Product sheet

MCF10A Cells | 305026

General information

Description	The MCF10A human mammary epithelial cell line, established from the mammary gland of a 36-year-old female with fibrocystic disease, serves as a model for studying the intricacies of normal breast cell function, transformation, and the epithelial to mesenchymal transition critical in invasive breast carcinoma transition. As a non-tumorigenic epithelial cell line derived from benign proliferative breast tissue, MCF10A cells are instrumental in mammary cell studies, offering insights into breast tumor progression and the dynamics of tumor cells in mammospheres. MCF10 A cells, characterized by their three-dimensional growth in collagen and their ability to form acinar structures in mixed Matrigel, provide a reliable model for analyzing the impact of oncogenes and studying the mammosphere formation, which is crucial for understanding the properties of mammary progenitor cells and their role in cancer research. The MCF10A cell line, while exhibiting a basal-like phenotype, express a combination of luminal and stem-like markers, as well as epithelial-cell markers such as cytokeratins and milk proteins. Their responsiveness to insulin, glucocorticoids, cholera enterotoxin, and epidermal growth factor (EGF) underscores the importance of growth factors and hormones in the proliferation and survival of human breast tissue cells. The MCF 10A model, provides a window into the genomic signaling pathways that govern cell behavior and phenotype in 3D culture, offering a platform for immunohistochemistry and immunofluorescence staining to visualize cellular processes. These cells are crucial for studying the transition of mammary cells during breast cancer development, including the role of lipid oxidation product genotoxicity and the impact of dietary components like soybean trypsin inhibitor on cell function. Furthermore, the MCF 10A cell line's comparison with other lines such as MCF7 (which is tumorigenic and estrogen receptor-positive) and MCF10F (another non-tumorigenic line but with different characteristics) enriches breast cancer research by providing diverse models for understanding the spectrum of non-invasive to highly metastatic phenotypes.
Organism	Human
Tissue	Mammary gland, breast
Synonyms	MCF-10A, MCF 10A, MCF.10A, MCF10A, MCF10-A, MCF10a, MCF-10 Attached, Michigan Cancer Foundation-10A

Characteristics

Age	36 years
Gender	Female
Morphology	Epithelial
Growth properties	Adherent

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Identifiers / Biosafety / Citation

Citation	MCF 10A (Cytion catalog number 305026)
Biosafety level	1

Expression / Mutation

Tumorigenic	No

Handling

Culture Medium	MEGM (We do not supply this product; please consider other suppliers. Please let us know if you need further assistance)
Medium supplements	Supplement the medium with 100 ng/ml cholera toxin
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	1:2 to 1:4
Fluid renewal	2 to 3 times per week
Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

Handling of cryopreserved cultures	MCF 10A cells are shipped in a deep-frozen state on dry ice. Upon receipt, confirm that the vial remains frozen. For storage, place the cryovial immediately at temperatures below -150 degrees. If you plan to culture the cells immediately, swiftly thaw the vial by shaking it in a 37 degrees water bath with clean water and an antimicrobial agent for 40-60 seconds. Remove the vial once a small ice clump persists, ensuring it remains cold. Proceed with all subsequent steps under aseptic conditions. In a sterile flow hood, disinfect the cryovial with 70% ethanol. Then, gently open the vial and transfer the cell suspension into a 15 ml centrifuge tube pre-filled with 8 ml of room temperature culture medium. Gently mix the cells. For cell separation, centrifuge at 300 x g for 3 minutes and dispose of the supernatant. Skipping centrifugation is optional, although any residual freezing medium should be removed after 24 hours. Resuspend the pellet gently in 10 ml of fresh culture medium and divide between two T25 culture flasks. Follow the subculture protocol for subsequent steps.

Quality control / Genetic profile / HLA

Sterility	Mycoplasma contamination is rigorously 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.
STR profile	**Amelogenin**: x,x **CSF1PO**: 10,12 **D13S317**: 8,9 **D16S539**: 11,12 **D5S818**: 10,13 **D7S820**: 10,11 **TH01**: 8,9.3 **TPOX**: 9,11 **vWA**: 15,17 **D3S1358**: 14,18 **D21S11**: 28,30 **D18S51**: 18,19 **Penta E**: 13,14 **Penta D**: 10,12 **D8S1179**: 14,16 **FGA**: 22,24 **D6S1043**: 12,18 **D2S1338**: 21,26 **D12S391**: 17,20 **D19S433**: 13,15