anti-Glypican 3 (GC33) Mouse Monoclonal Primary Antibody

REF 790-4564

06483186001

IVD Σ 50

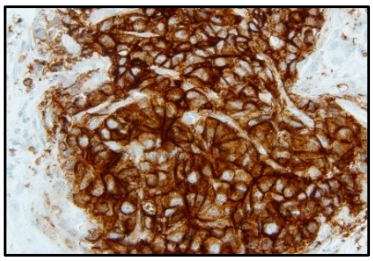

Figure 1. Anti-Glypican 3 (GC33) antibody staining hepatocellular carcinoma.

INTENDED USE

Anti-Glypican 3 (GC33) Mouse Monoclonal Primary Antibody is intended for laboratory use in the qualitative immunohistochemical detection of glypican 3 by light microscopy in sections of formalin-fixed, paraffin-embedded tissue stained on a BenchMark IHC/ISH instrument.

This product should be interpreted by a qualified pathologist in conjunction with histological examination, relevant clinical information, and proper controls.

This antibody is intended for in vitro diagnostic (IVD) use.

SUMMARY AND EXPLANATION

Glypican 3, a 70 kDa member of the glypican family, is encoded by the GPC3 gene located on the X chromosome (Xq26.2).[1,2] Glypican 3 has a structure consisting of a core protein and a heparan sulfate chain and binds to the cell membrane via a glycosylphosphatidylinositol anchor.[2] During embryogenesis, glypican 3 is expressed abundantly in multiple tissues and after birth, glypican 3 expression is decreased in healthy tissues.[3,4] Glypican 3 is anchored to the cell membrane and does not transmit intracellular signals due to the absence of a transmembrane domain.[1] Glypican 3 function appears to be primarily driven by its interactions in the extracellular matrix where it can recruit extracellular ligands and coordinate ligand-receptor interactions in the extracellular space.[1,5]

Hepatocytes are parenchymal cells of the liver and comprise roughly 80% of the total cell population of the liver.[6] Under normal physiological conditions, glypican 3 is generally not expressed in adult liver.[1,2] In contrast, glypican 3 expression has been detected in hepatocellular carcinoma, a primary liver cancer that originates from hepatocytes.[4,7] Immunohistochemistry (IHC) has been used to assess glypican 3 expression in hepatocellular carcinoma.[8,9,10] Several studies report glypican 3 expression in 70%-90% of hepatocellular carcinomas and the absence of glypican 3 in 100% of benign liver tissues. [8-11]

The detection of glypican 3 by IHC with anti-Glypican 3 (GC33) Mouse Monoclonal Primary Antibody (anti-Glypican 3 (GC33) antibody) may be used to aid in the differentiation of hepatocellular carcinoma from benign liver.

PRINCIPLE OF THE PROCEDURE

Anti-Glypican 3 (GC33) antibody binds to the glypican 3 protein in formalin-fixed, paraffin-embedded (FFPE) tissue sections. This antibody can be visualized using *ultra*View Universal DAB Detection Kit (Cat. No. 760-500 / 05269806001). Refer to the respective method sheet for more information.

MATERIAL PROVIDED

Anti-Glypican 3 (GC33) antibody contains sufficient reagent for 50 tests.

One 5 mL dispenser of anti-Glypican 3 (GC33) antibody contains approximately 8.5 µg of a mouse monoclonal antibody.

The antibody is diluted in phosphate buffered saline containing carrier protein and 0.05% ProClin 300, a preservative.

Specific antibody concentration is approximately 1.7 µg/mL. There is no known non-specific antibody reactivity observed in this product.

Anti-Glypican 3 (GC33) antibody is a mouse monoclonal antibody produced as cell culture supernatant.

Refer to the appropriate VENTANA detection kit method sheet for detailed descriptions of: Principle of the Procedure, Material and Methods, Specimen Collection and Preparation for Analysis, Quality Control Procedures, Troubleshooting, Interpretation of Results, and Limitations.

MATERIALS REQUIRED BUT NOT PROVIDED

Staining reagents, such as VENTANA detection kits and ancillary components, including negative and positive tissue control slides, are not provided.

Not all products listed in the method sheet may be available in all geographies. Consult your local support representative.

