Product description

The HGS2 cell line is a murine high-grade serous ovarian cancer (HGSOC) model derived from genetically engineered mice carrying Pax8-rtTA; TetO-Cre; Trp53 fl/fl; Pten fl/fl; BrCa2 fl/fl genotype. This model enables doxycycline-inducible, Pax8-driven Cre recombination within the Müllerian epithelium, resulting in synchronous deletion of Trp53, Pten, and Brca2 and subsequent tumour initiation. HGS2 was specifically generated from dissociated fragments of the fallopian tube/ovarian tissue, reflecting the anatomic site now recognised as the predominant origin of human high-grade serous ovarian cancer. SNP profiling confirmed that the line retains a predominantly C57BL/6 genetic background (95.1–96.5%), consistent with the originating GEMM strain. The resulting cell line exhibits epithelial characteristics and is suitable for both in vitro culture and in vivo transplantation studies in immunocompetent C57BL/6 hosts.

Name: HGS2 Cell Line

Cancer: Ovarian cancer

Cancers detailed: High Grade Serous Epithelial Ovarian; High-Grade Serous Ovarian (HGSOC)

Organism: Mouse

Tissue: Fallopian tube, ovarian, or peritoneal tumour tissues

Growth properties: Adherent

Model: Cancer model

CRISPR Edited: No

Conditional: Yes

Production details: HGS2 was generated following doxycycline-induced Cre activation in female GEMM mice (0.2 mg/ml in drinking water for 14 days post-weaning), resulting in targeted deletion of Trp53, Pten, and Brca2 within the Müllerian epithelium. Fallopian tube and ovarian tumour fragments were collected in cold PBS, finely minced, and enzymatically dissociated using collagenase type I to initiate cell isolation. After an initial passage on collagen-coated plates, cells were transferred into Primaria flasks and subsequently expanded as polyclonal cultures on standard tissue-culture plastic.

Biosafety level: 1

Cellosaurus id: CVCL_B5GW

Contributor(s)

Inventor: Frances Balkwill
Institute: Queen Mary University of London

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 vapour, until ready for use.

Recommended medium: DMEM:F12 1:1 with GlutaMax (GIBCO™) with the addition of 4% FBS (Hyclone), 1x Pen/Strep (Invitrogen), 1x insulin/transferrin/selenium (Invitrogen, 51300), 100 ng/ml hydrocortisone (Sigma, H0135), 20 ng/ml murine Epidermal Growth Factor (EGF, Sigma, E4127), 1x antibiotic-antimycotic (GIBCO™).

Subculture: Split 1:10 three times/week or 1:20 twice a week, depending on observed growth rate. Growth rate may vary depending on serum batch. Monitor cell density and adjust split ratios accordingly. 0.25% trypsin/EDTA solution; 5% CO2; 37°C.

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

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 minimise 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.
6. Wash by adding 15 - 20 mL of medium **dropwise**, while gently swirling the tube.
7. Centrifuge the cell suspension at **250 x g for 5 minutes** at room temperature.
8. 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.
9. Gently add required volume of culture medium and transfer to a 75 cm^2 culture dish.

***In vivo* use:**

Recommended injection protocol:

- Prepare 1 × 10^7 cells per mouse in sterile PBS.
- Trypsinize cells and neutralize trypsin with complete medium.
- Centrifuge, discard supernatant, and resuspend in PBS.
- Count cells and adjust to a final concentration suitable for delivering 1 × 10^7 cells in 300 µl PBS.
- Inject intraperitoneally into C57BL/6 mice.

Technical notes:

- Injection-site tumours may occasionally develop. To minimize this, use a fresh needle for each mouse.
- After inserting the needle into the peritoneal cavity, allow it to rest for several seconds before withdrawal to reduce backflow and subcutaneous deposition.
- Injection-site tumours are uncommon and rarely cause clinical issues.

Animal Monitoring Guidelines:

- Weight loss: Check at least twice weekly as animals approach endpoint; also assess general wellbeing (hunched posture, sunken eyes, reduced mobility).
- Ascites: Observe for abdominal distension and rounded flanks.
- Jaundice (rare): Tumour growth in the lesser omentum may obstruct the gall bladder, leading to jaundice. Although difficult to detect by ear or paw colour in C57BL/6 mice, signs include weight loss and dark yellow urine.
- Intestinal obstruction (very rare): Tumours arising from the mesentery can obstruct the intestine or cecum. Even small tumours may cause rapid clinical deterioration.

References

- Maniati et al. 2020. Cell Rep. 30(2):525-540.e7. PMID: 31940494.

Material Citation

If use of this material results in a scientific publication, please cite the material in the following manner: HGS2 cell line, was invented by Frances Balkwill (CancerTools.org #160538).