Data Sheet

HCI-EC-23 Human Endometrial Cancer Cell Line

SCC641

Pack Size: ≥ 1x10^6 viable cells/vial

Store in liquid nitrogen.

FOR RESEARCH USE ONLY
Not for use in diagnostic procedures. Not for human or animal consumption.

Background

Endometrial cancer, a sub-type of uterine cancer, affects the inner lining of the uterus also known as the endometrium. Endometrial cancer is categorized into two primary subtypes, Type I and Type II. Type I tumors are typically characterized by their high levels of estrogen receptor alpha (ERα). These tumors are also thought to be driven by excessive estrogen signaling. Type II endometrial tumors are considered to be hormone-independent and may have a mixed histological background.[1]

A variety of cell lines have been created from Type I tumors, however, many of these cell lines have lost ERα expression and estrogen response. The limited availability of ERα expressing endometrial cell lines limits the variety of genetic backgrounds for understanding endometrial cancer. Patient derived xenografts (PDX) have increased the capability to produce hormone-responsive models but lack some of the benefits of a cell line model.[1]

The HCI-EC-23 human endometrial cancer cell line was derived by generating a PDX cell line in a mouse model. Cells from an endometrial carcinoma sample were injected into immunodeficient mice and grown in the mouse model before being harvested. PDX samples were dissociated, grown on collagen coated plates and selected for predominantly human (>99%) cells which became the HCI-EC-23 cell line. These cells retain ER expression and estrogen-responsiveness *in vitro* and *in vivo*. The cell line contains important mutations relevant to endometrial carcinomas including mutations at PTEN, PIK3CA, ARID1A, CTCF, and ATM, but remains wild-type for PIK3R1, CTNNB1, KRAS and TP53. Progesterone receptor genes and estrogen receptor genes also remain wild-type.[1]

Estrogen responsiveness was tested in the HCI-EC-23 cell line by transfecting cells with a luciferase reporter under control of tandem estrogen response elements and treating cells with E2. HCI-EC-23 cells also showed estrogen responsiveness to 4-hydroxy-tamoxifen (4OHT) treatment which is consistent with observations of endometrial response.[1]

Source

GMO: Primary endometrial tumor was obtained from a 66-year-old woman diagnosed with Grade 2 Stage 1A endometrioid endometrial carcinoma which was later cloned into a mouse PDX model. A predominantly human (>99%) cell outgrowth was used to derive the HCI-EC-23 human endometrial cancer cell line.

Short Tandem Repeat

D3S1358: 16, 17	D7S820: 10, 11	vWA: 17, 19, 20	FGA: 20, 24, 25	D8S1179: 12, 13, 14
D21S11: 28, 29	D18S51: 12, 15	D5S818: 11	D13S317: 11, 12	D16S539: 11, 12
TH01: 9.3, 10	TPOX: 8, 9	CSF1PO: 12, 13	Penta E: 12, 15	Penta D: 11, 12
AMEL: X				

Quality Control Testing

- HCI-EC-23 human endometrial cancer cells are verified to be of human origin and negative for rat, Chinese hamster, Golden Syrian hamster, and nonhuman primate interspecies contamination, as assessed by a Contamination Clear panel by Charles River Animal Diagnostic Services.

  Note: HCI-EC-23 cells contain a very small amount of mouse DNA (<1%) attributed to the Patient Derived Xenograft (PDX) source of the cell line.

- Cells tested negative for infectious diseases against a Human Essential CLEAR panel by Charles River Animal Diagnostic Services.
- Cells tested negative for mycoplasma.

Storage and Handling

HCI-EC-23 cells should be stored in liquid nitrogen until use. The cells can be cultured for at least 10 passages after initial thawing without significantly affecting the cell marker expression and functionality.