The following reagents and materials may be required for staining but are not provided:

1. Recommended control tissue
2. Microscope slides, positively charged
3. Negative Control (Monoclonal) (Cat. No. 760-2014 / 05266670001)
4. *ultra*View Universal DAB Detection Kit (Cat. No. 760-500 / 05269806001)
5. EZ Prep Concentrate (10X) (Cat. No. 950-102 / 05279771001)
6. Reaction Buffer Concentrate (10X) (Cat. No. 950-300 / 05353955001)
7. LCS (Predilute) (Cat. No. 650-010 / 05264839001)
8. ULTRA LCS (Predilute) (Cat. No. 650-210 / 05424534001)
9. Cell Conditioning Solution (CC1) (Cat. No. 950-124 / 05279801001)
10. ULTRA Cell Conditioning Solution (ULTRA CC1) (Cat. No. 950-224 / 05424569001)
11. Hematoxylin II (Cat. No. 790-2208 / 05277965001)
12. Bluing Reagent (Cat. No. 760-2037 / 05266769001)
13. General purpose laboratory equipment
14. BenchMark IHC/ISH instrument

STORAGE AND STABILITY

Upon receipt and when not in use, store at 2-8°C. Do not freeze.

To ensure proper reagent delivery and the stability of the antibody, replace the dispenser cap after every use and immediately place the dispenser in the refrigerator in an upright position.

Every antibody dispenser is expiration dated. When properly stored, the reagent is stable to the date indicated on the label. Do not use reagent beyond the expiration date.

SPECIMEN PREPARATION

Routinely processed FFPE tissues are suitable for use with this primary antibody when used with VENTANA detection kits and BenchMark IHC/ISH instruments. Sections should be cut at approximately 4 µm in thickness and mounted on positively charged slides. The recommended tissue fixative is 10% neutral buffered formalin.[12] Slides should be stained immediately, as antigenicity of cut tissue sections may diminish over time.

It is recommended that positive and negative controls be run simultaneously with unknown specimens.

WARNINGS AND PRECAUTIONS

1. For in vitro diagnostic (IVD) use.
2. For professional use only.
3. **CAUTION**: In the United States, Federal law restricts this device to sale by or on the order of a physician. (Rx Only)
4. Do not use beyond the specified number of tests.
5. ProClin 300 is used as a preservative in this reagent. It is classified as an irritant and may cause sensitization through skin contact. Take reasonable precautions when handling. Avoid contact of reagents with eyes, skin, and mucous membranes. Use protective clothing and gloves.
6. Positively charged slides may be susceptible to environmental stresses resulting in inappropriate staining. Ask your Roche representative for more information on how to use these types of slides.
7. Materials of human or animal origin should be handled as biohazardous materials and disposed of with proper precautions. In the event of exposure, the health directives of the responsible authorities should be followed.[13,14]
8. Avoid contact of reagents with eyes and mucous membranes. If reagents come in contact with sensitive areas, wash with copious amounts of water.
9. Avoid microbial contamination of reagents as it may cause incorrect results.

10. For further information on the use of this device, refer to the BenchMark IHC/ISH instrument User Guide, and instructions for use of all necessary components located at dialog.roche.com.
11. Consult local and/or state authorities with regard to recommended method of disposal.
12. Product safety labeling primarily follows EU GHS guidance. Safety data sheet available for professional user on request.
13. To report suspected serious incidents related to this device, contact the local Roche representative and the competent authority of the Member State or Country in which the user is established.

This product contains components classified as follows in accordance with the Regulation (EC) No. 1272/2008:

Table 1. Hazard information.

Hazard	Code	Statement
Warning 	H317	May cause an allergic skin reaction.
	P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
	P272	Contaminated work clothing should not be allowed out of the workplace.
	P280	Wear protective gloves.
	P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
	P501	Dispose of contents/ container to an approved waste disposal plant.

This product contains CAS # 55965-84-9, reaction mass of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1).

STAINING PROCEDURE

VENTANA primary antibodies have been developed for use on BenchMark IHC/ISH instruments in combination with VENTANA detection kits and accessories. Refer to Table 2 for recommended staining protocol.

This antibody has been optimized for specific incubation times but the user must validate results obtained with this reagent.

The parameters for the automated procedures can be displayed, printed and edited according to the procedure in the instrument User Guide. Refer to the appropriate VENTANA detection kit method sheet for more details regarding immunohistochemistry staining procedures.

For more details on the proper use of this device, refer to the inline dispenser method sheet associated with P/N 760-4564.

