

MATERIAL SALES OPPORTUNITY: 27008D

DATA SHEET INFORMATION FOR

Cell Line Names:

US/VOT-E36 (University of Sheffield/Ventral Otocyst-Epithelial cell line number 36)

Host species:

Mouse (C57 Black6)

Phenotype and Useful Applications:

Epithelial cell line suitable for studies on:

Inner ear development

Gene expression and function of inner ear-specific genes

In vitro screening for gene activation and promoter analysis

Ototoxicity (prescribed drugs and agents that ameliorate their affects)

Function of inherited deafness mutations

Functional analysis of ion channels, receptors and signalling pathways in vitro

Genotype:

Cells derived from C57 Bl6 mice carrying a stable insertion of the conditional immortalising gene H-2Kb-tsA58, which describes a temperature-sensitive variant of the SV40 immortalising gene that encodes the large tumour antigen under the control of the γ -interferon-sensitive MHC Class 1 promoter. The transgenic mouse is called the Immortomouse™ (Jat et al 1991 Proc. Nat. Acad. Sci. USA 88, 5096-5100)

Characterisation & Specificity of Strain:

Derived from epithelial cells from the ventral region of the otocyst at embryonic day E10.5 (plug in mouse designated E0.5 and birth at E18-19). At this stage the sensory epithelia have not differentiated and the epithelium is competent to form most of the cells within the cochlear duct, including primary sensory neurons. VOT-E36 has been characterised extensively by timed expression under differentiating conditions in vitro of a combination of gene and protein markers for epithelial cells and for inner ear sensory cells. It has also been screened with Affymetrix mouse Micro-arrays. It forms cells of various cochlear phenotypes under differentiating conditions in vitro and despite being derived from an earlier developmental stage, it produces more advanced states of sensory cell differentiation than occurs with UB/OC-1, UB/OC-2. The cells are also available with a stably incorporated EGFP reporter that has been tested both in vitro and in vivo.

Relevant publications involving the strain:

Lawoko-Kerali G, Milo M, Davies D, Halsall A, Helyer R, Johnson CM, Rivolta MN, Tones MA, Holley MC (2004) Ventral otic cell lines as developmental models of auditory epithelial and neural precursors. *Dev Dyn* 231:801-814.

Liu JJ, Shin JH, Hyrc KL, Liu S, Lei D, Holley MC, Bao J (2006) Stem cell therapy for hearing loss: Math1 overexpression in VOT-E36 cells. *Otol Neurotol* 27:414-421.

Holley MC, Kneebone A, Milo M (2006) Information for gene networks in inner ear development: a study centered on the transcription factor *gata2*. *Hear Res.* 227:32-40

Helyer R, Cacciabue-Rivolta D, Davies D, Rivolta MN, Kros CJ, Holley MC (2007) A model for mammalian cochlear hair cell differentiation in vitro: effects of retinoic acid on cytoskeletal proteins and potassium conductances. *Eur J Neurosci.* 25:957-973.

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