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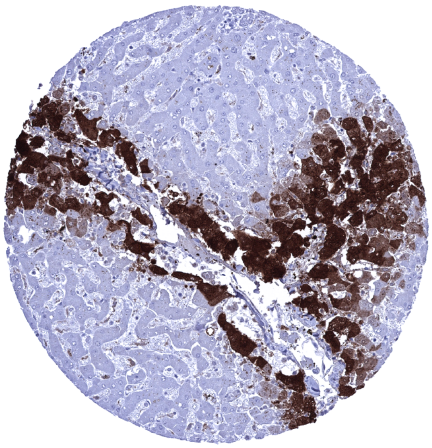
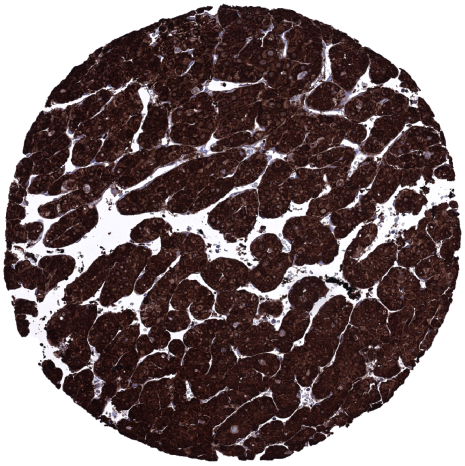
Anti- Glutamine Synthetase Antibody
MSVA-750M / Mouse monoclonal

Human SwissProt	P15104
Human Gene Symbol	GLUL
Synonyms	cell proliferation-inducing protein 59; GLUL; Glutamate ammonia ligase; GS; PIG43; PIG59; Glutamate decarboxylase; glutamine synthase; Glutamine synthetase; glutamine synthetase I; Proliferation inducing protein 43; GLNA; GLNS
Specificity	GLUL
Immunogen	Recombinant human GLUL fragment
Isotype	Mouse / IgG
Species Reactivity	Human

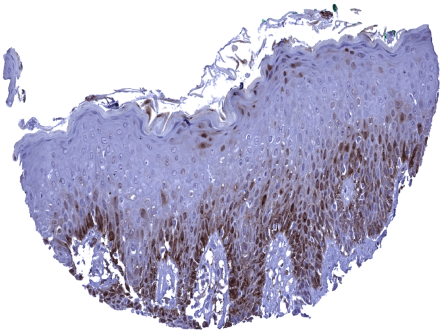
Localization	Cytoplasm. Mitochondrion.
Storage & Stability	Antibody with azide – store at 2 to 8 C. Antibody without azide – store at -20 to -80 C. Antibody is stable for 24 months. Non-hazardous. No MSD required.
Supplied As	200ug/ml of Ab Purified from Bioreactor Concentrate by Protein A/G. Prepared in 10mM PBS with 0.05% BSA & 0.05% azide. Also available without BSA
Positive Control	Liver: A strong GS staining should be seen of centrilobular hepatocytes while staining is weak to moderate in Kupffer cells.
Negative Control	Liver: Periportal hepatocytes must be GS negative in the normal liver.



Glutamine Synthetase staining is strong in centrilobular hepatocytes, weak to moderate in Kupffer cells but absent in periportal hepatocytes.



Hepatocellular carcinoma with excessive Glutamine Synthetase positivity of all tumor cells.



In the skin, a nuclear and cytoplasmic Glutamine Synthetase staining can be seen in the lower third and in the top layers of the squamous epithelium.

