Product sheet

Human Epidermal Keratinocyte | 300692

Description	Human Epidermal Keratinocytes (HEKs) are primary epithelial cells isolated from the epidermis of human skin, typically obtained from neonatal foreskin or adult skin tissue. These cells represent the predominant cell type of the epidermis and are responsible for the formation, maintenance, and regeneration of the stratified squamous epithelium. In vitro, HEKs display a characteristic cobblestone morphology when cultured under low-calcium conditions that support a proliferative, basal-like state. Upon calcium elevation or differentiation-inducing conditions, they undergo a well-defined program of stratification and terminal differentiation, recapitulating key aspects of epidermal development. Because HEKs maintain many physiological characteristics of native epidermis, they are widely used in 2D monolayer cultures as well as in advanced 3D organotypic skin equivalents that reproduce epidermal stratification and barrier formation. As primary cells, they have a finite lifespan and limited proliferative capacity, and their phenotype can vary depending on donor source and culture conditions. Therefore, careful control of passage number and differentiation state is essential for experimental reproducibility and for modeling normal skin biology and dermatological disease processes.
Organism	Human
Tissue	Skin; Epidermis
Disease	Normal
Applications	Toxicology, wound repair, skin cancer, response to UV radiation, psoriasis, eczema, viral infection, gene delivery systems, cellular differentiation, cosmetics research/testing

Age	Adult
Gender	Lot-specific
Ethnicity	Lot-specific
Morphology	Cobblestone appearance; cells are rounded, not flat; cells display a high mitotic index; at near 80% confluence, the cells will be associated with each other in colonies.
Cell type	keratinocyte
Growth properties	adherent

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Citation	Human Epidermal Keratinocytes (Cytion catalog number 300692)
Biosafety level	1
NCBI_TaxID	9606

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.

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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.
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.