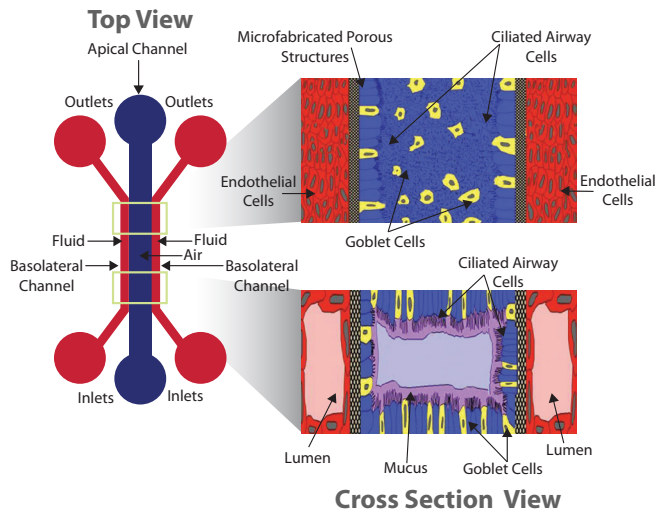


# SynALI: Lung Air-Liquid Interface-on-Chip Model

SynALI Lung model is functionalized with epithelial cells surrounded by vasculature comprised of lung microvascular endothelial cells. The functionalized model maintains an Air Liquid Interface (ALI) across the airway cells, allowing the formation of airway tubules that transport mucus and are maintained by the surrounding endothelium. Cell morphology, airway structure, cell-cell interactions, and functions of the airway (e.g. mucus transport, ciliary beating, therapeutic induced improvement) can be visualized and quantified in real-time in normal and diseased conditions.

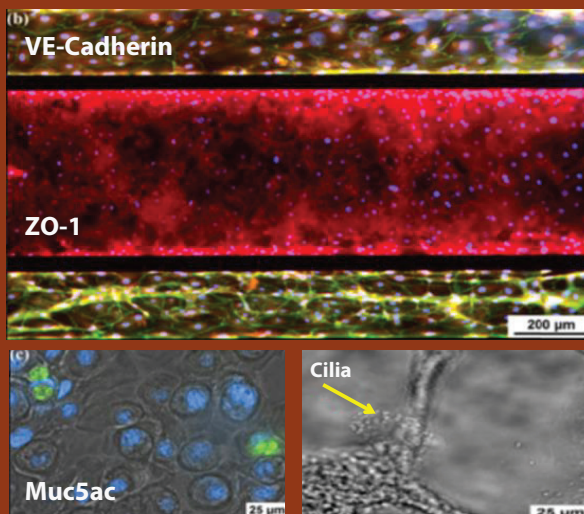
## Unique features include:

- Morphologically realistic airway structure and environment
- Air Liquid Interface (ALI) across the epithelium and endothelium
- In vivo hemodynamic shear stress
- Real-time visualization of cellular and barrier functionality



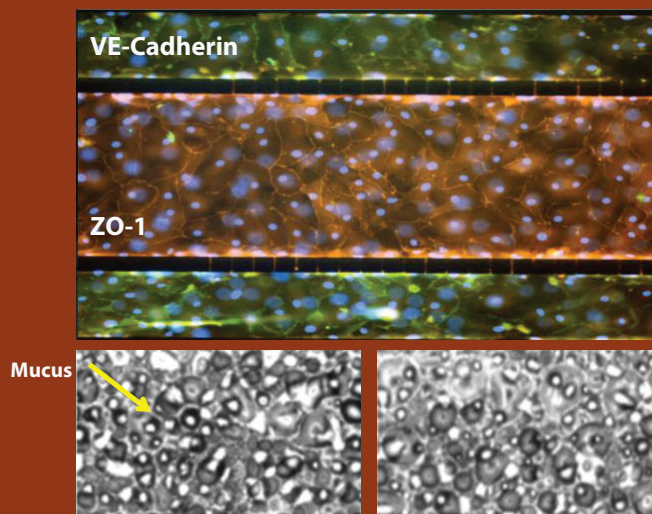
Schematic of the device used to develop the air-liquid-interface across the cells. The air (or epithelial) channel is separated from two fluid (basolateral) channels by a micro-fabricated porous structure. Right panel shows the orientation of cells when seen from top and cross-section views

## Small Airway Lung Model



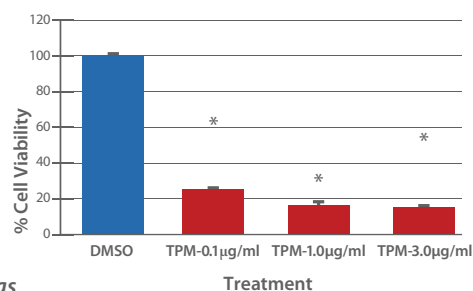
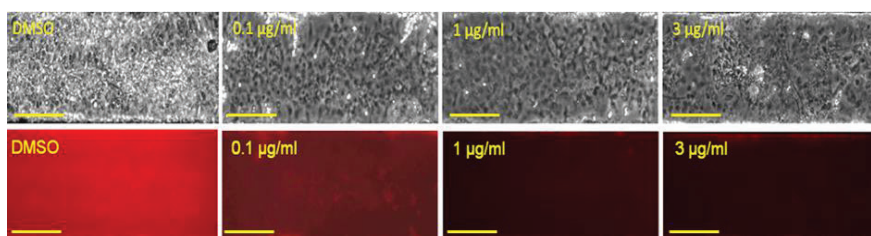
Co-culture human bronchial epithelial cells and human lung microvascular cells.