Biology

Glutamine synthetase (GS) is an enzyme converting glutamate and ammonium into glutamine using adenosine triphosphate (ATP). As GS is the only enzyme capable of producing glutamine, the enzyme is pivotal. Glutamine is the most abundant amino acid in mammalian blood, making up as much as 20% of the total amino acid content. Glutamine is essential for protein and aminoacid synthesis. As the glutamine coming from diet is metabolized in the intestine, most of the body glutamine is synthesized de novo. GS exerts critical biological functions in liver, kidney, skeletal muscle, and brain. In the liver GS detoxifies ammonia. In the kidney, it contributes to the acid–base balance by controlling ammonium availability. In the skeletal muscle, GS synthesizes glutamine which is then consumed for energy production. In the brain, astrocytic GS controls the glutamate level which is relevant for the protection of neurons from ammonium toxicity. In cancer, GS plays a pivotal role in restructuring the cell metabolism in order to enable continued proliferation and cell survival in poorly vascularized and nutrient-deprived environments. In normal tissues, GS is most abundantly expressed in centrilobular hepatocytes, Leydig cells of the testis, and stomach corpus glands but GS occurs in many other cell types. In cancers, GS immunostaining is most prominent in hepatocellular carcinomas. However, a positive GS staining is also seen in a variable but often large fraction of a broad range of different tumor entities. GS positivity not only involves tumor cells but to a variable extent also the tumor microenvironment including blood vessels.

Potential Research Applications

-Glutamine synthetase is a pivotal gene for cell metabolism. Its expression level is variable in many cell types including cancer cells. The clinical significance of an altered expression of glutamine synthetase in cancer and other diseases should be explored in more detail.

Protocol Suggestions

Dilution: 1:150 ; pH 7,8 is optimal. Freshly cut sections should be used (less than 10 days between cutting and staining deteriorates staining intensity for most antibodies in IHC).

Limitations

This antibody is available for **research use only** and is not approved for use in diagnostics.

Warranty

There are no warranties, expressed or implied, which extend beyond this description. MSVA is not liable for any personal injury or economic loss resulting from this product.

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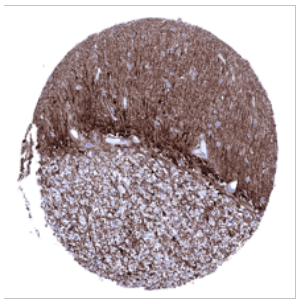
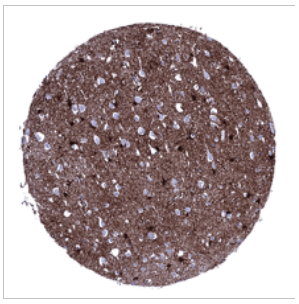
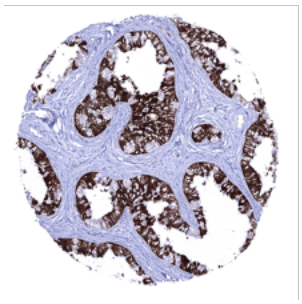


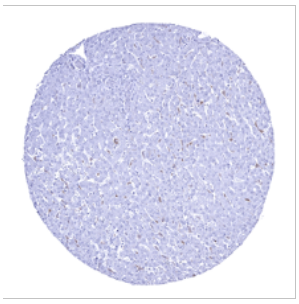
Cerebellum (molecular layer, Purkinje cell layer, granule cell layer, white matter) - An intense GS positivity occurs in glia cells and in associated fibres. Purkinje cells are GS negative



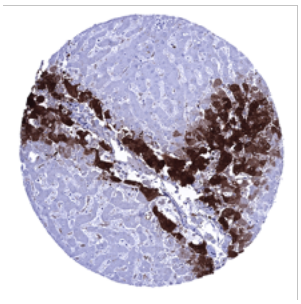
Cerebrum, grey matter - An intense GS positivity is seen in all glia cells and in associated fibres. Neurons are GS negative



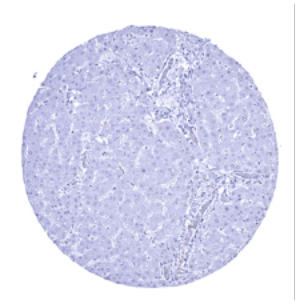
Epididymis - Strong GS staining in most epithelial cells of the cauda epididymis



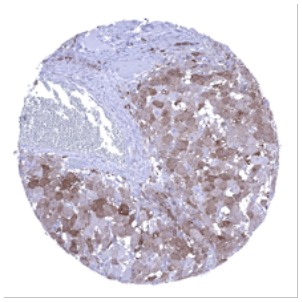
Liver - A weak GS staining is seen in Kupffer cells



