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EpiAlveolar | Data Sheet

Features

- Triple Cell Culture Model
- Optional incorporation of macrophages
- Highly reproducible
- Easily-handled cell culture inserts
- Cost effective alternative to animal and clinical testing

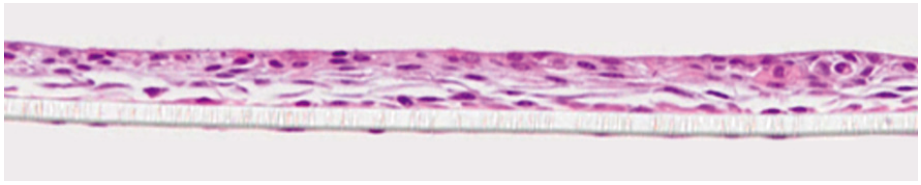
Key Applications

- Inhalation Toxicity
- Inhaled Drug Delivery
- Pulmonary Fibrosis
- Viral Infection

The EpiAlveolar Model

Mattek's EpiAlveolar System consists of normal, human-derived alveolar epithelial cells co-cultured with donor-matched fibroblasts and human microvascular endothelial cells on specially prepared, optically clear cell culture inserts. Human-derived macrophages can also be incorporated into the three-dimensional, highly differentiated model.

A



B

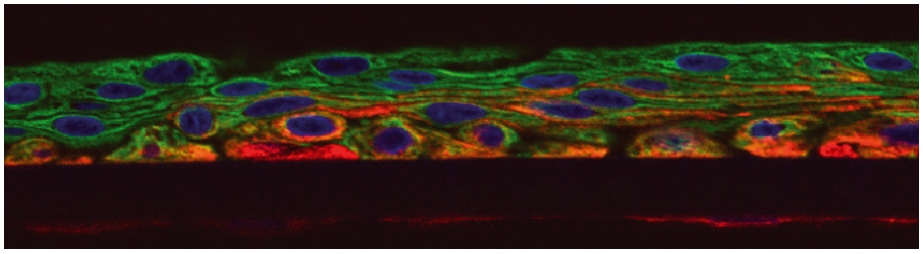
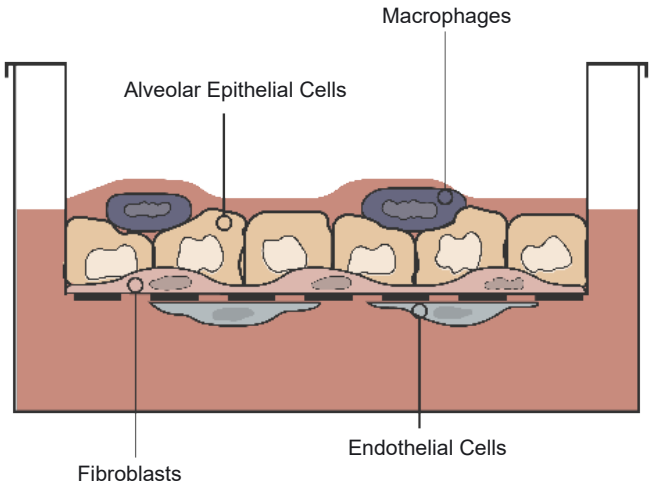


Figure 1. Cross-sections of EpiAlveolar tissue stained with: a) H&E and b) Cytokeratin 19 (green, epithelial cells), Vimentin (red, fibroblasts), DAPI (blue, nuclei.)

Schematic diagram of EpiAlveolar tetra-culture system containing primary endothelial cells, fibroblasts, epithelial cells and optional macrophages.



