

Exploring Skin Proteins and Antibodies



For Melanoma Monday, we explore the [Human Protein Atlas' analysis of the skin specific transcriptome](#). Here we present highlights from the findings, together with selected antibodies against proteins expressed in skin. All antibodies are presented on the Human Protein Atlas and available in our catalog as [Triple A Polyclonals](#).

63% of all human proteins are expressed in skin

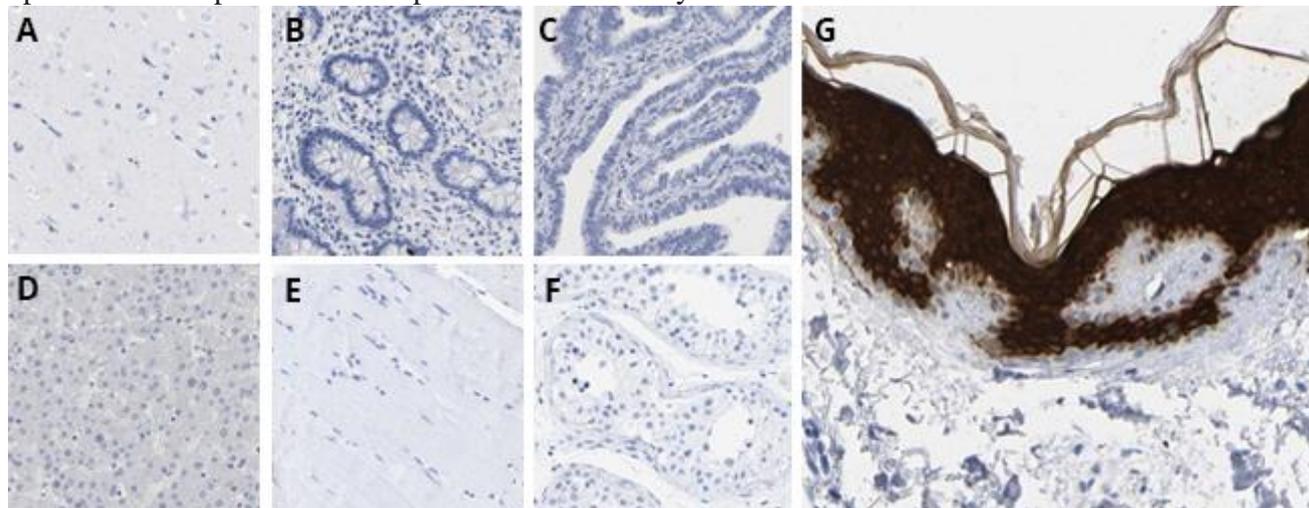
Two thirds of all human proteins are expressed in skin. The number is based on the Human Protein Atlas analysis of RNA-Seq data for approximately 20,000 human proteins.

Only 95 skin specific (enriched) genes

412 of all human genes showed some level of elevated expression in skin compared to other tissues in the study. Only 95 genes had the highest level of elevated expression in skin (tissue enriched), expressed at least five times more in skin as compared to other tissues.

Skin specific proteins relate to keratinization and epidermal development

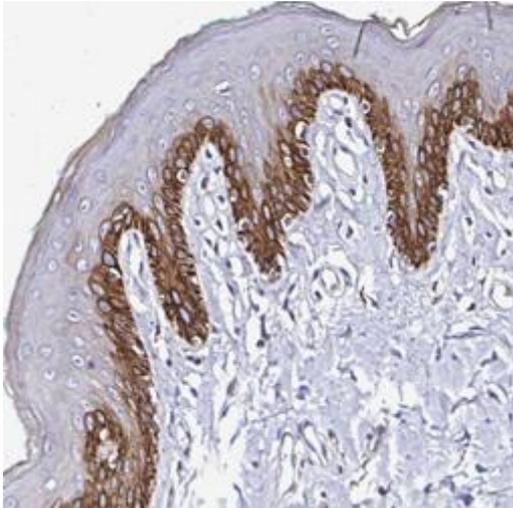
The genes found to be enriched in skin correspond to proteins related to keratinization, epidermal and epithelial development and keratinocyte differentiation.



