**Product sheet**

# UM-UC-3 Cells | 305074

## General information

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| **Description** | The UM-UC-3 cell line is derived from a human bladder carcinoma, specifically a high-grade transitional cell carcinoma (TCC), established from a male patient. It has been widely used in cancer research due to its robust growth characteristics, both in vitro and in vivo. UM-UC-3 cells display an epithelial morphology and are aneuploid, with a modal chromosome number ranging from 59 to 95. These cells are capable of forming tumors in immunocompromised mice, with histological features resembling the primary tumor, highlighting their utility as a preclinical model for bladder cancer.<br><br>Genetic and molecular studies have revealed significant alterations in UM-UC-3 cells, including frequent deletions and mutations in key tumor suppressor genes such as CDKN2A and CDKN2B. These genes are located in the 9p21 region, which is commonly deleted in bladder cancer, contributing to dysregulation of the cell cycle. Additionally, UM-UC-3 exhibits changes in the phosphatidylinositol 3-kinase (PI3K) signaling pathway, a critical driver of tumorigenesis in urothelial carcinoma. These features make it a valuable model for studying oncogenic signaling pathways and testing targeted therapies.<br><br>UM-UC-3 cells have been employed extensively in therapeutic research, particularly in exploring the effects of inhibitors targeting the PI3K/AKT and MAPK signaling pathways. They are also used in drug screening programs to identify compounds effective against bladder cancer. The cell line's genetic and phenotypic stability over multiple passages further supports its role as a reliable research tool in cancer biology and therapeutic development. |
| **Organism** | Human |
| **Tissue** | Urinary bladder |
| **Disease** | Bladder carcinoma |
| **Synonyms** | UMUC-3, UM-UC3, UMUC3, UC-3, University of Michigan-Urothelial Carcinoma-3 |

## Characteristics

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| **Age** | Age unspecified |
| **Gender** | Male |
| **Ethnicity** | European |
| **Morphology** | Epithelial |
| **Growth properties** | Adherent |

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## Regulatory Data

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| **Citation** | UM-UC-3 (Cytion catalog number 305074) |
| **Biosafety level** | 1 |
| **NCBI_TaxID** | 9606 |
| **CellosaurusAccession** | CVCL_1783 |

## Biomolecular Data

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| **Tumorigenic** | Yes |

## Handling

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| **Culture Medium** | EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a) |
| **Supplements** | Supplement the medium with 10% FBS and 1% NEAA |
| **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. |
| **Fluid renewal** | 2 to 3 times per week |
| **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. |

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| **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.<br>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.<br>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.<br>4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.<br>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.<br>6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.<br>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.<br>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.<br><br>To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections. |