Human renal proximal tubular epithelial cells

hTERT immortalized

RPTEC/TERT1

Good experiments start with the right choices – hTERT immortalized cell lines retain the cell-type specific phenotype while constantly growing. No more lot-to-lot variability. No more growth arrest.

Just the perfect choice!

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Human renal proximal tubular epithelial cells (RPTEC/TERT1)

Renal proximal tubular epithelial cells are involved in resorption of essential metabolites, water, protein and advanced glycation end-products after glomerular filtration. Thus, these cells play an essential role in various kidney diseases and are especially sensitive to toxic substances.

In a nutshell

- Original tissue: human kidney cortex
- Ectopic expression of hTERT (catalytic subunit of human telomerase) in renal proximal tubular epithelial cells (Wieser et al. 2008)
- Characterized by typical cobblestone morphology and gamma-glutamyl transferase (GGT) activity as well as transporter functions
- Expression of cell type specific markers Aminopeptidase N (CD13) and E-Cadherin
- Formation of domes and tight junctions upon cultivation to high cell density
- Response to parathyroid hormone (PTH) but not arginine vasopressin (AVP) treatment

Cell type specific characteristics

Continuous growth in vitro

RPTEC/TERT1 cells have been grown for a minimum of 90 population doublings (PDs) without showing signs of growth retardation, whereas the parental cells entered senescence after having reached a maximum of 24 PDs. The population doubling time of RPTEC/TERT1 cells is 72 – 96 hours.

Enzymes, hormone response

RPTEC/TERT1 cells are characterized by gamma glutamyl transferase activity and respond to parathyroid hormone but not to arginine vasopressin by increase of the intracellular cAMP level.

Domes, tight junctions

When confluent, RPTEC/TERT1 cells form domes indicating active water transport and show a continuous belt of ZO1 and E-Cadherin together with TEER levels of normal cells.

Transport functions


Applications

- Study of transport function in the kidney
- Assessment of in vitro nephrotoxicity
- Phenotypic and orthogonal drug screening
- Detection and prediction of renal injury (i.e. diabetic nephropathy, CKD)
- Development of bioartificial kidney devices
- Construction of lab-on-a-chip devices

Adherence to GCCP-Standards!

Evercyte is committed to follow the principles of Good Cell Culture Practice (GCCP, Coecke et al., 2005). Therefore, our cell lines are:

- established following ethical standards (approved by IRB in accordance with the Declaration of Helsinki)
- quality tested (sterility, absence of specific human-pathogenic viruses, STR-profile, longevity)
- characterized for expression of cell type specific markers and functions

References


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