## Alveolar Lung Model



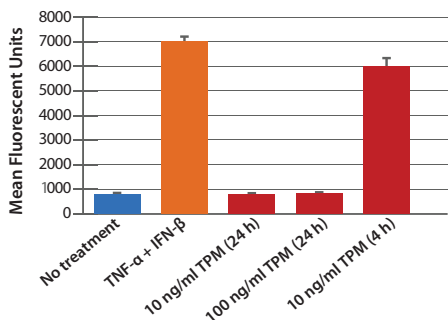
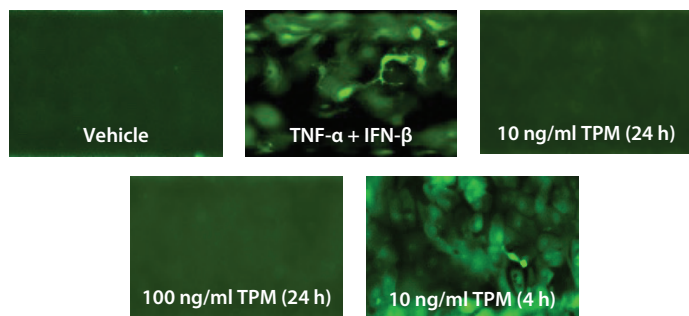
Co-culture human microvascular lung endothelial cells, human alveolar epithelial cells type I and II

## SynALI Lung-on-Chip model can quantitate lung epithelial viability after compound exposure

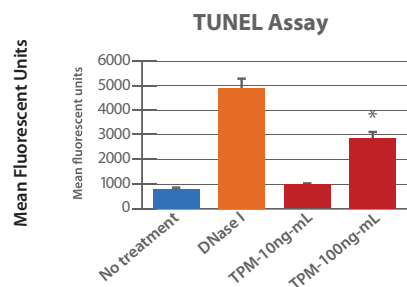
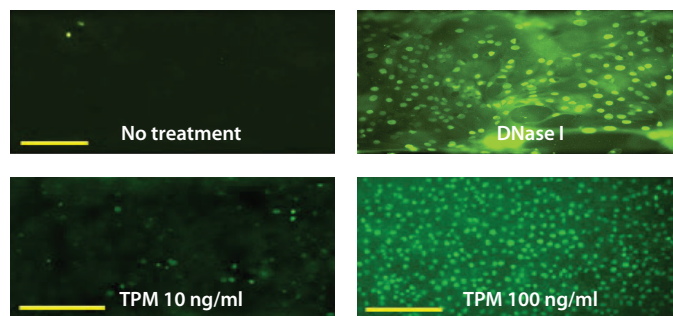


Viability of lung epithelium treated with equi-nicotine units of TPM was significantly lower than the DMSO-treated control

# Lung epithelial oxidative stress and apoptosis visualized and quantified in SynALI



Cigarette total particulate matter increases oxidative stress measured at 4 hours and 24 hours post dosing.



Cells treated with 10 ng/ml equi-nicotine units of TPM induced a moderate cell death; whereas, 100ng/ml equi-nicotine units of TPM enhanced apoptotic cell death.

## Product Purchase Options

Catalog#	Description	Price
405001	SynALI Lung Model Starter Kit - Includes 10 chips, pneumatic priming device, tubing, clamps, syringes and needles	\$2,100
108011-SA3	SynALI Lung Model Chip - IMN2 - Linear (3um slits) - Pack of 3	\$375
108013-3	IMN2 - Linear 500-500-500 (3um slits) - Pack of 3	\$375

## Contract Research Services using the SynALI Model

<b>Air Liquid Interface Models available:</b>	<ul style="list-style-type: none"> <li>• Monoculture using primary epithelial cells</li> <li>• Co-Culture with endothelial cells</li> <li>• Tri-culture with fibroblasts</li> </ul>
<b>Assays available:</b>	<ul style="list-style-type: none"> <li>• Toxicity assays</li> <li>• Biomarker analysis</li> <li>• Therapeutic screening</li> </ul>
<b>Sample Endpoints:</b>	Vascular Permeability, TEER resistance measurements, Viability, ROS, Real-time imaging of cellular changes, Biomarker analysis, Quantitation of immune cell interactions with the endothelium, Biomarker screening using immunoassays. Collect cells or effluents for downstream genomic, proteomic or metabolomic analysis.

### Publications using SynALI Lung Model

Co-Cultured Microfluidic Model of The Airway Optimized For Microscopy And Micro-Optical Coherence Tomography Imaging (2019). Liu Z *et al. Biomedical Optics Express* Vol. 10, Issue 10, pp. 5414-5430.



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