

Respiratory Toxicology

Using *Ex Vivo* Precision Cut Long Slices and Reconstructed Human Airway Models

- Established Acute Toxicology Assays in 2D and 3D models
- Customized programs to address your specific respiratory questions
- Evaluate hazards of simple to complex aerosols
- Acute and chronic airway and oral mucosal tissue toxicology
- Dedicated laboratory with specialized dosing and exposure systems



Culturing Human Precision Cut Lung Slices into Roller Chambers

Human Precision Cut Lung Slices (hPCLS)

- Human lung tissues cultured long-term at Air-Liquid Interface (ALI), submerged or in roller culture
- Cytotoxicity and Viability Endpoints - Lactate Dehydrogenase, Adenylate Kinase and WST-8/MTT conversion assays
- Airway Contractility Responsiveness
- Histological Evaluations
 - Alveolar vs. small airway changes
 - H&E architectural and cellular changes
 - Masson's Trichrome (collagen deposition)
 - Custom IHC staining (e.g., macrophages)
- Fibrosis Evaluations
 - Inflammatory Cytokine Analyses
 - Tissue collagen content by ELISA
- Activated macrophage quantitation

hPCLS are available for purchase.
Contact clientservices@iivs.org for more information.

Reconstructed Human Airway Models

- Human tissue models from oral cavity, nasopharynx, trachea, bronchi, small airway and alveolar spaces cultured long-term at ALI
- Cytotoxicity Endpoints - Lactate Dehydrogenase (LDH) or Adenylate Kinase (AK) release assays
- Viability Endpoint - WST-8 or MTT conversion assays (for GHS acute inhalation classification)
- Mucociliary clearance by ciliary beat frequency (analyses with SAVA)
- Inflammatory Cytokine Analyses by ELISA or Multi-plex
- Mucin production
- Goblet Cell hyperplasia evaluation

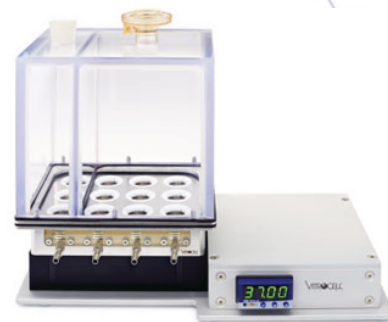
Exposure Systems and Other Endpoints

Exposure Systems:

- Vitrocell® VC-1
 - Climate Chamber with 12/12 or 12/6 and
 - Exposure Modules
- VitroCell® CLOUD
- Tecan D300 Digital Dispenser

Other Endpoints:

- Oxidative Stress
- TEER
- Protein Content
- RNA Analysis
- Proteomics

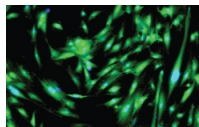
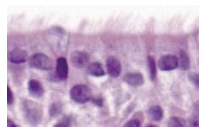
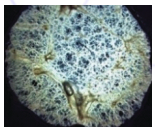


VitroCell® Cloud system for airway exposures generously donated by PETA Science Consortium International (PSCI)

**Molecular
Initiating
Events**

**Cellular
Key Events**

**Tissue/
Organ Key Events**

Exposure Aqueous - Solvent- Aerosol			
Test System			
Biomarkers/Events	2D Cells	3D RHuA	3D hPCLS
Oxidative Stress	✓	✓	✓
DNA Binding/Strand Breaks	✓	✓	✓
Mitotoxicity	✓	✓	
Cytotoxicity	✓	✓	✓
Vitability	✓	✓	✓
Macrophage Activation			☑
Cytokine/Chemokine Response	✓	✓	✓
Tight Junction Integrity		☑	
ECM Deposition			☑
Mucociliary Clearance		☑	
Airway Contractility			☑
Goblet Cell Increase		☑	
Mucin Expression		☑	
Chronic Inflammation		✓	✓
Chronic Tissue Health		✓	☑

☑ = unique to Model

For more information, contact Client Services at clientservices@iivs.org.

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