Product sheet

U-251 MG Cells | 300385

General information

Description	The U-251 MG cell line is a well-characterized human glioblastoma multiforme (GBM) cell line that is extensively used in neuro-oncology research. Derived originally from a 75-year-old Caucasian male, this cell line has been instrumental in the study of brain tumors, particularly in understanding the molecular and cellular mechanisms underlying malignant gliomas. The U-251 MG cells exhibit astrocytic properties, which are characteristic of their origin from astrocytes, the predominant cell type involved in GBM. Genetically, U-251 MG cells harbor mutations and alterations typical of high-grade astrocytomas, including mutations in the TP53 gene and loss of heterozygosity in chromosome 10, which encompasses the PTEN gene. These genetic traits contribute to the cell line's utility in studying tumor suppressor gene functions and the cellular pathways involved in tumor progression and resistance. The cells are also known for their robust in vitro growth rates and ability to form tumors when xenografted into immunocompromised mice, making them a valuable model for in vivo studies of tumor growth, invasion, and therapy response. Furthermore, U-251 MG has been employed in a multitude of studies focusing on therapeutic approaches, including chemotherapy resistance, radiation therapy outcomes, and the evaluation of novel anticancer compounds. Its extensive use in translational research highlights its relevance in bridging basic neuroscientific discoveries with clinical applications, particularly in the development of targeted therapies for glioblastoma.
Organism	Human
Tissue	Brain
Disease	Astrocytoma
Synonyms	U-251MG, U-251-MG, U-251_MG, U251-MG, U251MG, U-251, U251, U251n, U251N, 251 MG, 251MG

Characteristics

Age	75 years
Gender	Male
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Adherent

Regulatory Data

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Citation	U-251 MG (Cytion catalog number 300385)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0021

Biomolecular Data

Protein expression	Expression of GFAP and vimentin

Handling

Culture Medium	DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
Doubling time	24 hours
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	1 x 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week
Post-Thaw Recovery	Fast, within 24 hours
Freeze medium	As a cryopreservation medium, we use 50% basal medium + 40% FBS + 10% DMSO, 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

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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.