Representative Data

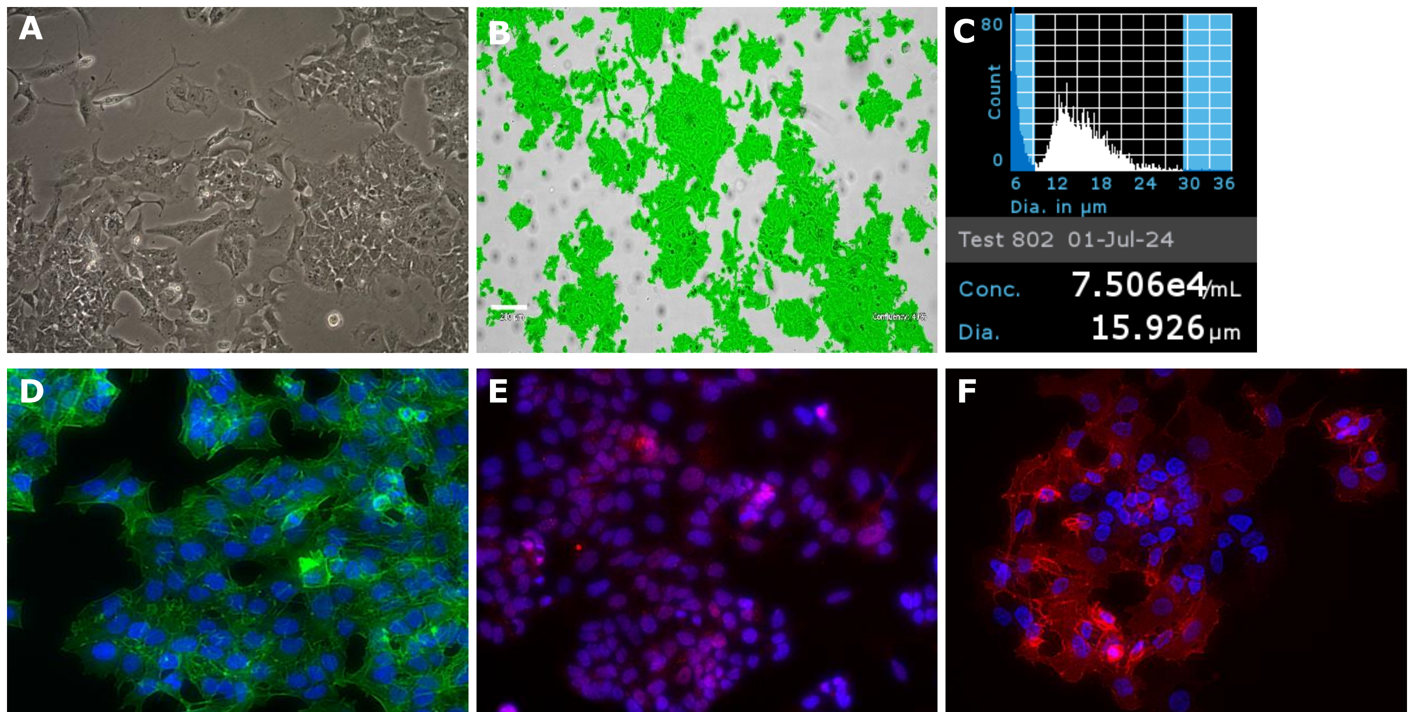

Figure 1. (**A**) Bright-field images of HCI-EC-23 cells three days after thaw in a T175 flask (4X magnification). (**B**) Cell confluency was assessed throughout the culture using the Millicell® Digital Cell Imager (MDCI10000). (**C**) Cell counting was performed using the Scepter™ 3.0 Handheld Automated Cell Counter using 60 µm sensors (PHCC360KIT). (**D**) HCI-EC-23 cells stained with Phalloidin-Atto-488 (49409). (**E**) HCI-EC-23 cells express Estrogen Receptor Alpha (06-935). (**F**) HCI-EC-23 cells express EPCAM (BioLegend, 324202).

Protocols

Thawing the Cells

1. Do not thaw the cells until the recommended medium is on hand. Cells can grow on standard tissue cultureware surfaces without any additional coating.
2. HCI-EC-23 cells are thawed and expanded in HCI-EC-23 Expansion Medium comprising of RPMI1640 (R8758) containing 10% FBS (ES-009-B), 2 mM L-Glutamine (G7513) and Penicillin/Streptomycin (P4333).
3. Remove the vial of frozen HCI-EC-23 cells from liquid nitrogen and incubate in a 37 °C water bath. Closely monitor until the cells are completely thawed. Maximum cell viability is dependent on the rapid and complete thawing of frozen cells.

   IMPORTANT: Do not vortex the cells.
4. As soon as the cells are completely thawed, disinfect the outside of the vial with 70% ethanol. Proceed immediately to the next step.
5. In a laminar flow hood, use a 1-2 mL pipette to transfer the cells to a sterile 15 mL conical tube. Be careful not to introduce any bubbles during the transfer process.
6. Using a 10 mL pipette, slowly add dropwise 9 mL of HCI-EC-23 Expansion Medium (Step 1 above) to the 15 mL conical tube.

   IMPORTANT: Do not add the entire volume of media all at once to the cells. This may result in decreased cell viability due to osmotic shock.
7. Gently mix the cell suspension by slowly pipetting up and down twice. Be careful not to introduce any bubbles.

   IMPORTANT: Do not vortex the cells.
8. Centrifuge the tube at 300 x *g* for 2-3 minutes to pellet the cells.
9. Decant as much of the supernatant as possible. Steps 5-8 are necessary to remove residual cryopreservative (DMSO).
10. Resuspend the cells in 35 mL of HCI-EC-23 Expansion Medium.
11. Transfer the cell mixture to a T175 tissue culture flask.
12. Incubate the cells at 37 °C in a humidified incubator with 5% CO_2.

Subculturing the Cells

1. HCI-EC-23 cells can be passaged at ~80-85% confluency.
2. Carefully remove the medium from the tissue culture flask containing the 80-85% confluent layer of HCI-EC-23 cells.
3. Rinse the flask with 10 mL 1X sterile PBS (TMS-012-A). Aspirate after the rinse.
4. Apply 5-7 mL of pre-warmed Accutase® (A6964) and incubate in a 37 °C incubator for 5 minutes.
5. Inspect the flask and ensure the complete detachment of cells by gently tapping the side of the flask with the palm of your hand.
6. Add 5-7 mL of HCI-EC-23 Expansion Medium to the plate.
7. Gently rotate the flask to mix the cell suspension. Transfer the dissociated cells to a 15 mL conical tube.
8. Centrifuge the tube at 300 x *g* for 3-5 minutes to pellet the cells.
9. Discard the supernatant, then loosen the cell pellet by tapping the tip of the tube with a finger.
10. Apply 2-5 mL of HCI-EC-23 cell medium to the conical tube and resuspend the cells thoroughly. Large cell clumps may be broken up by gentle trituration.

    IMPORTANT: Do not vortex the cells.
11. Count the number of cells using a hemocytometer or a Scepter™ 3.0 Handheld Automated Cell Counter.
12. Plate the cells to the desired density. Typical split ratio is 1:10.

Cryopreservation of the Cells

HCI-EC-23 cells may be frozen in HCI-EC-23 Expansion Medium supplemented with 10% DMSO using a Nalgene® slow freeze Mr. Frosty® container.

References

1. Rush, C.M., Blanchard, Z., Polaski, J.T. et al. Characterization of HCI-EC-23 a novel estrogen and progesterone-responsive endometrial cancer cell line. Sci Rep 12, 19731 (2022). https://doi.org/10.1038/s41598-022-24211-8

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