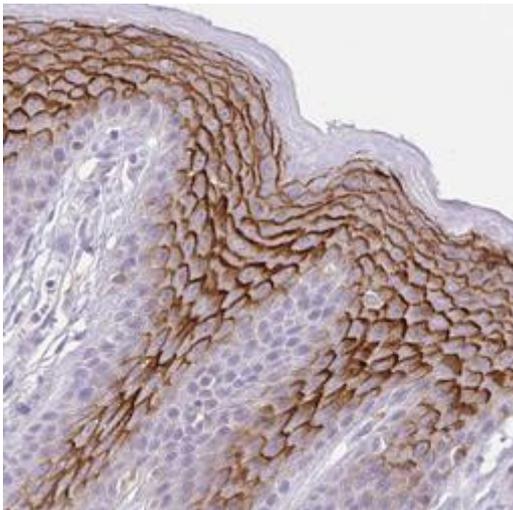
KRT1 (Keratin 1) protein is tissue enriched in skin, with at least 5 times higher RNA expression in skin compared to other tissues. Illustrated here with IHC staining in seven different tissues using the [Anti-KRT1 antibody \(HPA017917\)](#). No staining is seen in cerebral cortex (A), colon (B), fallopian tube (C), liver (D), skeletal muscle (E) or testis (F) tissues, whereas Anti-KRT1 staining in human skin shows strong positivity in epidermal cells (G).

IHC staining patterns in epidermis layers in skin

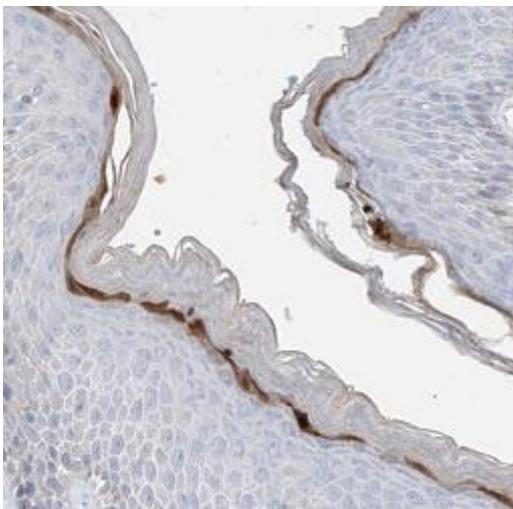
The skin is organized in epidermis, dermis and the innermost subcutis layers. Antibody stainings of the different epidermis layers; stratum basale, stratum spinosum, stratum granulosum and stratum corneum are exemplified in the images below.



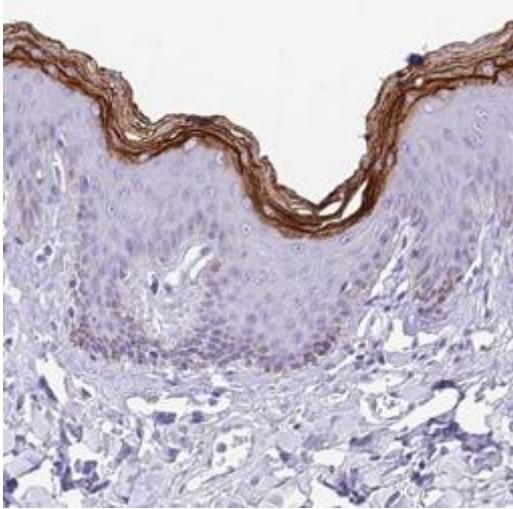
The [Anti-PLA2G4E \(HPA041105\) antibody](#) targets phospholipase A2, group IVE, expressed in the basal layer (stratum basale) of epidermis.



The [Anti-KRTDAP \(HPA063474\) antibody](#) against keratinocyte differentiation associated protein shows cytoplasmic expression in squamous epithelium in stratum spinosum.



Staining of stratum granulosum layer exemplified by the [Anti-KPRP \(HPA031988\) antibody](#) against keratinocyte proline-rich protein.



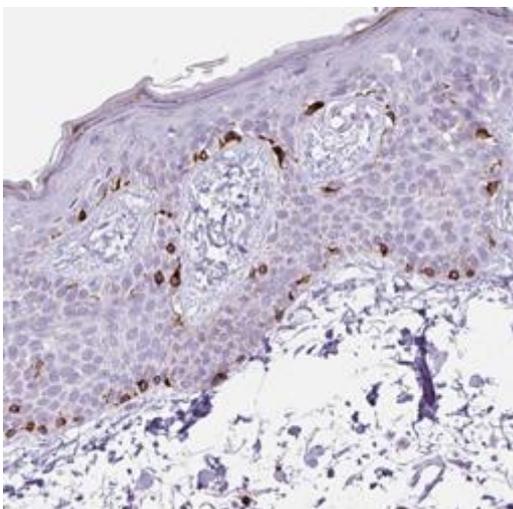
The [Anti-CDSN \(HPA044730\) antibody](#) targets corneodesmosin, expressed in the outermost layer of the skin; stratum corneum.