Table 2. Recommended staining protocol for anti-Glypican 3 (GC33) antibody with *ultra*View Universal DAB Detection Kit on BenchMark IHC/ISH instruments.

Procedure Type	Method	
	XT	ULTRA or ULTRA PLUS [a]
Deparaffinization	Selected	Selected
Cell Conditioning (Antigen Unmasking)	CC1, Mild	ULTRA CC1, Mild, 36 minutes, 95 °C
Antibody (Primary)	32 minutes, 37 °C	32 minutes, 36 °C
Counterstain	Hematoxylin II, 4 minutes	
Post Counterstain	Bluing, 4 minutes	

[a] Concordance was demonstrated between BenchMark ULTRA and BenchMark ULTRA PLUS instruments using representative assays

Due to variation in tissue fixation and processing, as well as general lab instrument and environmental conditions, it may be necessary to increase or decrease the primary antibody incubation, cell conditioning or protease pretreatment based on individual specimens, detection used, and reader preference. For further information on fixation variables, refer to "Immunohistochemistry Principles and Advances."[15]

NEGATIVE REAGENT CONTROL

In addition to staining with anti-Glypican 3 (GC33) antibody, a second slide should be stained with the appropriate negative control reagent.

POSITIVE TISSUE CONTROL

Optimal laboratory practice is to include a positive control section on the same slide as the test tissue. This helps identify any failures applying reagents to the slide. Tissue with weak positive staining is best suited for quality control. Control tissue may contain both positive and negative staining elements and serve as both the positive and negative control. Control tissue should be fresh autopsy, biopsy, or surgical specimen, prepared or fixed as soon as possible in a manner identical to test sections.

Known positive tissue controls should be utilized only for monitoring performance of reagents and instruments, not as an aid in determining specific diagnosis of test samples. If the positive tissue controls fail to demonstrate positive staining, results of the test specimen should be considered invalid.

Examples of positive control tissue for this antibody are hepatocellular carcinoma and placenta.

STAINING INTERPRETATION / EXPECTED RESULTS

The cellular staining pattern for anti-Glypican 3 (GC33) antibody is cytoplasmic / membranous.

SPECIFIC LIMITATIONS

This antibody may demonstrate staining in the pituitary and in serous adenocarcinoma.

All assays might not be registered on every instrument. Please contact your local Roche representative for more information.

PERFORMANCE CHARACTERISTICS

ANALYTICAL PERFORMANCE

Staining tests for sensitivity, specificity, and precision were conducted and the results are listed below.

Sensitivity and Specificity

Table 3. Sensitivity/Specificity of anti-Glypican 3 (GC33) antibody was determined by testing FFPE normal tissues.

Tissue	# positive / total cases	Tissue	# positive / total cases
Cerebrum	0/3	Esophagus	0/3
Cerebellum	0/3	Stomach	0/3
Adrenal gland	0/3	Small intestine	0/3
Ovary	0/3	Colon	0/3
Pancreas	0/3	Liver [a]	0/52
Parathyroid gland	0/3	Liver cirrhosis	0/12
Pituitary gland	3/3	Liver hepatitis	0/11
Testis	0/3	Salivary gland	0/3
Thyroid	0/3	Kidney	0/3
Breast	0/3	Prostate	0/3
Spleen	0/3	Endometrium	0/3
Tonsil	0/3	Cervix	0/3
Thymus	0/3	Skeletal muscle	0/3

Tissue	# positive / total cases	Tissue	# positive / total cases
Bone marrow	0/3	Skin	0/3
Lung	0/3	Nerve	0/3
Heart	0/3	Mesothelium	0/3

[a] Tissues include normal and reactive liver.

Table 4. Sensitivity/Specificity of anti-Glypican 3 (GC33) antibody was determined by testing a variety of FFPE neoplastic tissues.

