# KYSE520

305449

## GENERAL INFORMATION

### Description

The KYSE520 cell line is a human esophageal squamous cell carcinoma (ESCC) model derived from a primary tumor. It is moderately differentiated and has been instrumental in investigating epithelial-mesenchymal plasticity (EMP) in esophageal cancer. KYSE520 cells exhibit heterogeneity, consisting of both epithelial-like (CD44v+) and mesenchymal-like (CD44v−) subpopulations. These two populations are capable of interconversion, reflecting a dynamic EMP process. This property makes KYSE520 an excellent model for studying cancer stem cell traits and chemoresistance mechanisms in ESCC.
Genetically, KYSE520 cells display notable epigenetic regulation. The promoter region of the JAM3 gene, a tumor suppressor, is unmethylated in these cells, allowing its expression. JAM3 plays a role in regulating cell proliferation, migration, and invasion through Wnt/β-catenin signaling. The maintenance of JAM3 expression in KYSE520 has been linked to the suppression of aggressive cancer phenotypes.
In therapeutic research, KYSE520 cells have been used to explore the role of fibroblast growth factor receptor-like 1 (FGFRL1). Studies have shown that FGFRL1-deficient KYSE520 cells exhibit reduced tumor growth and motility, alongside a decrease in matrix metalloproteinase-1 (MMP-1) and fibroblast growth factor binding protein 1 (FGFBP1) expression. These findings underscore the importance of FGFRL1 in tumorigenesis and suggest potential therapeutic targets. Additionally, the EMP dynamics and associated molecular pathways in KYSE520 cells provide insights into ESCC progression and resistance mechanisms, contributing to the development of targeted treatments.

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| **Tissue** | Esophagus |
| **Disease** | Squamous cell carcinoma |

### Synonyms

- KYSE 520
- KYSE-520
- Kyse520
- KYSE0520

## CLASSIFICATION

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| **Organism** | Human |
| **Sex** | Female |
| **Growth properties** | Adherent |
| **Biosafety level** | 1 |

## CHARACTERISTICS

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| **Morphology** | Epithelial-like |

## IDENTIFIERS

### Citation

KYSE520 (Cytion catalog number 305449)

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| **NCBI TaxID** | 9606 |
| **Cellosaurus** | CVCL_1355 |

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## EXPRESSION AND SUSCEPTIBILITY

### Oncogenes

TP53, MYC

### Mutational profile

Mutation: TP53, c.376-2A>T, Splice acceptor mutation

## HANDLING AND CULTURE

### Culture medium

Ham's F12, w: 1.0 mM stable Glutamine, w: 1.0 mM Sodium pyruvate, w: 1.1 g/L NaHCO3 (Cytion article number 820600a) + RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a); 1:1 mixture

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| **Incubation atmosphere** | 37°C, 5% $CO_2$, humidified atmosphere. |

### Supplements

Supplement the medium with 2% FBS

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| **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.

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| **Seeding density** | 0.6 - 1.2 x $10^4$ cells/$cm^2$ |
| **Fluid renewal** | 2 times per week |

### Thawing and culturing

Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
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.
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.
Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
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.
Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
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.
Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

## QUALITY CONTROL AND CRYOPRESERVATION

### 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.

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| **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. |

### 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.

### 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.

## DONOR

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| **Donor age** | 58 years |
| **Ethnicity** | Japanese |

## LEGAL AND SAFETY

### Safety precautions

When planning to store a cryovial in liquid nitrogen for future thawing, it is mandatory to adhere to stringent safety measures. Appropriate protective gloves and clothing are essential, and the use of a face mask or safety goggles is required during the transfer of frozen samples to or from the liquid nitrogen tank. This is to mitigate the risk of injury from potential cryovial explosions upon removal, which can result in the projection of sharp fragments.

### Warranty

At Cytion, we stand behind the quality and viability of our products.
We guarantee that our cells will be viable at the start of culture for
60 days after shipment from our facilities.
We assure that all materials conform to the specifications described in the
Certificate of Analysis and/or Product Sheet.
For full details, please refer to our
Warranty Statement.

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| **Material Transfer Agreement required** | Yes |