Melanoma

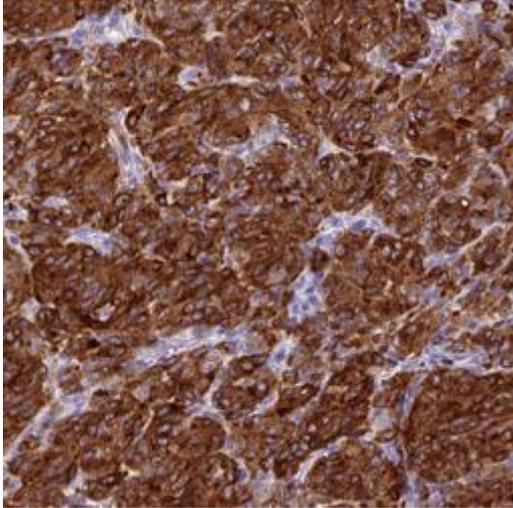
Melanoma develops from melanocytes that become cancerous. Melanocytes are located in the basal layer of the epidermis and their primary role is to produce and deliver melanin-pigment to basal keratinocytes through dendritic processes. Examples of antibodies staining melanocytes are [Anti-MLANA](#), [Anti-PMEL](#) and [Anti-DCT](#). Learn more about [Melanoma in the Human Protein Atlas Tissue Dictionary](#).



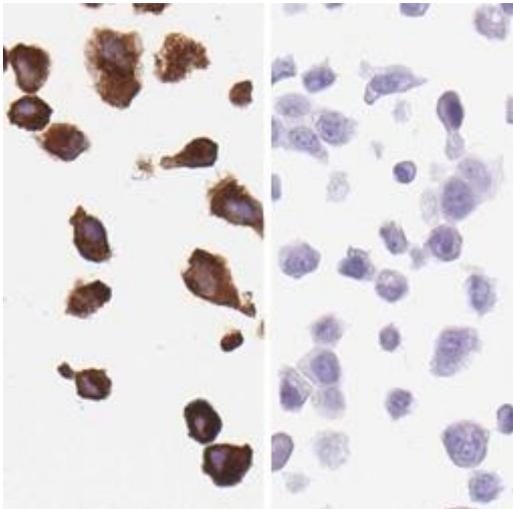
[Anti-MLANA \(HPA048662\) antibody](#) staining of cancer tissues, showing strong positivity in melanoma, but no staining in other cancers. Screenshot from Human Protein Atlas [Cancer Atlas entry of the MLANA gene](#).



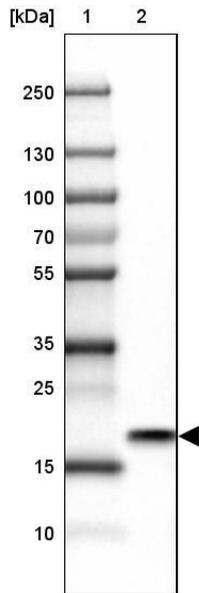
The [Anti-MLANA antibody](#) shows strong staining of melanocytes in normal human skin.



The [Anti-MLANA antibody](#) shows strong positivity in tumor cells in melanoma samples.

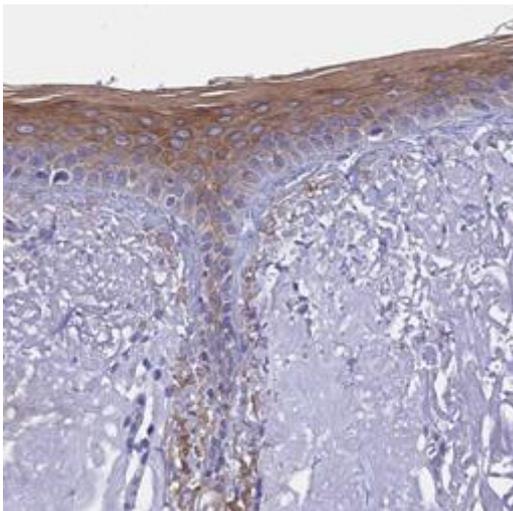


In the metastatic melanoma cell line SK-MEL-30, the [Anti-MLANA antibody](#) stains cytoplasm strongly, while the keratinocyte cell line HaCaT shows no positivity.