Pathology	# positive / total cases
Glioblastoma (Cerebrum)	0/1
Meningioma (Cerebrum)	0/1
Ependymoma (Cerebrum)	0/1
Oligodendroglioma (Cerebrum)	0/1
Serous adenocarcinoma (Ovary)	1/1
Mucinous adenocarcinoma (Ovary)	0/1
Neuroendocrine neoplasm (Pancreas)	0/1
Adenocarcinoma (Pancreas)	0/1
Seminoma (Testis)	0/1
Embryonal carcinoma (Testis)	0/1
Medullary carcinoma (Thyroid)	0/1
Papillary carcinoma (Thyroid)	0/1
Ductal carcinoma in situ (Breast)	0/2
Invasive ductal carcinoma (Breast)	0/1
Diffuse large B-cell lymphoma (Spleen)	0/1
Small cell carcinoma (Lung)	0/1
Squamous cell carcinoma (Lung)	0/1
Adenocarcinoma (Lung)	0/1
Squamous cell carcinoma (Esophagus)	0/1
Adenocarcinoma (Esophagus)	0/1
Mucinous adenocarcinoma (Stomach)	0/1
Gastrointestinal stromal tumor (Small intestine)	0/1
Adenocarcinoma (Colon)	0/2
Gastrointestinal stromal tumor (Abdominal cavity)	0/1
Adenocarcinoma (Rectum)	0/1
Gastrointestinal stromal tumor (Rectum)	0/1
Melanoma (Rectum)	0/1
Cholangiocarcinoma (Liver)	0/12
Hepatocellular carcinoma (Liver)	84/124
Metastatic hepatocellular carcinoma	3/5
Hepatoblastoma (Liver)	0/1
Adenoma/Dysplastic Nodule (Liver)	0/2
Clear cell carcinoma (Kidney)	0/1
Adenocarcinoma (Prostate)	0/2
Leiomyoma (Uterus)	0/1
Adenocarcinoma (Uterus)	0/1
Clear cell carcinoma (Uterus)	0/1
Squamous cell carcinoma (Cervix)	0/2
Embryonal rhabdomyosarcoma (Striated muscle)	0/1
Basal cell carcinoma (Skin)	0/1
Squamous cell carcinoma (Skin)	0/1
Neurofibroma (Soft tissue)	0/1
Ganglioneuroblastoma (Retroperitoneum)	0/1
Spindle cell rhabdomyosarcoma (Retroperitoneum)	0/1
Mesothelioma (Abdominal cavity)	0/1
Lymphoma; NOS (Lymph node)	0/1
Diffuse large B-cell lymphoma (Lymph node)	0/1
B-cell lymphoma, NOS (Lymph node)	0/1
Hodgkin lymphoma	0/1
Urothelial carcinoma (Bladder)	0/1
Leiomyosarcoma (Bladder)	0/1
Osteosarcoma (Bone)	0/1
Leiomyosarcoma (Smooth muscle)	0/1

Precision

Precision studies for anti-Glypican 3 (GC33) antibody were completed to demonstrate:

- Between lot precision of the antibody.
- Within run and between day precision on a BenchMark XT instrument.
- Between instrument precision on the BenchMark XT and BenchMark ULTRA instrument.
- Between platform precision between the BenchMark XT and BenchMark ULTRA instruments.

All studies met their acceptance criteria.

Precision on the BenchMark ULTRA PLUS instrument was demonstrated using representative assays. Studies included Within-run Repeatability, Between-day and Between-run Intermediate Precision. All studies met their acceptance criteria.

CLINICAL PERFORMANCE

Clinical performance data relevant to the intended purpose of anti-Glypican 3 (GC33) antibody were assessed by systematic review of the literature. The data gathered support the use of the device in accordance with its intended purpose.

REFERENCES

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NOTE: A point (period/stop) is always used in this document as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

The summary of safety and performance can be found here:

https://ec.europa.eu/tools/eudamed

Symbols

Ventana uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard (for USA: see dialog.roche.com for definition of symbols used):

GTIN	Global Trade Item Number
UDI	Unique Device Identification
	Indicates the entity importing the medical device into the European Union

REVISION HISTORY

Rev	Updates
D	Updates to Intended Use, Summary and Explanation, Principle of the Procedure, Material Provided, Materials Required but not Provided, Storage and Stability, Specimen Preparation, Warnings and Precautions, Staining Procedure, Negative Reagent Control, Positive Tissue Control, Staining Interpretation / Expected Results, Specific Limitations, Analytical Performance, Clinical Performance, References, Symbols, Intellectual Property, and Contact Information sections. Added BenchMark XT, ULTRA, and ULTRA PLUS instruments. Added recommended protocols for *ultra*View Universal DAB Detection Kit. Removed recommended protocols for iVIEW DAB.

INTELLECTUAL PROPERTY

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