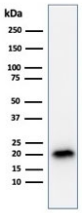
Melan-A Antibody / MART-1 [clone A103] (V2121)

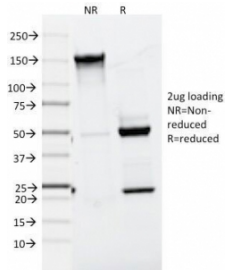
Catalog No.	Formulation	Size
V2121-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	100 ug
V2121-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	20 ug
V2121SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug
V2121IHC-7ML	Prediluted in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide; *For IHC use only*	7 ml

Citations (10) **Bulk quote request**

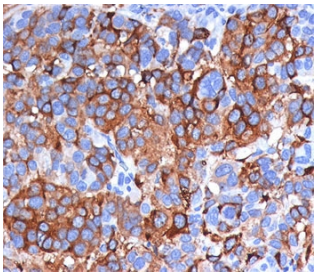
Species Reactivity	Human, Mouse, Rat
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1, kappa
Clone Name	A103
Purity	Protein G affinity chromatography
Buffer	1X PBS, pH 7.4
Gene ID	2315
Localization	Cytoplasmic
Applications	Flow Cytometry : 1-2ug/million cells Immunofluorescence : 1-2ug/ml Western Blot : 1-2ug/ml Immunohistochemistry (FFPE) : 1-2ug/ml for 30 min at RT
Limitations	This **Melan-A antibody** is available for research use only, not for diagnostic or therapeutic testing.



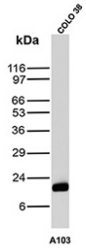
Western blot testing of human COLO-38 cell lysate with recombinant Melan-A antibody (clone A103). Expected molecular weight ~20 kDa with possible doublet.



SDS-PAGE Analysis of Purified, BSA-Free Melan-A Antibody (clone A103). Confirmation of Integrity and Purity of the Antibody.



IHC testing of FFPE human melanoma stained with Melan-A antibody (clone A103).



Western blot testing of human COLO-38 cell lysate with recombinant Melan-A antibody (clone A103). Expected molecular weight ~20 kDa with possible doublet.

Description

Melan-A antibody detects Melanoma antigen recognized by T cells 1 (MART-1), a melanocyte differentiation antigen involved in melanosome formation and pigment production. The UniProt recommended name is Melanoma antigen recognized by T cells 1 (MLANA). This integral membrane protein plays an essential role in melanin synthesis by stabilizing the structural integrity of melanosomes and assisting in the proper folding and transport of melanogenic enzymes such as tyrosinase.

Functionally, Melan-A antibody identifies a 118-amino-acid protein localized to the limiting membrane of stage I and II melanosomes within melanocytes. MLANA interacts directly with PMEL (also known as gp100), promoting fibril matrix formation that supports melanin deposition. Through these interactions, Melan-A contributes to the structural maturation of melanosomes, ensuring efficient pigment biosynthesis and intracellular transport. Expression of this antigen is largely restricted to normal melanocytes, retinal pigment epithelium, and melanoma cells, making it a highly specific marker for melanocytic differentiation.

The MLANA gene is located on chromosome 9p24.1 and encodes a type III membrane protein regulated by the microphthalmia-associated transcription factor (MITF). MITF-dependent expression of MLANA is a defining feature of melanocytic lineage commitment, and its transcriptional activation is tightly linked to pigmentation pathways. In neoplastic

contexts, MLANA is one of the most consistently expressed melanoma-associated antigens and serves as a diagnostic marker for identifying malignant melanoma in histopathology and cytology.

In clinical and research settings, Melan-A serves as a critical immunohistochemical marker for the identification of melanocytic tumors. Alongside HMB-45 (gp100) and SOX10, it forms part of the standard diagnostic antibody panel for distinguishing melanomas from non-melanocytic neoplasms. Its uniform cytoplasmic and membranous staining pattern makes it particularly valuable for detecting both primary and metastatic melanoma cells. Importantly, Melan-A staining is typically absent in carcinomas, lymphomas, and most sarcomas, reinforcing its diagnostic specificity.

Immunologically, Melan-A (MART-1) is also recognized as a prominent target antigen for cytotoxic T lymphocytes (CTLs) in melanoma immunotherapy. The peptide MART-1(26-35) presented by HLA-A2 has been extensively characterized as a T-cell epitope capable of eliciting strong anti-tumor immune responses. This immunogenic property has made MLANA a leading candidate in cancer vaccine development and T-cell-based adoptive immunotherapy trials. Experimental models using Melan-A-specific CTLs have provided valuable insight into tumor immune recognition and immune escape mechanisms.

Melan-A antibody is widely used in cancer biology, dermatopathology, and immunology research. It is suitable for immunohistochemistry, western blotting, and immunofluorescence to detect melanocyte lineage markers and evaluate tumor differentiation status. This antibody is essential for diagnostic assessment of melanoma, including sentinel lymph node biopsies, cytological smears, and paraffin-embedded tissues. In research applications, it supports studies of melanogenesis, melanosome biogenesis, and antigen presentation pathways relevant to melanoma immunity.

Beyond oncology, Melan-A is of interest in developmental biology and pigmentary disorders, where its expression reflects melanocyte lineage integrity and differentiation potential. Its role in the formation of melanosomal scaffolding links it to congenital hypopigmentation syndromes and conditions affecting melanosome transport. Because MLANA expression is tightly correlated with MITF transcriptional activity, it also serves as a functional readout of melanocytic gene regulatory networks.

Structurally, Melan-A contains a single transmembrane helix, a cytoplasmic tail with sorting signals, and a luminal region that interacts with melanosomal matrix proteins. The antigen is highly conserved across primates and mammals, ensuring cross-species comparability in melanoma models. NSJ Bioreagents provides Melan-A antibody reagents validated for use in melanoma diagnostics, pigment biology, and immune-oncology research.

Application Notes

Due to differences in protocols and secondary antibody used, the Melan-A antibody may require titration for optimal performance.
1. FFPE staining is enhanced by boiling sections in pH 9 10mM Tris with 1mM EDTA for 10-20 min followed by cooling at RT for 20 minutes.
2. The prediluted format is supplied in a dropper bottle and is optimized for use in IHC. After epitope retrieval step (if required), drip mAb solution onto the tissue section and incubate at RT for 30 min.

Immunogen

Recombinant human protein was used as the immunogen for the Melan-A antibody.

Storage

Store the Melan-A antibody at 2-8oC (with azide) or aliquot and store at -20oC or colder (without azide).

References (1)