PC3

300312

GENERAL INFORMATION

Description

PC3 cells, derived from the bone metastasis in a 62-year-old Caucasian male with grade IV prostatic adenocarcinoma, are a cornerstone in the study of human prostate carcinoma. The PC-3 human prostate cancer cell line is widely used for studying the molecular and cellular aspects of prostate cancer, especially in the context of metastatic disease. Their high metastatic potential makes them a valuable model for advanced prostate cancer research.
As epithelial cells, PC3 cells' lack of response to androgens and their independence from typical growth factors like glucocorticoids or fibroblast growth factors, positions them uniquely among human prostate carcinoma cells for studying the impact of koenimbin and other potential therapeutic agents.
The absence of prostate-specific antigen (PSA) expression and low activities of testosterone-5-alpha reductase and acidic phosphatase set PC3 apart from other prostate cancer cell models like LNCaP and DU145, the former known for expressing luminal differentiation markers such as AR and PSA, and the latter representing a moderated metastatic potential of prostate carcinoma.
Furthermore, the role of the PC3 prostatic carcinoma cell line in prostate cancer stem cells research is underscored by the observation that a subset forms cancer stem cell holoclones. This characteristic makes the PC3 cell line a critical model for studying the tumor environment, particularly through xenograft models where PC3 xenograft tumors are used to investigate tumor growth and response to therapies in vivo.
In summary, PC3 cells, originating from a grade IV prostatic adenocarcinoma, serve as a pivotal model in prostate cancer research due to their high metastatic potential, unique androgen independence, and distinct cellular characteristics. Their versatility extends from molecular studies of metastasis to the exploration of therapeutic responses and the investigation of prostate cancer stem cells, making them an invaluable resource for advancing our understanding of prostate carcinoma's complexities and potential treatments.

Tissue	Prostate
Disease	Adenocarcinoma
Metastatic site	Bone

Applications

Transfection host

Synonyms

- PC-3
- PC.3

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent and suspension
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice

Karyotype

The karyotype of PC3 cells is notable for being triploid, containing multiple chromosomal abnormalities that contribute to their aggressive nature.

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Doubling time	40 hours

IDENTIFIERS

Citation

PC3 (Cytion catalog number 300312)

NCBI TaxID	9606
Cellosaurus	CVCL_0035

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

HLA A1, A9

HANDLING AND CULTURE

Culture medium

DMEM:Ham's F12 (1:1), w: 3.1 g/L Glucose, w: 2.5 mM L-Glutamine, w: 15 mM HEPES, w: 0.5 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)

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

Supplements

Supplement the medium with 5% FBS

Dissociation reagent	Accutase

Subculturing

Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

Seeding density	Start with 3 x 10^4 cells/cm^2. After cell recovery, use the seeding density of 1 x 10^4 cells/cm^2 for the subsequent splitting steps.
Fluid renewal	2 to 3 times per week
Post-thaw recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

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	62 years
Ethnicity	Caucasian

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.

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