Product sheet

MR1 Cells | 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.
Organism	Animal cells

Characteristics

Morphology	Lymphoblast
Growth properties	Suspension

Identifiers / Biosafety / Citation

Citation	MR1 (Cytion catalog number 305000)
Biosafety level	1

Expression / Mutation

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Protein expression	immunoglobulin, monoclonal antibody, against mouse CD40 ligand (CD154, CD40L, gp39)

Handling

Culture Medium	RPMI 1640, w: 2.1 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Medium 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.
Split ratio	1:2 to 1:6
Fluid renewal	2 to 3 times per week
Freeze medium	CM-1 (Cytion catalog number 800100)

Handling of cryopreserved cultures

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. 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.
3. 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.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. 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.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. 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.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

Quality control / Genetic profile / HLA

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.