BPH-1 Human Benign Prostatic Hyperplasia Cell Line

Immortalized Cell Line

Cat. # SCC256

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.
THIS PRODUCT CONTAINS GENETICALLY MODIFIED ORGANISMS.

Data Sheet

Background

Benign prostatic hyperplasia (BPH) is the most common neoplasm, affecting over 50% of men over 60 years of age and 80% over 90.[1] Benign prostatic disease is the prevalent cause of lower urinary tract symptoms. The high incidence of prostatic disease has spurred development of relevant human models for prostate growth and differentiation in order to more fully understand the physiology and progression of this disease.

BPH-1 is an immortalized benign prostatic hyperplasia cell line that is a highly cited human model for prostate growth and physiology. Compared to prostate cancer cell lines, BPH-1 cells expressed increased levels of estradiol (E2) and aromatase, factors that have been implicated in BPH progression.[2] BPH-1 cells share the cytokeratin profile of luminal epithelial cells and do not express androgen receptor or prostate-specific antigen (PSA).[3] BPH-1 cells express the proto-oncogene *p53* and harbor several chromosomal structural rearrangements but are non-tumorigenic in nude mice.[3] The BPH-1 cell line is a well-established model for human prostate biology and widely used for investigation into the causes and potential treatments for prostatic disease.

Source

The BPH-1 cell line was established from primary prostatic tissue from a 68-year-old patient and the cell line was immortalized with Simian virus 40 (SV40) large T antigen.[3] BPH-1 cells contain a *neomycin* resistance cassette and are resistant to G418.

Short tandem repeat (STR) Profile

D3S1358: 16	D16S539: 9
TH01: 6, 7	CSF1PO: 10, 12
D21S11: 28, 32.2	Penta D: 9, 14
D18S51: 10, 16	vWA: 17
Penta E: 7, 10	D8S1179: 10, 15
D5S818: 11, 12	TPOX: 8, 12
D13S317: 11, 12	FGA: 24
D7S820: 10, 11	Amelogenin: X, Y

Immortalized cell lines are inherently genetically unstable. Genetic instability may arise in the form of loss of heterozygosity of alleles at one or more genetic sites with increased passages.

Quality Control Testing

- Each vial contains ≥ $1X10^6$ viable cells.
- Cells are tested negative for infectious diseases by a Human Essential CLEAR panel by Charles River Animal Diagnostic Services.
- Cells are verified to be of human origin and negative for inter-species contamination from rat, mouse, chinese hamster, Golden Syrian hamster, and non-human primate (NHP) as assessed by a Contamination CLEAR panel by Charles River Animal Diagnostic Services.
- Cells are negative for mycoplasma contamination.
- Each lot of cells is genotyped by STR analysis to verify the unique identity of the cell line.

Storage & Handling

BPH-1 human benign prostatic hyperplasia cell line should be stored in liquid nitrogen. The cells can be cultured for at least 10 passages after initial thawing without significantly affecting the cell marker expression and functionality.

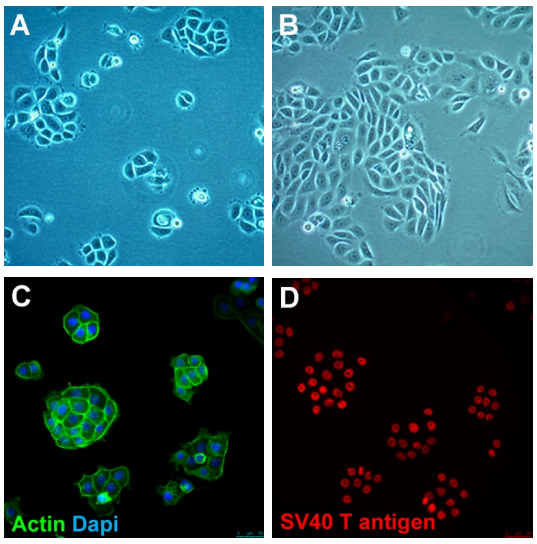

Figure 1. BPH-1 cells one (**A**) and 2 (**B**) days after thawing in a T75 flask. Cells express actin (**C**, Phalloidin-FITC; Sigma P5282) and SV40 T antigen (**D**, Millipore DP01).

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Protocols

Thawing Cells

1. Do not thaw the cells until the recommended medium is on hand. Cells can grow on normal tissue cultureware surfaces without any additional coating.

   BPH-1 Expansion Medium: Cells are thawed and expanded in RPMI-1640 (Cat. No. R8758) supplemented with 10% FBS (Cat. No. ES-009-B).
2. Remove the vial of frozen BPH-1 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.
3. As soon as the cells are completely thawed, disinfect the outside of the vial with 70% ethanol. Proceed immediately to the next step.
4. In a laminar flow hood, use a 1 or 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.
5. Using a 10 mL pipette, slowly add dropwise 9 mL of BPH-1 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.
6. 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.
7. Centrifuge the tube at 300 x g for 2-3 minutes to pellet the cells.
8. Decant as much of the supernatant as possible. Steps 5-8 are necessary to remove residual cryopreservative (DMSO).
9. Resuspend the cells in 15 mL of BPH-1 Expansion Medium.
10. Transfer the cell mixture to a T75 tissue culture flask.
11. Incubate the cells at 37°C in a humidified incubator with 5% CO_2.

Subculturing Cells

Note: BPH-1 cells are highly adherent, and many cells may not detach with normal strength trypsin-EDTA. We recommend using 5x StableCell Trypsin Solution (Sigma T2605) to dissociate the cells.

1. Do not allow the cells to grow to confluency. BPH-1 cells should be passaged at ~80-85% confluence.
2. Carefully remove the medium from the T75 tissue culture flask containing the BPH-1 cells.
3. Rinse the flask with 10 mL 1X PBS. Aspirate after the rinse.
3. Apply 5-7 mL of Trypsin (Cat. No. T2605) and incubate in a 37°C incubator for 5 minutes.
4. Inspect the flask and ensure the complete detachment of cells by gently tapping the side of the flask with the palm of your hand.
5. Add 5-7 mL of BPH-1 Expansion Medium to the plate.
6. Gently rotate the flask to mix the cell suspension. Transfer the dissociated cells to a 15 mL conical tube.
7. Centrifuge the tube at 300 x g for 3-5 minutes to pellet the cells.
8. Discard the supernatant, then loosen the cell pellet by tapping the tip of the tube with a finger.
9. Apply 2-5 mL of BPH-1 Expansion Medium to the conical tube and resuspend the cells thoroughly.

   IMPORTANT: Do not vortex the cells.
10. Count the number of cells using a hemocytometer.
11. Plate the cells to the desired density. Typical split ratio is 1:5 – 1.6.

Cryopreservation of Cells

BPH-1 human immortalized benign prostatic hyperplasia cell line may be frozen in the expansion medium plus 10% DMSO using a Nalgene slow freeze Mr. Frosty container.

References

1. *Asian J Urol.* 2017; 4(3): 148-161.
2. *J Endocrinol.* 2007; 195(1): 89-94.
3. *In Vitro Cell Dev Biol Anim.* 1995; 31(1): 14-24.

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