LNCaP

300265

GENERAL INFORMATION

Description

LNCaP cells, derived from a metastatic lesion in a lymph node of a prostate cancer patient, represent a critical tool in prostate cancer research, particularly for studying the role of androgens and androgen receptor (AR) dynamics in cancer progression. The LNCaP cell line is characterized by their androgen-sensitive growth and offers a window into the mechanisms underlying prostate cancer's response to hormonal manipulation.
As a model for metastatic prostate cancer, parental LNCaP cells and their sublines, such as the LNCaP clone FGC, provide clinically relevant insights into disease progression, especially in the context of metastasis to bone, forming osteoblastic lesions akin to those observed in human prostate cancer.
The LNCaP human prostate cancer cell line expresses a mutated form of the AR gene with broader steroid-binding specificity and therefore is pivotal for understanding the complex interplay between AR activity and prostate cancer progression. This includes the examination of AR downstream targets like PSA and NKx3.1, which are crucial for prostatic epithelial cell function. LNCaP cells are further used in cytotoxicity studies such as those induced by ripl or the potential therapeutic effects of compounds like amygdalin, within the scope of intracellular drug delivery strategies.
In summary, the human prostate carcinoma cell line LNCaP serves as a cornerstone in understanding the role of androgens in cancer progression and prostate cancer, offering insights into hormone-responsive cancers, the challenges of resistant prostate cancer, and the potential for therapeutic interventions. The LNCaP cell line is considered one of the classic and most widely used human prostate cancer cell lines, alongside DU145 and PC3 cells.

Tissue	Prostate
Disease	Carcinoma
Metastatic site	Left supraclavicular lymph node

Synonyms

- LNCAP
- LNCap
- Ln-Cap
- Lymph Node Carcinoma of the prostate

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice

Karyotype

Pseudodiploid male, seven marker chromosomes, modal number = 46, range = 33 to 91

Doubling time	60 hours

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IDENTIFIERS

Citation

LNCaP (Cytion catalog number 300265)

NCBI TaxID	9606
Cellosaurus	CVCL_0395

EXPRESSION AND SUSCEPTIBILITY

Receptors expressed

Androgen, estrogen

Protein expression

P53 positive

Products

Human prostatic acid phosphatase, prostate specific antigen

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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

Supplements

Supplement the medium with heat-inactivated 10% 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	1 to 2 x 10^4 cells/cm^2
Fluid renewal	Every 3 days
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	50 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