Product sheet

U87MG Cells | 300367

General information

Description	The U87MG cell line, established from a human glioblastoma, is one of the most widely utilized cellular models in neurobiological and cancer research. Originating from a malignant tumor of the central nervous system, these cells exhibit many of the hallmark features of glioblastoma multiforme (GBM), including rapid proliferation, high invasiveness, and significant genetic and phenotypic heterogeneity. This makes the U87MG cell line, also referred to as U87 cells, an invaluable tool for exploring the molecular and cellular mechanisms underlying brain tumors, as well as for testing potential therapeutic strategies. In neuroscience and immuno-oncology research, U87MG cells serve as a model to elucidate the cell function and cytotoxicity mechanisms in glioblastoma, including the exploration of NK cell cytotoxicity. The expression of NKG2D ligands on U87 cells and the use of NKG2D antibodies in studies highlight the intricate dynamics between cancer cells and the immune system, particularly NK cells, in the tumor microenvironment. The stemness features of U87 glioblastoma cells, alongside their genetic and phenotypic attributes, are subjects of intense study, aiming to unravel the mechanisms that confer these cells a high degree of plasticity and resistance to conventional therapies. The U87 cell line's exact origin remains somewhat enigmatic, with genetic analyses revealing differences from the original tumor. In summary, the U87 cell line remains a fundamental tool in glioblastoma research, facilitating a deeper understanding of the disease's biology and the quest for more effective treatments.
Organism	Human
Tissue	Brain
Disease	Glioblastoma
Synonyms	U-87MG, U87 MG, U-87-MG, U87-MG, U-87 MG, U-87, U87, 87 MG, 87MG

Characteristics

Age	44 years
Gender	Male
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Adherent

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Regulatory Data

Citation	U87MG (Cytion catalog number 300367)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0022

Biomolecular Data

Isoenzymes	Me-2, 1, PGM3, 1, PGM1, 2, ES-D, 1, AK-1, 1, GLO-1, 1, G6PD, B
Tumorigenic	Yes, in nude mice inoculated subcutaneously with 107 cells

Handling

Culture Medium	EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)
Supplements	Supplement the medium with 10% FBS and 1% NEAA
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.
Seeding density	4×10^4 cells/cm^2
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.

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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.