12Z

305733

GENERAL INFORMATION

Description

The 12Z cell line is an immortalized human endometriotic epithelial cell model derived from peritoneal endometriotic lesions. It was originally established by transfecting primary endometriotic epithelial cells with the SV40 large T antigen, enabling extended proliferative capacity. The 12Z cells are cytokeratin-positive and E-cadherin-negative, distinguishing them as an epithelial-like population with an invasive phenotype. These cells have been shown to exhibit high migratory and invasive behavior in vitro, similar to metastatic carcinoma cells, and express N-cadherin, a cadherin associated with increased invasiveness and motility. This molecular profile supports their use in studying invasion mechanisms relevant to endometriosis and parallels seen in cancer biology.
Functionally, 12Z cells express genes involved in estrogen and progesterone signaling, extracellular matrix remodeling, angiogenesis, cytokine production, and prostaglandin E2 (PGE2) biosynthesis and signaling. They exhibit elevated activity of matrix metalloproteinases MMP-2 and MMP-9, which are critical for degrading extracellular matrix components and facilitating tissue invasion. Furthermore, 12Z cells produce high levels of PGE2, an inflammatory mediator implicated in the pathophysiology of endometriosis. These features, along with their responsiveness to steroid hormones, make 12Z cells an effective in vitro model for dissecting the molecular underpinnings of endometriotic lesion establishment, invasion, and hormonal regulation.
Importantly, recent quality control studies have confirmed the genetic authenticity of 12Z cells through STR (short tandem repeat) profiling, mitigating previous concerns about cross-contamination and misidentification in endometriosis research. These cells, along with the closely related Z11 line, have been proposed as standard models for improving reproducibility and reliability in the field of reproductive biology and endometriosis research.

Tissue	Endometrium, epithelium
Disease	Endometriosis

Synonyms

- 12z
- 12-Z
- Z12
- Z-12
- Z12 Eo
- EEC12Z

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This cell line contains an SV40 Large T Antigen expression construct delivered via a pcDNA3.1 vector, enabling extended proliferation through p53 and Rb inactivation. The insert is integrated into the human endometriotic cell line 12Z. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

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CHARACTERISTICS

Morphology	Epithelial-like
Cell type	Epithelial cell
Doubling time	31 hours

IDENTIFIERS

Citation

12Z (Cytion catalog number 305733)

NCBI TaxID	9606
Cellosaurus	CVCL_0Q73

HANDLING AND CULTURE

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)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS

Seeding density	1-3 x 10^4 cells/cm^2

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.

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

Donor age	37 years

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.

Disclaimer

Our cells are provided for in vitro laboratory research purposes exclusively and are not intended for clinical or diagnostic use, nor are they to be administered to humans or used for veterinary purposes. Users must adhere to all applicable guidelines and regulations for the handling and use of these cells in a research setting.

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.

Material Transfer Agreement required	Yes