Product sheet

RAW 264.7 Cells | 400319

General information

Description	RAW 264.7 cells are a widely used murine macrophage cell line derived from the ascites of a male mouse with a tumor induced by the Abelson murine leukemia virus and are commonly used in immunological and infectious disease research. As an immortalized cell line, RAW264.7 cells are a key model system for studying macrophage biology, including immune responses to pathogens, signal transduction, and gene expression. RAW264.7 cells are particularly valuable for their ability to differentiate into macrophage-like cells. These cells can be polarized into M1 macrophages, associated with inflammatory responses, or M2 macrophages, linked to tissue repair and anti-inflammatory processes. This polarization capacity, along with their ability to perform essential macrophage functions like pinocytosis and phagocytosis, underscores their relevance in studying macrophage biology and the complex interplay between immune responses and pathogens. RAW 264.7 cells are instrumental in studying the immune system's interactions with various factors, including pathogens and bone biology. RAW264.7 cells can be induced to differentiate into osteoclast-like cells under certain conditions, such as exposure to RANKL (Receptor Activator of Nuclear Factor κB Ligand), making them a model for studying certain aspects of osteoclast biology and bone resorption. The RAW264.7 cell line's response to various stimuli, including the induction of pyroptosis, an inflammatory cell death process triggered by factors such as LPS (lipopolysaccharide), is instrumental in dissecting the pathways leading to inflammatory cytokine production. The impact of environmental conditions, such as extracellular glucose levels on cell function and phenotype, offers insights into cellular metabolism and the potential downregulation of inflammatory responses. RAW264.7 cells, with their origins in murine leukemia and their extensive use in immunological research, serve as a crucial tool in advancing our understanding of macrophage biology, immune system-pathogen dynamics, osteoimmunology, and inflammatory responses, highlighting their indispensable role in both basic and applied biomedical research.
Organism	Mouse
Tissue	Ascites
Disease	Leukemia
Synonyms	RAW264, RAW2647, RAW264.7, RAW-264.7, Raw 264.7, Raw264.7

Characteristics

Breed/Subspecies	BALB/c
Age	Adult
Gender	Male

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Cell type	Macrophage
Growth properties	Adherent

Regulatory Data

Citation	RAW 264.7 (Cytion catalog number 400319)
Biosafety level	2
NCBI_TaxID	10090
CellosaurusAccession	CVCL_0493

Biomolecular Data

Receptors expressed	Immunoglobulin (Fc), complement (C3)
Antigen expression	H-2d
Viruses	The cell line was tested and found positive for Reverse Transcriptase (RT) activity from C-Type retroviruses in cell culture supernatant and cell extract. Ectromelia virus (mousepox) may be secreted.
Products	Lysozyme

Handling

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Strongly adhesive cells, use of cell scraper
Doubling time	RAW264.7 cells exhibit a doubling time ranging from 11 to 30 hours

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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.
Seeding density	4×10^4 cells/cm^2
Fluid renewal	2 to 3 times per week
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.

Thawing and Culturing Cells

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.

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

Quality Control & Molecular Analysis

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.