DC2.4

305515

GENERAL INFORMATION

Description

The DC2.4 cell line is an immortalized mouse dendritic cell line that originates from bone marrow. It is commonly used to study dendritic cell (DC) biology, immune responses, and the development of immunotherapies. DC2.4 cells are characterized by their role as antigen-presenting cells (APCs) and are known to express typical surface markers of dendritic cells, such as CD11c and MHC class I molecules. However, they exhibit an immature phenotype under standard culture conditions, with low expression of MHC class II and costimulatory molecules like CD40 and CD80. This makes them useful for investigating the mechanisms and stimuli required for DC maturation and their subsequent immune functions.

Studies have shown that specific stimuli can induce maturation of DC2.4 cells. Notably, exposure to interferon-gamma (IFN-γ) leads to significant upregulation of MHC class II, CD40, CD80, and CCR7, as well as increased cytokine secretion, including IL-6, IL-12, and TNF-α. IFN-γ-matured DC2.4 cells have been demonstrated to effectively activate CD8+ cytotoxic T cells both in vitro and in vivo, enhancing antitumor immunity. For instance, IFN-γ-treated, antigen-pulsed DC2.4 cells have been shown to induce robust CD8+ T cell responses and provide protective antitumor effects in mouse models. This highlights the cell line's utility in cancer immunotherapy research and vaccine development.

Additionally, DC2.4 cells have been employed to study host-pathogen interactions, as their response to various immune challenges can mimic aspects of the innate immune system's activation. The analysis of exosomal miRNA profiles from DC2.4 cells, especially when infected with pathogens like Toxoplasma gondii, has provided insights into the molecular mechanisms underlying dendritic cell signaling and immune communication. The differential expression of exosomal miRNAs in response to infection suggests potential roles in modulating host immunity and highlights the utility of DC2.4 in exosome and RNA-based immune research.

Tissue	Bone marrow

Synonyms

- DC 2.4

CLASSIFICATION

Organism	Mouse
Sex	Unspecified
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This murine dendritic cell line (DC2.4) contains retroviral constructs encoding murine GM-CSF, v-myc and v-raf introduced by transduction, supporting transformation and growth. The inserts are stably present in the dendritic cell-derived line. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Cell type	Dendritic cell

IDENTIFIERS

Citation

DC2.4 (Cytion catalog number 305515)

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NCBI TaxID	10090
Cellosaurus	CVCL_J409

EXPRESSION AND SUSCEPTIBILITY

Viruses

Transformant: Recombinant retrovirus J2

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, 1% NEAA and 10mM HEPES

Dissociation reagent	Accutase

Subculturing

Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

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.

DONOR

Breed / subspecies	C57BL/6
Donor age	Unspecified

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