

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!

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

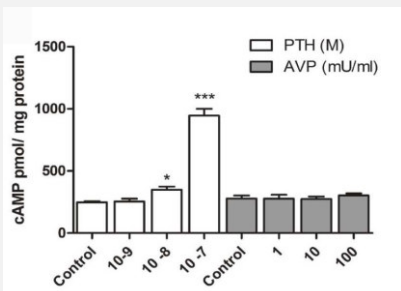
- Original tissue: **human kidney cortex**
- Transduction of **renal proximal tubular epithelial cells** with retrovirus carrying the **catalytic subunit of human telomerase (hTERT)**, Wieser et al. 2008)
- Characterized by typical **cobblestone morphology** and **gamma-glutamyl transferase (GGT)** activity 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

RNA-Seq data
available at
evercyte.com!

_cell type specific characteristics

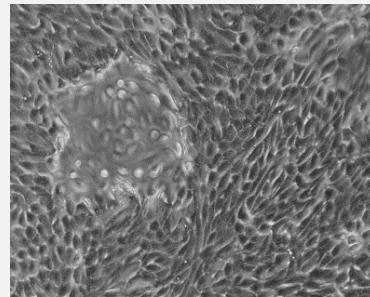
► Continuous growth *in vitro*

RPTEC/TERT1 cells have been grown for a minimum of 90 population doublings (PDs) without showing signs of growth retardation (Wieser et al, 2008), 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.



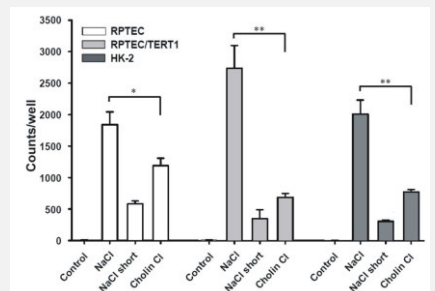
► Enzymes, hormone response

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

RPTEC/TERT1 cells express sodium-dependent phosphate transporters as well as several xenobiotic transporters (Wieser et al, 2008, Aschauer et al. 2013 and 2015; Homan et al, 2016)

_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

Wieser et al, 2008, AJP renal • Ellis et al, 2011, MolBioSyst • Radford et al, 2012, AJP renal • Wilmes et al, 2013, J Proteomics • Aschauer et al, 2013, MCB • Jennings et al, 2014, Arch Toxicol • Aschauer et al, 2015, Toxicol In Vitro • Slyne et al, 2015, Nephrol Dial Transplant • Homan et al, 2016, Sci Rep •