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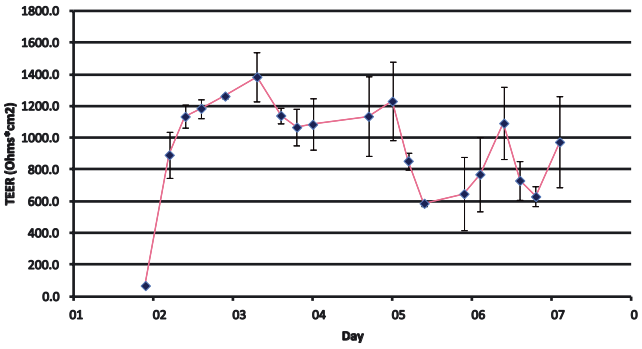
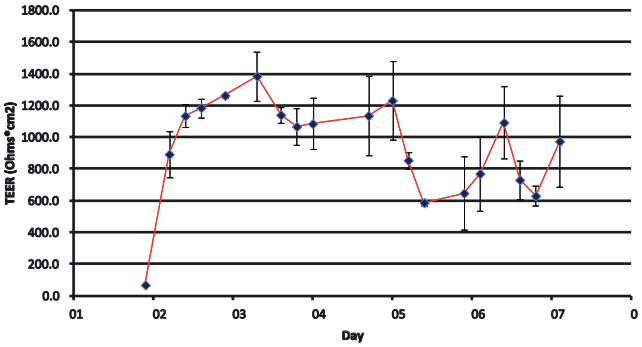
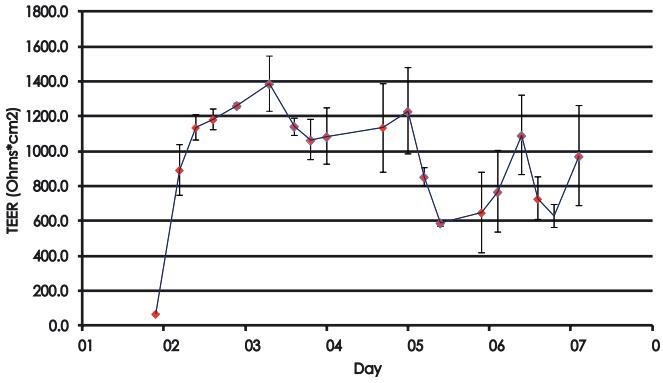
EpiAlveolar Barrier Function



Alv-100-FT-PE12 Transepitheliai Electrical Resistance



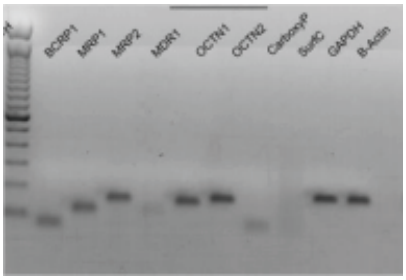
EpiAlveolar Barrier Function



EpiAlveolar maintains it barrier function over extended culture periods: Transepithelial electrical resistance (TEER) >300 Ohms*cm² for up to 60 days. Transepithelial electrical resistance (TEER) >300 Ohms*cm² for up to 60 days.

Inhalation Studies

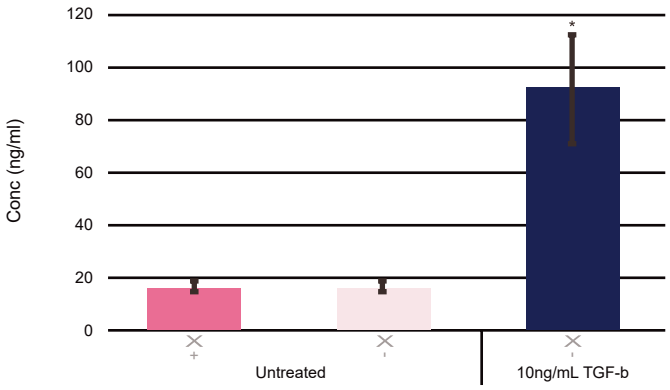
EpiAlveolar expresses several ABC transporters, including BCRP, MRP1 and MRP2, as well as organic cation uptake transporters, making it a useful tool for inhaled drug delivery and inhalation toxicity studies. EpiAlveolar has also been used to study fibrosis and deep lung effects of nano-particles.



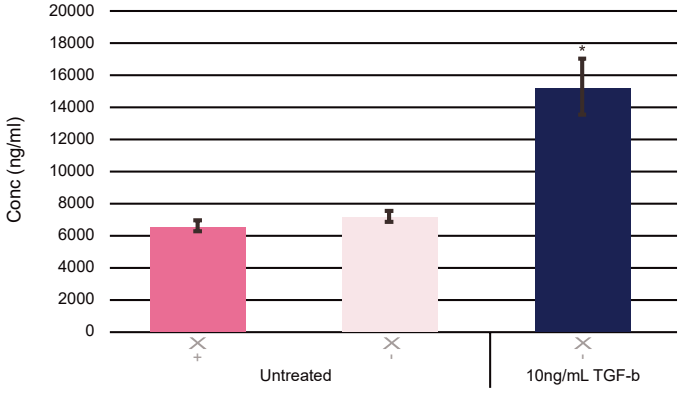
Pulmonary Fibrosis

Studies have shown that treatment of EpiAlveolar with TGF-β induces the production of the pro-fibrotic markers Collagen 1a1, α-Smooth Muscle Actin and Fibronectin, making it a useful model for the study of pulmonary fibrosis.

Cumulative Collagen 1a1 Release



Cumulative Fibronectin Release



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