

GC-1 spg Cells | 300375

General information

Description

The GC-1 spg cell line was immortalized through transfection with the pSV3-neo plasmid, which harbors the coding sequences for the SV40 large T antigen and neomycin resistance. This genetic modification not only provides resistance to certain antibiotics but also promotes the continuous growth of the cells by altering their cell cycle regulation, thus bypassing the Hayflick limit typical of primary cells. This process of immortalization allows the cells to maintain proliferative capacity while retaining key phenotypic characteristics of spermatogonia.

Phenotypically, the GC-1 spg cell line exhibits characteristics that are indicative of a transitional stage between type B spermatogonia and primary spermatocytes, making it an especially relevant model for studying the early stages of spermatogenesis. The cells express two testis-specific isoproteins: cytochrome c and lactate dehydrogenase C4. These markers are crucial for studying cell metabolism and energy management during spermatogenesis, reflecting the unique metabolic pathways active in germ cells. The expression of these specific isoproteins underscores the cell line's utility in exploring the biochemical and physiological aspects of testicular cell function and development.

Organism Mouse

Tissue Testis

Applications 3D cell culture

Synonyms GC-1spg, GC-1, GC1-SPG

Characteristics

Age 10 days

Gender Male

Morphology Epithelial

Cell type Spermatocyte

Growth properties Adherent

Identifiers / Biosafety / Citation

Citation GC-1 spg (Cytion catalog number 300375)

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Biosafety level 2

Expression / Mutation

Viruses Transformant: Simian virus 40 (SV40) T antigen

Handling

Culture Medium DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 1.5 g/L NaHCO₃, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

Medium supplements Supplement the medium with 10% FBS

Passaging solution 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 CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

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Handling of cryopreserved cultures

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 $300 \times g$ for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. Optionally, skip centrifugation but remove any remaining freezing medium after 24 hours.
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.

Quality control / Genetic profile / HLA

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.