Product sheet

KPL-4 Cells | 305578

General information

Description	The KPL-4 cell line is a human breast cancer model originally derived from the malignant pleural effusion of a patient with inflammatory breast cancer. This cell line exhibits overexpression and amplification of HER2 (ErbB-2), as well as expression of other ErbB family receptors, including HER1 (EGFR) and HER3. Such characteristics make it particularly relevant for studying the molecular mechanisms underlying aggressive HER2-positive breast cancers and testing targeted therapies. KPL-4 cells are highly tumorigenic and have been used to establish xenograft models in immunodeficient mice. These models have demonstrated that KPL-4 tumors secrete significant amounts of interleukin-6 (IL-6), contributing to cachexia in host animals. The secretion of IL-6 correlates with tumor burden, highlighting the systemic effects of tumor biology in HER2-positive cancers. Importantly, KPL-4 cells respond to anti-HER2 therapies such as trastuzumab, although the in vivo efficacy of these treatments is variable, potentially due to the aggressive nature of this cancer model. The cell line has also been leveraged in advanced therapeutic research. For example, photoactivating antibody-mimetic drug conjugates (AMDCs) targeting HER2 have shown efficacy in KPL-4 xenograft models. These therapies combine HER2-specific binding molecules with cytotoxic payloads activated by light, achieving significant tumor reduction with minimal off-target effects. Such studies underscore the utility of KPL-4 cells in evaluating novel therapeutic modalities for HER2-positive breast cancer.
Organism	Human
Tissue	Breast
Disease	Breast inflammatory carcinoma
Metastatic site	Pleural effusion
Synonyms	KPL4

Characteristics

Age	52 years
Gender	Female
Ethnicity	Japanese
Morphology	Epithelial-like
Growth properties	Adherent

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Regulatory Data

Citation	KPL-4 (Cytion catalog number 305578)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_5310

Biomolecular Data

MSI-status	Stable (MSS)

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
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 TrypLE Express, 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 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. 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

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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.