

MG-63 Cells | 300441**General information****Description**

MG-63 cells, a human osteosarcoma cell line derived from the bone of a 14-year-old White male patient with osteosarcoma, are a pivotal model in bone biology research. MG63 human osteosarcoma cells, with their fibroblast morphology and rapid proliferation, serve as an essential tool in understanding bone metabolism, particularly in the context of osteosarcoma.

MG-63 cells produce high levels of human interferon when induced with agents like polyinosinic acid-polycytidylic acid, cycloheximide, and actinomycin D. Enhanced interferon production is crucial for studies focusing on the immune responses within the bone microenvironment.

Seeding MG-63 cells on biocompatible surfaces like Bioglass disks, titanium (Ti-6Al-4V) disks, and cobalt chrome (Co-Cr-Mo) alloys is possible due to their strong cell adherence and attachment. They are a good osteoblastic model for studying osseointegration and bone cell-implant interactions with amorphous carbon films and composite tantalum.

Research involving the osteoblastic cell line MG-63 often focuses on apoptosis, the regulation, and expression of osteocalcin, and the impact of adenosine on bone metabolism.

Overall, MG-63 cells remain a cornerstone in the study of human osteoblast-like cells, offering insights into cell growth, differentiation, and the intricate interactions between bone cells and their microenvironment.

Organism

Human

Tissue

Bone

Disease

Osteosarcoma

Metastatic site

Bone, left femur

Synonyms

M-G63, MG63

Characteristics**Age**

14 years

Gender

Male

Ethnicity

Caucasian

Morphology

Fibroblast-like

Growth properties

Adherent

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Identifiers / Biosafety / Citation

Citation MG-63 (Cytion catalog number 300441)

Biosafety level 1

Expression / Mutation

Receptors expressed Transforming growth factor beta (TGF beta, type I and type II)

Products Interferon

Handling

Culture Medium DMEM:Ham's F12, w: 3.1 g/L Glucose, w: 1.6 mM L-Glutamine, w: 15 mM HEPES, w: 1.0 mM Sodium pyruvate, w: 1.2 g/L NaHCO₃ (Cytion article number 820400a)

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.

Split ratio A ratio of 1:4 to 1:8 is recommended

Seeding density 1×10^4 cells/cm²

Fluid renewal 2 to 3 times per week

Freezing recovery After thawing, plate the cells at 5×10^4 cells/cm² and allow the cells to recover from the freezing process and to adhere for at least 48 hours.

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Freeze medium

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

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 x 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.

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STR profile

CSF1PO: 10,12
D13S317: 11
D16S539: 11,12
D5S818: 11,12
D7S820: 10
TH01: 9,3
TPOX: 8,11
vWA: 16,19
D3S1358: 15
D21S11: 30
D18S51: 16
Penta E: 11,12
Penta D: 9,13
D8S1179: 13
FGA: 21,25

HLA alleles

A*: 01:01:01
B*: 08:01:01
C*: 07:01:01
DRB1*: 03:01:01
DQA1*: 05:01:01
DQB1*: 02:01:01
DPB1*: 01:01:01, 04:02:01
E: 01:01:01