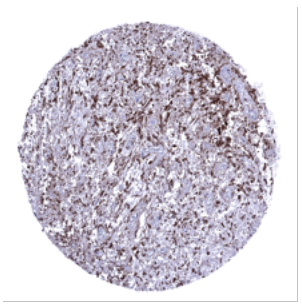
Liver - GS staining is strong in centrilobular hepatocytes, weak to moderate in Kupffer cells but absent in periportal hepatocytes



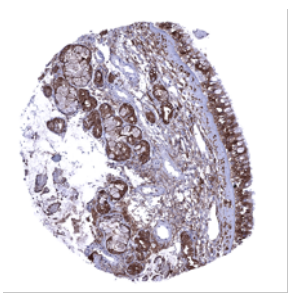
Liver - GS staining is weak in Kupffer cells but absent in periportal hepatocytes and bile ducts



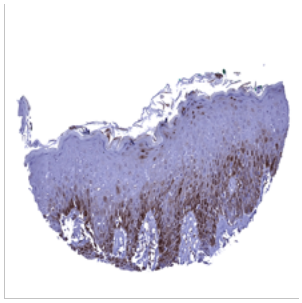
Ovary, corpus luteum - GS staining is variable and ranges from weak to strong (mosaic pattern)



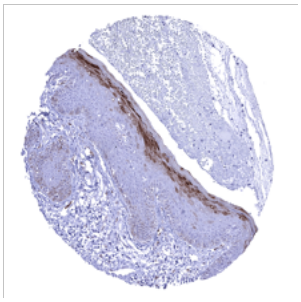
Pituitary gland, posterior lobe - Intense GS positivity of glia cells and associated fibres



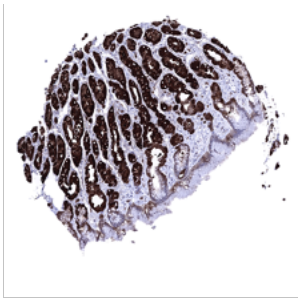
Sinus paranasales - Most cells of the respiratory epithelium and of associated glands show a moderate to strong GS staining



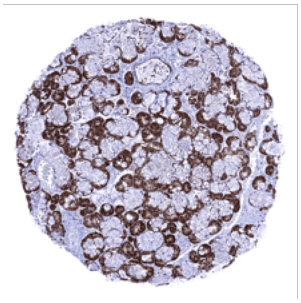
Skin - A nuclear and cytoplasmic GS staining can be seen in the lower third and in the top layers of the squamous epithelium



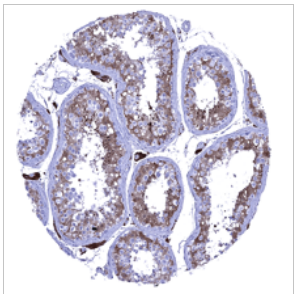
Skin (anal canal) - A nuclear and cytoplasmic GS staining is seen in the top third of the squamous epithelium



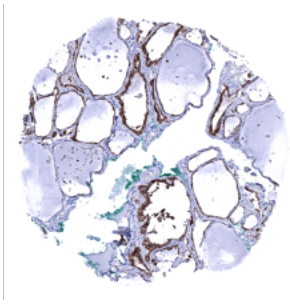
Stomach, corpus - A strong GS staining is seen in glandular cells while staining is only weak in surface epithelial cells



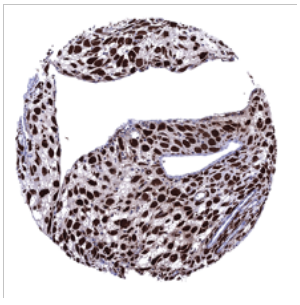
Sublingual gland - Strong GS staining of myoepithelial cell



Testis - GS staining is weak to moderate in Sertoli cells and strong and Leydig cells



Thyroid gland - Strong GS staining in follicle cells of the thyroid



Uterus, endometrium (pregnancy) - GS staining is very intense in decidua cells