Product description

The KPC cell line is a widely used model for studying pancreatic ductal adenocarcinoma (PDA). It closely recapitulates key features of human PDA, including the development of pancreatic intraepithelial neoplasia (PanIN). This cell line retains the hallmark mutations found in the KPC mouse model expressing $KRAS^{G12D}$ and $TP53^{R172H}$, making it highly relevant for research into tumor biology, biomarker discovery, metastasis, and therapeutic development. Its mixed genetic background further enhances its utility across a range of experimental contexts.

Name: KPC Cell Line (mixed genetic background)

Alternate name: PDAC cell line

Disease: Pancreatic cancer

Cancers detailed: Pancreatic cancer; Pancreatic ductal adenocarcinoma

Tool sub type: Continuous

Organism: Mouse

Growth properties: Loosely adherent

Model: Transgenic

Conditional: No

Production details: The cell line was derived from the KPC mouse model developed by Hingorani et al. (2005), which incorporates conditional point mutations in the KRAS and TP53 genes. These mutations are silenced by upstream lox-stop-lox (LSL) sequences until activated by Cre recombinase, driven by the PDX1 promoter—a transcription factor specific to pancreatic tissue. This ensures targeted expression of the oncogenes in acinar, islet, and ductal cells of the pancreas, while other tissues remain heterozygous. The resulting model provides a robust and clinically relevant system for investigating PDA pathogenesis and treatment strategies.

CRISPR Edited: No

Biosafety level: 1

Contributor(s)

Inventor: Jennifer Morton
Institute: Cancer Research UK, Glasgow Beatson Institute

Properties

Product format: Frozen

Unpacking and storage:

1. Check all containers for leakage or breakage.

2. Remove the frozen cells from the dry ice packaging and immediately place the cells at a temperature below -130°C, preferably in liquid nitrogen vapor, until ready for use.

Recommended medium: DMEM with 10% FBS, 1% L-Glutamine and 1% Pen/Strep.

Subculture: Split 1:2 every 2 days, 0.25% trypsin, 2-5 min at 37.0°C.

Culture conditions: 37.0°C ± 1.0°C incubator with 5.0% ± 1.0% CO_2

Cryopreservation: Cells can be cryopreserved in 10% DMSO and 90% FBS or in cell culture medium with 10% DMSO and 10% FBS. It is recommended to freeze 3 vials of 1 mL each from a T75 flask at 80-90% confluency for optimal density and revivability upon thaw.

Handling instructions

1. Please ensure that vials are frozen when received, and store at **<-130 °C long term**. When removing frozen cells from storage, it is important to minimize exposure to room temperature (15 - 25°C). If not proceeding directly to thawing, place the cells on dry ice or in a liquid nitrogen container.
2. **Do not thaw at room temperature.** To thaw, swirl the vial quickly in a 37 °C water bath with O-ring and cap above the water to avoid contamination. Remove from the water bath with a small ice pellet remaining (this should not take more than 2 minutes) and wipe the exterior with 70% ethanol or isopropanol before transferring to a biosafety cabinet. Further steps should be conducted under aseptic conditions.
3. We strongly recommend that the volume of cell suspension is measured at this point, and a 20 uL aliquot be removed for a **viable cell count** using trypan blue or similar dye. This ensures that provided cells are viable, and the cell count can be used to determine volume of growth medium to be added to the cell suspension.
4. Transfer the remaining cell suspension to a 50 mL conical tube using a pipette.
5. Rinse the vial with 1 mL of medium and add it dropwise to the cells, while gently swirling the 50 mL tube. Wash by adding 15 - 20 mL of medium dropwise, while gently swirling the tube.
6. Centrifuge the cell suspension at 250 x g for 5 minutes at room temperature. Carefully remove the supernatant with a pipette, leaving a small amount of medium to ensure the cell pellet is not disturbed. Resuspend the cell pellet by gently flicking the tube.
7. Gently add required volume of culture medium and transfer to a suitable cell culture flask and incubate. Examine the cultures after 24 hours and subculture as described. Revival of this cell line may be slow compared to other mammalian cell lines.

References

- Li et al. 2014. Gastroenterology. 146(5):1386-96.e1-17. PMID: 24462734.
- Hingorani et al. 2005. Cancer Cell. 7(5):469-83. PMID: 15894267.

Material Citation

If use of this material results in a scientific publication, please cite the material in the following manner: KPC Cell Line (mixed genetic background), was invented by Jennifer Morton (CancerTools.org #153600).