AMAb91091	IHC, WB	IgG1	62% / 61%
Anti-LAMA1	AMAb91117	IHC*, WB	IgG1	89% / 91%
Anti-LAMA2	AMAb91166	IHC*, WB	IgG1	96% / 98%
Anti-LAMA3	AMAb91123	IHC, WB	IgG1	74% / 71%
Anti-LAMA4	AMAb91133	IHC, WB	IgG2b	86% / 85%
Anti-LAMA4	AMAb91134	IHC*, WB	IgG1	86% / 85%
Anti-LAMA5	AMAb91124	IHC*, WB*	IgG1	62% / 68%
Anti-LAMB1	AMAb91092	IHC, WB	IgG1	90% / 89%
Anti-LAMB2	AMAb91096	IHC, WB*	IgG1	83% / 82%
Anti-LAMB2	AMAb91097	IHC*, WB	IgG2a	83% / 82%
Anti-LAMB3	AMAb91160	IHC*, WB, ICC-IF	IgG1	75% / 76%
Anti-LAMB3	AMAb91161	IHC*, WB	IgG1	75% / 76%
Anti-LAMC1	AMAb91136	IHC, WB	IgG2b	91% / 91%
Anti-LAMC1	AMAb91137	IHC, WB	IgG1	91% / 91%
Anti-LAMC1	AMAb91138	IHC*, WB	IgG2b	86% / 89%
Anti-LAMC1	AMAb91140	IHC, WB	IgG1	86% / 89%
Anti-LAMC2	AMAb91098	IHC*, WB*, ICC-IF	IgG1	83% / 79%

* Products with enhanced validation for indicated application

LAMA4 in Smooth muscle — RNA [TPM] 20 40 60 80 100

LAMA4 in Lymph node — RNA [TPM] 20 40 60 80 100

Orthogonal validation of protein expression using IHC by comparison to RNA-seq data of corresponding target in high and low expression tissues. Immunohistochemistry analysis in human smooth muscle (**A**) and lymph node (**B**) tissues using AMAb91134 antibody. Corresponding LAMA4 RNA-seq (TPM) data are presented for the same tissues.

Enhanced Validation

In addition to the extensive validation and characterization always performed for our antibodies, we conduct application-specific enhanced validation.

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

The image on the left shows an example of orthogonal enhanced validation using the Anti-LAMA4 antibody.

Learn more about enhanced validation.

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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 as 25 µL and 100 µL unit size.

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.

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. Each antibody is supported by over 500 staining images. 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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