MR1

305000

GENERAL INFORMATION

Description

MR1 is a hybridoma cell line derived from the fusion of spleen cells with NS-1 myeloma cells, following the immunization of animals with mouse T cells, particularly of the Th1 subtype. These cells express immunoglobulin, specifically monoclonal antibodies targeting the mouse CD40 ligand (CD154, also known as gp39 or CD40L). The isotype of the monoclonal antibody produced is IgG. CD154 is a crucial molecule involved in T cell interactions, particularly in the activation of B cells, as its binding to CD40 on B cells is essential for B cell proliferation, differentiation, and immunoglobulin production. This binding also influences T cell costimulation and cytokine production, making CD154 an important target for therapeutic intervention in immune modulation.
MR1-derived antibodies specifically target and block the interaction between CD154 and CD40, which has therapeutic implications in various immune responses. Notably, anti-CD154 antibodies have been used to induce T cell unresponsiveness to organ grafts in transplantation. By blocking the CD154-CD40 interaction, MR1 antibodies inhibit T cell activation and the associated immune response, promoting a state of tolerance. This strategy is particularly valuable in preventing organ rejection in transplant recipients, as it enables long-term graft survival without the need for systemic immunosuppressants, which can have extensive side effects. In experimental models, MR1 antibodies have demonstrated the ability to prolong pancreatic islet graft survival, which is significant in the treatment of diabetes through islet transplantation.
MR1 antibodies are also utilized in research related to autoimmune diseases, where inappropriate activation of T cells and B cells via CD40-CD154 interactions plays a critical role. By inhibiting these interactions, MR1 antibodies can help modulate immune responses, making them potential candidates for therapeutic applications beyond transplantation, including in autoimmune conditions and certain lymphoproliferative disorders. Research and patent literature have explored the use of MR1 in various applications, underscoring its relevance in the field of immune regulation and therapeutic antibody development.

CLASSIFICATION

Growth properties	Suspension
Biosafety level	1

CHARACTERISTICS

Morphology	Lymphoblast

IDENTIFIERS

Citation

MR1 (Cytion catalog number 305000)

NCBI TaxID	10090/10032
Cellosaurus	CVCL_8964

EXPRESSION AND SUSCEPTIBILITY

Protein expression

Immunoglobulin, monoclonal antibody, against mouse CD40 ligand (CD154, CD40L, gp39)

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS, 0.05 mM 2-mercaptoethanol

Subculturing

Gently homogenize the cell suspension in the flask by pipetting up and down, then take a representative sample to determine the cell density per ml. Dilute the suspension to achieve a cell concentration of 1 x 10^5 cells/ml with fresh culture medium, and aliquot the adjusted suspension into new flasks for further cultivation.

Fluid renewal	2 to 3 times per week

Thawing and culturing

Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

QUALITY CONTROL AND CRYOPRESERVATION

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.
To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.

Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

Storage conditions

For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Shipping conditions

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.

LEGAL AND SAFETY

Safety precautions

When planning to store a cryovial in liquid nitrogen for future thawing, it is mandatory to adhere to stringent safety measures. Appropriate protective gloves and clothing are essential, and the use of a face mask or safety goggles is required during the transfer of frozen samples to or from the liquid nitrogen tank. This is to mitigate the risk of injury from potential cryovial explosions upon removal, which can result in the projection of sharp fragments.

Warranty

At Cytion, we stand behind the quality and viability of our products.
We guarantee that our cells will be viable at the start of culture for
60 days after shipment from our facilities.
We assure that all materials conform to the specifications described in the
Certificate of Analysis and/or Product Sheet.
For full details, please refer to our
Warranty Statement.

Material Transfer Agreement required	Yes

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