Human Sebocytes

300696

GENERAL INFORMATION

Description

Human sebocyte cells are specialized epithelial cells derived from the sebaceous glands of the skin, which are holocrine glands associated with hair follicles and distributed throughout most cutaneous surfaces. Sebocytes are responsible for the synthesis, accumulation, and secretion of sebum, a complex mixture of lipids including triglycerides, wax esters, squalene, cholesterol esters, and free fatty acids. In vitro human sebocyte models are typically established either as primary cultures isolated from facial or scalp sebaceous glands or as immortalized sebocyte lines generated through defined genetic modifications to enable extended proliferation while retaining lipid-producing capacity. Phenotypically, human sebocytes display a characteristic differentiation program marked by progressive intracellular lipid droplet accumulation and enlargement of the cytoplasm prior to terminal holocrine secretion. They express epithelial and sebocyte-associated markers such as cytokeratins (e.g., K7, K8, K18), peroxisome proliferator-activated receptors (PPARα and PPARγ), sterol regulatory element-binding proteins (SREBPs), and enzymes involved in lipid biosynthesis including fatty acid synthase (FASN) and stearoyl-CoA desaturase. Sebocyte differentiation and lipogenesis are regulated by androgens, insulin-like growth factor-1 (IGF-1), retinoids, inflammatory cytokines, and Toll-like receptor signaling pathways. These cells also actively participate in innate immunity by producing antimicrobial peptides and pro-inflammatory mediators in response to microbial stimuli such as Cutibacterium acnes.
Human sebocyte cell models are widely used in dermatological and cosmetic research to investigate acne pathogenesis, seborrheic dermatitis, androgen signaling, lipid metabolism, inflammatory signaling, and drug responses. They provide a controlled platform for evaluating the effects of hormonal modulation, retinoids, anti-androgens, PPAR agonists, and anti-inflammatory compounds on sebaceous gland biology. When using primary sebocytes, investigators must consider donor variability and limited lifespan, whereas immortalized sebocyte lines offer improved reproducibility but may exhibit altered differentiation kinetics compared to native sebaceous gland tissue.

Tissue	Face, skin, sebaceous gland

Applications

Dermatology research; acne pathogenesis; sebaceous lipid metabolism; androgen/IGF-1 signaling studies; inflammatory response studies; cosmetic and pharmaceutical screening; retinoid and anti-androgen testing

Synonyms

- Primary human sebocytes
- Human sebaceous gland cells

CLASSIFICATION

Organism	Human
Sex	Unspecified
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	epithelial-like
Cell type	Sebocyte

IDENTIFIERS

Citation

Human Sebocytes (Cytion catalog number 300696)

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Banking information
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NCBI TaxID	9606

HANDLING AND CULTURE

Culture medium

Sebocyte growth Medium

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.
Dissociation reagent	Accutase

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	Unspecified
Ethnicity	Unspecified

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

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