





Product Sheet

MEK1 Mutant-A375 Isogenic Cell Line (ATCC® CRL-1619IG-3™)

Please read this **FIRST**



Storage Temp.
**liquid nitrogen
vapor phase**



Biosafety Level
2

Intended Use

This product is intended for research use only. It is not intended for any animal or human therapeutic or diagnostic use.

Complete Growth Medium

The base medium for this cell line is ATCC-formulated Dulbecco's Modified Eagle's Medium (DMEM; ATCC 30-2002). To make the complete medium add the following component to the base medium: Fetal bovine serum (FBS; ATCC 30-2020) to a final concentration of 10%.

Citation of Strain

If use of this culture results in a scientific publication, it should be cited in that manuscript in the following manner: MEK1 Mutant-A375 Isogenic Cell Line (ATCC® CRL-1619IG-3™)

American Type Culture Collection
PO Box 1549
Manassas, VA 20108 USA
www.atcc.org

800.638.6597 or 703.365.2700
Fax: 703.365.2750
Email: Tech@atcc.org

Or contact your local distributor

Description

Organism: *Homo sapiens*, human
Tissue: skin
Disease: malignant melanoma
Age: 54 years
Gender: female
Morphology: epithelial
Growth Properties: adherent
DNA Profile:
Amelogenin: X
CSF1PO: 11,12
D13S317: 11,14
D16S539: 9
D5S818: 12
D7S820: 9
THO1: 8
TPOX: 8,10
vWA: 16,17

Batch-Specific Information

Refer to the Certificate of Analysis for batch-specific test results.

SAFETY PRECAUTION

ATCC highly recommends that protective gloves and clothing always be used and a full face mask always be worn when handling frozen vials. It is important to note that some vials leak when submersed in liquid nitrogen and will slowly fill with liquid nitrogen. Upon thawing, the conversion of the liquid nitrogen back to its gas phase may result in the vessel exploding or blowing off its cap with dangerous force creating flying debris.

Unpacking & Storage Instructions

1. Check all containers for leakage or breakage.
2. Remove the frozen cells from the dry ice packaging and immediately place the cells at a temperature below -130°C , preferably in liquid nitrogen vapor, until ready for use.

Handling Procedure for Frozen Cells

To ensure the highest level of viability, thaw the vial and initiate the culture as soon as possible upon receipt. If upon arrival, continued storage of the frozen culture is necessary, it should be stored in liquid nitrogen vapor phase and not at -70°C . Storage at -70°C will result in loss of viability.

1. Thaw the vial by gentle agitation in a 37°C water bath. To reduce the possibility of contamination, keep the O-ring and cap out of the water. Thawing should be rapid (approximately 2 minutes).
2. Remove the vial from the water bath as soon as the contents are thawed, and decontaminate by dipping in or spraying with 70% ethanol. All of the operations from this point on should be carried out under strict aseptic conditions.
3. Transfer the vial contents to a centrifuge tube containing 9.0 mL complete culture medium. and spin at approximately $150 \times g$ for 5 to 7 minutes.
4. Resuspend cell pellet with the recommended complete medium (see the specific batch information for the culture recommended dilution ratio). It is important to avoid excessive alkalinity of the medium during recovery of the cells. It is suggested that, prior to the addition of the vial contents, the culture vessel containing the complete growth medium be placed into the incubator for at least 15 minutes to allow the medium to reach its normal pH (7.0 to 7.6). pH (7.0 to 7.6).
5. Incubate the culture at 37°C in a suitable incubator. A 5% CO_2 in air atmosphere is recommended if using the medium described on this product sheet.

Handling Procedure for Flask Cultures

The flask was seeded with cells (see specific batch information) grown and completely filled with medium at ATCC to prevent loss of cells during shipping.