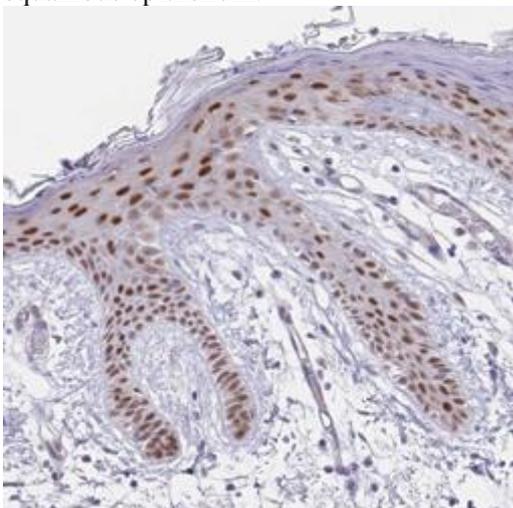


In Western Blot, the expression of MLANA in cell line SK-MEL-30 can be verified using the [Anti-MLANA antibody](#).

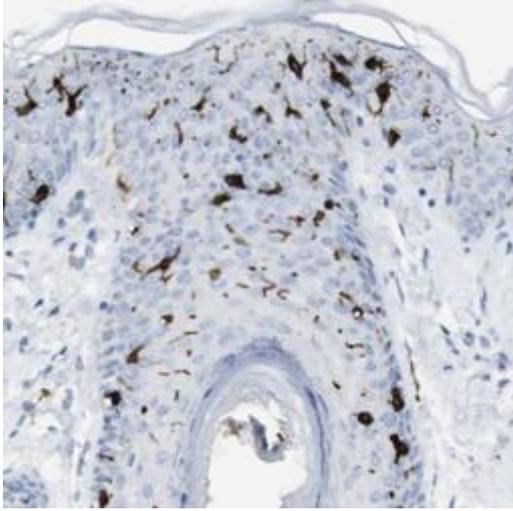
IHC staining patterns seen in skin



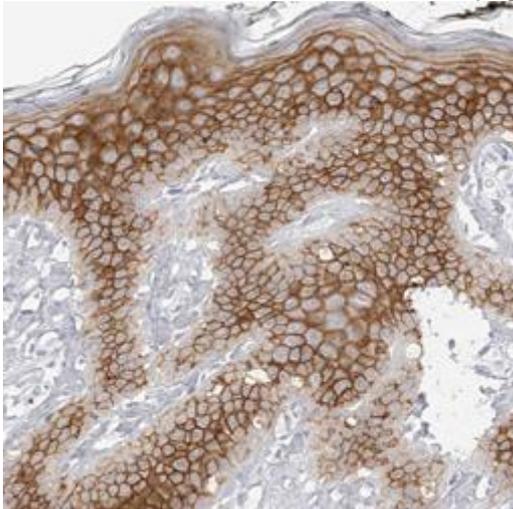
[Anti-KRT77 \(HPA045934\) antibody](#) staining of skin tissue shows cytoplasmic positivity in superficial squamous epithelium.



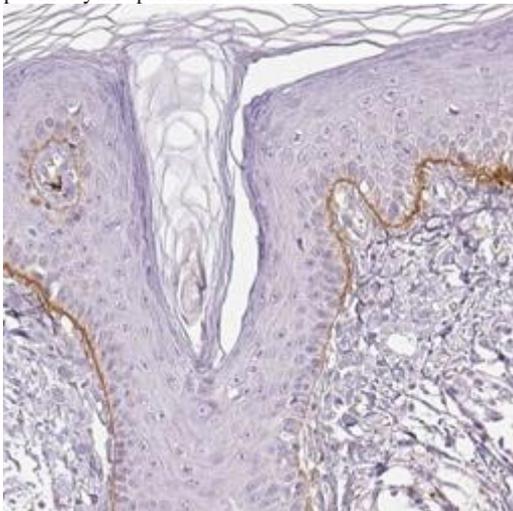
IHC staining using the [Anti-POU2F3 \(HPA019652\) antibody](#) shows nuclear positivity in epidermal cells.



The [Anti-CD207 \(HPA011216\) antibody](#) specifically stains Langerhans cells in human skin tissue.



IHC staining in human skin using the [Anti-LY6D \(HPA024755\) antibody](#) shows strong cytoplasmic and membranous positivity in epidermal cells.



[Anti-S100BP \(HPA024220\) antibody](#) stains the basal membrane of epidermis.



The [Anti-COL17A1 \(HPA052963\) antibody](#) targets COL17A1, a structural component of hemidesmosomes. The antibody shows membranous staining in the basal layer of epidermis.

