Product sheet

A431 Cells | 300112

General information

Description	The A431 cell line, derived from a solid epidermoid carcinoma tumor in an 85-year-old female patient, is a human tumor cell line with an epithelial morphology, typically growing in clusters. The A-431 cell line is extensively utilized in cancer, toxicity, and immuno-oncology studies, serving as a positive control for epidermal growth factor (EGF) receptor expression due to its high receptor density. Upon binding of EGF to its receptor (EGFR) on the surface of A431 cells, a rapid tyrosine phosphorylation of membrane proteins occurs, triggering a cascade of intracellular signaling pathways. These pathways include the MAPK/ERK and PI3K/AKT pathways, which are pivotal in regulating cell cycle progression, survival, and proliferation. EGFR stimulates cell proliferation at low concentrations, whereas at higher concentrations, it inhibits growth and induces terminal differentiation in A431 cells. This dynamic response to EGFR underscores the cell line's utility in exploring cell signaling pathways and the cell cycle in the context of cancer. A-431 cell-derived xenograft models are used for studying tumor behavior in a live environment and evaluating anticancer therapies. These models help assess how treatments such as EGF supplementation and radiation, affect tumor growth and highlight the cells' sensitivity to radiation. In summary, the A-431 cell line serves as an invaluable human epidermoid carcinoma cell model, facilitating a deeper understanding of EGFR signaling, tumor biology, and the development of therapeutic interventions aimed at combating epidermoid carcinoma and other related cancers.
Organism	Human
Tissue	Epidermoid
Disease	Squamous cell carcinoma
Synonyms	A-431, A431/P

Characteristics

Age	85 years
Gender	Female
Morphology	Epithelial-like, flat polygonal
Growth properties	Adherent

Regulatory Data

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Citation	A431 (Cytion catalog number 300112)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0037

Biomolecular Data

Receptors expressed	EGF-binding sites
Protein expression	P53 positive
Isoenzymes	G6PD, B, PGM1, 1, PGM3, 1, ES-D, 1, Me-2, 0, AK-1, 1, GLO-1, 2
Tumorigenic	Yes, in immunosuppressed mice
Products	HBp17
Mutational profile	BRAF V600Ewt
Karyotype	Six marker chromosomes with rearrangements: der(6), der(7), der(17), der(21), dic(13,14), and dic(14,18). Amplification of the C-MYC oncogene at 8q24 in two marker chromosomes: dup(8)(q24) and der(15)t(8,15)(q22,p11).

Handling

Culture Medium	DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase

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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.
Seeding density	1 x 10^4 cells/cm^2 will result in a confluent monolayer within 4 days.
Fluid renewal	2 to 3 times per week
Post-Thaw Recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.
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.

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. 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. 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.
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

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.