MTAP deficiency in cancer



comparison of antibodies

The antibody MSVA-741R has been validated by Gorbokon et al. (1) on 76 different normal tissue types (608 samples) according to the guidelines of the International Working Group of Antibody Validation (IWGAV) by comparison with a different independent antibody (2).

M S V A - 7 4 1 R



lymph node

breast

duodenum colon descendens



Validation Antibody

MSVA-741R, a distinct nuclear and Usina cytoplasmic MTAP staining was seen in interfollicular lymphocytes of a lymph node, breast glandular cells, as well as epithelial cells of the colon, and in the epithelium of the duodenum. Using the validation antibody, a highly similar MTAP staining pattern was observed in lymph node, the breast and most other tissues. A strong additional staining of mucus producing goblet cells was only seen by the validation antibody in the mucosa of the colon and the duodenum. These stainings were considered an antibody specific cross-reactivity of the validation antibody.

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





ΜΤΑΡ

clone MSVA-741R

Sensitive and specific marker for homozygous 9p21 deletions



Publication Summary

of S-methyl-5'-thioadenosine Prevalence Phosphorylase (MTAP) Deficiency in Human Cancer: A Tissue Microarray Study on 13,067 **Tumors From 149 Different Tumor Types** Gorbokon et al. Am J Surg Pathol. 2024 Oct

1;48(10):1245-1258.



Prevalence of S-methyl-5'-thioadenosine Phosphorylase (MTAP) Deficiency in Human Cancer: A Tissue Microarray Study on 13,067 Tumors From 149 Different **Tumor Types**

Gorbokon et al. Am J Surg Pathol. 2024 Oct 1;48(10):1245-1258. (1)

The ubiquitously expressed S-methyl-5'-thioadenosine phosphorylase (MTAP), coded by the MTAP gene at 9p21, is often homozygously deleted in cancer. Homozygous deletion of the MTAP gene results in a complete MTAP expression loss (MTAP deficiency) which causes critical vulnerability of affected cancer cells towards drugs targeting multiple different pathways. IHC detection of MTAP expression loss can be used as a marker for neoplastic transformation in many tissue types (1).

The analysis of 13'067 tumors by Gorbokon et al. provides a comprehensive catalogue on MTAP deficiency in human cancer. MTAP expression loss occurred in 83 of 149 tumor categories.

MTAP MSVA-741R (Research use only) SKU: 5293-741R

Also available without BSA & azide



Key Findings

MTAP deficiency was most common in neuroendocrine neoplasms, Hodgkin's lymphoma, mesothelioma, bilio-pancreatic adenocarcinomas, urothelial neoplasms, squamous cell carcinomas, and in various types of sarcomas.

In most tumor types, homozygous 9p21 deletion was the cause of MTAP expression loss in 90% to 100% of cases. Exception: MTAP deficiency was not due to deletion in neuroendocrine tumors, Hodgkin's and other lymphomas.



Urothelium with intense cytoplasmic and nuclear MTAP staining of all cells.



Non-invasive urothelial carcinoma (pTa) lacking MTAP staining in all tumor cells. MTAP positive stroma cells serve as an internal control.





Uterus, cervix – Adenocarcinoma lacking MTAF staining in tumor cells



Stomach – Gastric adenocarcinoma (intestinal type) without MTAP staining in tumor cells.



Appendix – Neuroendocrine tumor with complete absence of MTAP staining in tumor cells

Conclusion

MTAP IHC has very high specificity and sensitivity for detection of homozygous 9p21 deletion involving MTAP.

MTAP expression loss is a useful marker for neoplastic transformation in many tissue types (mesothelium, urothelium, pancreas, lung, others) (1).

Heum, neuroendocrine carcinoma (NEC) (5) Ileum, neuroendocrine tumor (NET) (47 Colorectal, neuroendocrine tumor (NET) (10) Lung, neuroendocrine tumor (NET) (28) Hodgkin Lymphoma (50) Gallbladder adenocarcinoma (42) Squamous cell carcinoma of the bladder (21) Mesothelioma hinhasic (19) Annendix neuroendocrine tumor (NET) (14) Ductal adenocarcinoma of the pancreas (507) Mesothelioma, epithelioid (25) Mucinous carcinoma of the ovary (65) Urothelial carcinoma nT2-4 G3 (573) Squamous cell carcinoma of the larvnx (81) Squamous cell carcinoma of the vulva (119) Rhabdomyosarcoma (5) Chondrosarcoma (10) Acinar cell carcinoma of the pancreas (16) Squamous cell carcinoma of the vagina (54) Pancreatic/Ampullary adenocarcinoma (78) Squamous cell carcinoma of the lung (59) Cholangiocarcinoma (43) Malignant melanoma (51) Sarcoma, not otherwise specified (NOS) (63) T-cell Non Hodgkin lymphoma (22) Adenocarcinoma of the esophagus (45) Adenocarcinoma of the lung (167) Gastric adenocarcinoma, intestinal type (168) Squamous cell carcinoma of the pharynx (59) Gallbladder Klatskin tumor (34) Pancreas, neuroendocrine tumor (NET) (89) Squamous cell carcinoma of the skin (103) Henatocellular carcinoma (294) Carcinosarcoma of the ovary (40) Follicular lymphoma (86) Clear cell carcinoma of the ovary (32) Dermatofibrosarcoma protuberans (16) Leiomyosarcoma (70) Medullary thyroid carcinoma (74) Medullary carcinoma of the breast (19) Gastric adenocarcinoma, mixed type (57) Brenner tumor (39) quamous cell carcinoma of the anal canal (78) Anaplastic thyroid carcinoma (39) Adenocarcinoma of the cervix (22) Gastric adenocarcinoma, diffuse type (151) Gastrointestinal stromal tumor (GIST) (55) Basal cell carcinoma (68) Granulosa cell tumor of the ovary (42) Squamous cell carcinoma of the penis (86) Squamous cell carcinoma of the cervix (119) Endometrial serous carcinoma (67) Panillary renal cell carcinoma (318) Serous carcinoma of the ovary (443) Schwannoma (113) Adenocarcinoma of the colon (1892) Endometrioid endometrial carcinoma (296) Clear cell renal cell carcinoma (1109) Seminoma (454)

Urothelial carcinoma of the kidney pelvis (49) Malionant melanoma Lymph node metastasis (67) Squamous cell carcinoma of the esophagus (37) Adenocarcinoma NOS of the salivary gland (29) Pancreas, neuroendocrine carcinoma (NEC) (12) Colorectal, neuroendocrine carcinoma (NEC) (13) Diffuse large B cell lymphoma (DLBCL) (108) Adenocarcinoma of the prostate (recurrence) (159) Invasive breast carcinoma of no special type (454)

Malignant peripheral nerve sheath tumor (MPNST) (13) Non-invasive papillary urothelial carcinoma, pTa G3 (101) Oral squamous cell carcinoma (floor of the mouth) (119) Diffuse large B-cell lymphoma (DLBCL) in the testis (14) Mucoepidermoid carcinoma of the salivary gland (149)

Ranking order

The prevalence of MTAP deficiency is shown in a ranking list below (data from Gorbokon et al. (1) summarized in own graphics).