Explore a Selected Number of Skin Specific Antibodies

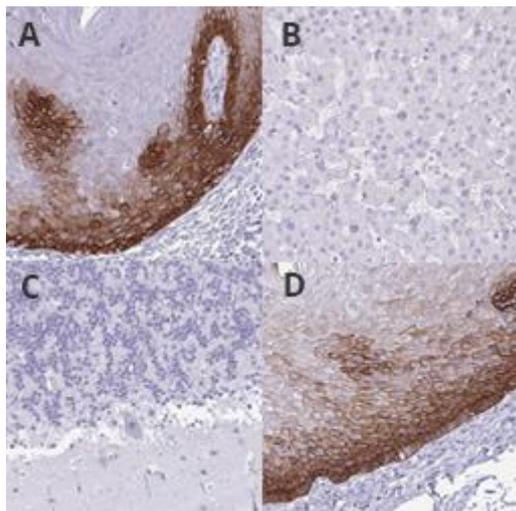
We have compiled a list of a selected number of antibodies against skin specific proteins. Explore the links to the Human Protein Atlas in the table below, and see the tissue expression for the respective proteins in various tissues illustrated with RNA FPKM values as well as staining intensity values. The links in the "Antibody" column takes you to the respective product pages in our online store.

Antibody	Protein	Tissue expression on the Human Protein Atlas
Anti-AHNAK2 (HPA000878)	AHNAK nucleoprotein 2	AHNAK2 tissue expression
Anti-ASPRV1 (HPA034810)	Aspartic peptidase, retroviral-like 1	ASPRV1 tissue expression
Anti-CASP14 (HPA027062)	Caspase 14	CASP14 tissue expression
Anti-CDSN (HPA044730)	Corneodesmosin	CDSN tissue expression
Anti-COL17A1 (HPA043673)	Collagen, type XVII, alpha 1	COL17A1 tissue expression
Anti-COL7A1 (HPA042420)	Collagen, type VII, alpha 1	COL7A1 tissue expression
Anti-DCT (HPA010743)	Dopachrome tautomerase	DCT tissue expression
Anti-DMKN (HPA029406)	Dermokine	DMKN tissue expression
Anti-FLG (HPA030188)	Filaggrin	FLG tissue expression
Anti-KLK5 (HPA014343)	Kallikrein-related peptidase 5	KLK5 tissue expression
Anti-KPRP (HPA031988)	Keratinocyte proline-rich protein	KPRP tissue expression
Anti-KRT1 (HPA017917)	Keratin 1	KRT1 tissue expression
Anti-KRT10 (HPA012014)	Keratin 10	KRT10 tissue expression
Anti-KRT14 (HPA023040)	Keratin 14	KRT14 tissue expression
Anti-KRT77 (HPA045934)	Keratin 77	KRT77 tissue expression

Anti-KRTDAP (HPA063474)	Keratinocyte differentiation-associated protein	KRTDAP tissue expression
Anti-LCE6A (HPA046376)	Late cornified envelope 6A	LCE6A tissue expression
Anti-LGALS7B (HPA001549)	Lectin, galactoside-binding, soluble, 7	LGALS7 tissue expression
Anti-MLANA (HPA048662)	Melan-A	MLANA tissue expression
Anti-PLA2G4E (HPA041105)	Phospholipase A2	PLA2G4E tissue expression
Anti-PMEL (HPA031649)	Premelanosome protein	PMEL tissue expression
Anti-POU2F3 (HPA019652)	POU class 2 homeobox 3	POU2F3 tissue expression
Anti-SPRR4 (HPA055963)	Small proline-rich protein 4	SPRR4 tissue expression

Group enriched expression in skin and esophagus

Most group-enriched genes in skin share expression with genes expressed in other tissues coated by squamous epithelia, such as esophagus. Group enriched expression is illustrated below with the [Anti-KRT5 \(Keratin 5\) antibody](#). The images show staining of human skin, liver, cerebellum and esophagus, with clear positivity in only skin and esophagus.



The [Anti-KRT5 \(HPA059479\) antibody](#) shows group enriched expression in skin (A) and esophagus (D), but no staining in liver (B) or cerebellum (C).

Learn about skin function and histology in the [Tissue Dictionary](#)

The Human Protein Atlas tissue dictionary is a valuable resource for learning about histology. Explore the function and histology of normal skin and melanoma on the following pages:

- [Normal skin tissue explained in the Tissue Dictionary](#)
- [Melanoma tissue entry in the Tissue Dictionary](#)

Learn more

- [The Human Protein Atlas knowledge page of the Human skin proteome](#)

Pour commander