RG2

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.

Tissue	Brain
Disease	Rat malignant glioma

Applications

3D cell culture, Neuroscience

Synonyms

- RG-2
- Rat Glioma-2
- D74
- D74-RG2

CLASSIFICATION

Organism	Rat
Sex	Unspecified
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Glial
Tumourigenic	Yes, in CD Fischer rats

IDENTIFIERS

Citation

RG2 (Cytion catalog number 300649)

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NCBI TaxID	10116
Cellosaurus	CVCL_3581

HANDLING AND CULTURE

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)

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

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.

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	Fischer 344
Donor age	20 days after gestation

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

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