Product sheet

RG2 Cells | 300649

General information

Description	The RG2 cell line is derived from a chemically induced glioma in Fischer 344 rats. Generated via transplacental administration of N-ethyl-N-nitrosourea (ENU), RG2 gliomas are classified as anaplastic gliomas due to their invasive growth pattern, high mitotic index, and undifferentiated morphology. These tumors are notable for their consistent lethality in vivo and their ability to grow in syngeneic hosts without eliciting a significant immune response. This low immunogenicity makes RG2 an ideal model for studying glioblastoma-like tumors and testing experimental therapies in immunocompetent settings. RG2 glioma cells exhibit characteristics typical of high-grade gliomas, including rapid proliferation, invasive capacity, and genomic alterations. Studies have highlighted the loss of tumor suppressor genes such as CDKN2A, along with dysregulated pathways involving PDGF, Ras, and IGF signaling. The cell line grows as undifferentiated spindle-shaped cells in vitro, maintaining their tumorigenic potential when implanted intracranially, where they display diffuse invasion into normal brain tissue, mimicking human glioblastoma behavior. This cell line has been extensively utilized in preclinical research to evaluate the efficacy of various therapeutic approaches, including chemotherapy, radiotherapy, gene therapy, and immunotherapy. RG2 gliomas are particularly valuable for testing novel drug delivery methods, such as convection-enhanced delivery (CED), and for investigating mechanisms of blood-brain barrier disruption in gliomas. Its histopathological and molecular resemblance to human glioblastomas underscores its utility in translational neuro-oncology.
Organism	Rat
Tissue	Brain
Disease	Rat malignant glioma
Applications	3D cell culture, Neuroscience
Synonyms	RG-2, Rat Glioma-2, D74, D74-RG2

Characteristics

Breed/Subspecies	Fischer 344
Age	20 days after gestation
Gender	Unspecified
Morphology	Glial

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Growth properties	Adherent

Regulatory Data

Citation	RG2 (Cytion catalog number 300649)
Biosafety level	1
NCBI_TaxID	10116
CellosaurusAccession	CVCL_3581

Biomolecular Data

Tumorigenic	Yes, in CD Fischer rats

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
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.
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

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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.