Product sheet

12Z Cells | 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.
Organism	Human
Tissue	Endometrium, epithelium
Disease	Endometriosis
Synonyms	12z, 12-Z, Z12, Z-12, Z12 Eo, EEC12Z

Characteristics

Age	37 years
Gender	Female
Morphology	Epithelial-like
Cell type	Epithelial cell

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Growth properties	Adherent

Regulatory Data

Citation	12Z (Cytion catalog number 305733)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0Q73
GMO Status	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.

Biomolecular Data

Mutational profile	

Handling

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)
Supplements	Supplement the medium with 10% FBS
Doubling time	31 hours
Seeding density	1-3 x 10^4 cells/cm^2
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.

Thawing and Culturing Cells	1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit. 2. 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. 3. 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. 4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening. 5. 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. 6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. 7. 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. 8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.
Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
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.
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.

Quality Control & Molecular Analysis

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.