1. Upon receipt visually examine the culture for macroscopic evidence of any microbial contamination. Using an inverted microscope (preferably equipped with phase-contrast optics), carefully check for




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- any evidence of microbial contamination. Also check to determine if the majority of cells are still attached to the bottom of the flask; during shipping the cultures are sometimes handled roughly and many of the cells often detach and become suspended in the culture medium (but are still viable).
2. **If the cells are still attached**, aseptically remove all but 5 to 10 mL of the shipping medium. The shipping medium can be saved for reuse. Incubate the cells at 37°C in a 5% CO₂ in air atmosphere until they are ready to be subcultured.
 3. **If the cells are not attached**, aseptically remove the entire contents of the flask and centrifuge at 125 x g for 5 to 10 minutes. Remove shipping medium and save. Resuspend the pelleted cells in 10 mL of this medium and add to 25 cm² flask. Incubate at 37°C in a 5% CO₂ in air atmosphere until cells are ready to be subcultured.



Subculturing Procedure

Volumes used in this protocol are for 75 cm² flask; proportionally reduce or increase amount of dissociation medium for culture vessels of other sizes. Corning® T-75 flasks (catalog #430641) are recommended for subculturing this product.

1. Remove and discard culture medium.
2. Briefly rinse the cell layer with 0.25% (w/v) Trypsin-0.53 mM EDTA solution to remove all traces of serum that contains trypsin inhibitor.
3. Add 2.0 to 3.0 mL of Trypsin-EDTA solution to flask and observe cells under an inverted microscope until cell layer is dispersed (usually within 5 to 15 minutes).
Note: To avoid clumping do not agitate the cells by hitting or shaking the flask while waiting for the cells to detach. Cells that are difficult to detach may be placed at 37°C to facilitate dispersal.
4. Add 6.0 to 8.0 mL of complete growth medium and aspirate cells by gently pipetting.
5. Add appropriate aliquots of the cell suspension to new culture vessels.
Cultures can be established between 1.0 x 10⁴ and 4 x 10⁴ viable cells/cm².
6. Incubate cultures at 37°C.

Interval: Maintain cultures at a cell concentration between 8 X 10³ and 4 X 10⁴ cell/cm².

Subcultivation Ratio: A subcultivation ratio of 1:2 to 1:6 is recommended

Medium Renewal: 2 to 3 times per week



Cryopreservation Medium

Complete growth medium supplemented with 5% (v/v) DMSO (ATCC 4-X)



Comments

This is a malignant BRAFV600E/MEK1Q56P mutant isogenic line derived from the parental A375 (ATCC CRL-1619) cell line. The c.167A>C knock-in mutation encoding MEK1 p.Q56P protein expression was generated at ATCC by utilizing the CRISPR/Cas9 gene editing technology. This is a heterozygous mutation expressing the MEK1 wild-type and the c.167A>C mutant alleles.

BRAF is a proto-oncogene encoding B-RAF, a serine/threonine kinase of the RAF family that acts downstream of RAS and upstream of MEK in the MAPK/ERK signaling pathway. Mutations in BRAF lead to excessive cellular proliferation, differentiation, and survival. BRAF V600E mutations are present in 50% of melanomas and although there are current BRAF inhibitors used as successful therapeutics, patients often become resistant to drugs several months following treatment. One mechanism of resistance to these inhibitors is caused by upstream secondary RAS acquired mutations. The MEK1 Q56P mutant isogenic line, ATCC CRL-1619IG-3 has been validated at the genomic, transcript, and protein bio-functional levels and exhibits significant resistance to the BRAF inhibitors Dabrafenib and Vemurafenib, as well as the MEK inhibitor trametinib when compared to its parental cell line. Furthermore, A-375 MEK1Q56P (ATCC CRL-1619IG-3™) cells display increased sensitivity to combination MEK/BRAF inhibitor treatments, making this line an ideal model system for the development of novel combination therapies targeting multiple points in the RAS-RAF-MEK-ERK-MAPK signaling pathway, as well as for the screening of new potential BRAF and MEK inhibitors.



References

References and other information relating to this product are available online at www.atcc.org.



Biosafety Level: 2



Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the current publication of the *Biosafety in Microbiological and Biomedical Laboratories* from the U.S. Department of Health and Human Services Centers for Disease Control and Prevention and National Institutes for Health.



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Disclaimers

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Additional information on this culture is available on the ATCC web site at www.atcc.org.
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