Build What's Real – One Platform for All

From lung-on-chip to aerosol drug exposure and perfusion assays, our modular platform supports organ-specific modeling and clinically relevant drug testing – all in one integrated system.

YOUR ORGAN MODELING SOLUTION STARTS HERE

About Us

Anivance AI develops physiologically relevant organ modeling platforms by integrating **organ-on-chip technology, MPS perfusion systems**, and **aerosol delivery modules**. We help pharmaceutical and research teams rapidly build disease models, simulate clinical dosing, and capture real-time cellular responses. Our modular, scalable solutions bridge in vitro experiments with human physiology, accelerating decision-making and translational drug development.

Why Choose Us

Anivance AI offers a modular, scalable system combining organ-on-chip, MPS, and inhalation modules—designed to mimic clinical dosing and accelerate toxicity, efficacy, and chronic exposure studies. Anivance AI accelerates your research toward application—faster and more relevant.

- **Plug-and-Play Operation, Continuous Monitoring**
- **Diverse Organ Models, Clinically Aligned**
- **Modular Integration, Application Flexibility**
- **Reliable Data, Closer to the Clinic**

Lab-as-a-service

AI-Powered Scheduling | Cost-Effective Analysis | Rapid Data Delivery

Dynamic MPS Perfusion

Dynamic Perfusion Module | Accurate Pharmacokinetic Simulation

Anivance ai

SPOTLIGHT
ON STAR PRODUCTS POWERING INNOVATION

CREATE YOUR ORGAN ON-CHIP

Our platform provides physiologically relevant 3D models for respiratory, hepatic, fibrotic, and cancer systems. With integrated organ-on-chip and aerosol modules, it supports ALI culture, automated flow control, and multi-cell co-culture. These features enable detailed studies of drug deposition, tissue interaction, and efficacy.

Organ-on-Chip for Biomimetic Platform

- Validated in **10+ patient-derived** organ models, including airway, liver, intestine, and cancer.
- Supports 10+ biological indicators, such as barrier integrity, mucus production, inflammatory response, and drug-induced toxicity.

Chip MPS for Physiological Simulation

- Maintains dynamic culture with programmable flow and physiological shear stress.
- Supports cell differentiation and sustained functionality across the 1–28 day culture period.

Aerosol Exposure System for Inhalation

- Automates 8-chip culture with air, liquid, and aerosol delivery under air-liquid conditions.
- Enables inhalation studies on drug deposition, ciliary motion, mucus clearance, and particle behavior for respiratory therapy testing.

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TRUSTED BY PHYSICIANS AND PHARMA

LAB-AS-A-SERVICE

ENDORSED BY DOZENS OF CLINICIANS

Our platform has been endorsed by medical professionals across specialties for its translational potential and robust disease modeling capabilities — helping bridge the gap between research and clinical relevance.

Across **5** Countries

Executing **20+** Projects

- ***Ready to Market***
- ***You Ask, We Do***
- ***Data Fast, Insights Last***

ORGAN-ON-CHIP MODELING

PULMONARY

- Healthy Airway
- Chronic Obstructive Pulmonary Disease (COPD)
- Idiopathic Pulmonary Fibrosis (IPF)
- Cystic Fibrosis (CF)
- Lung Cancer
- Asthma Airway

TUMOR

SKIN

LIVER

THYROID

JOINT CAVITY

GUT

STOMACH

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Organ-on-Chip Modeling

Biomimetic Organ Models | Versatile Disease Platforms

Dynamic MPS Perfusion

Dynamic Perfusion Module | Accurate Pharmacokinetic Simulation

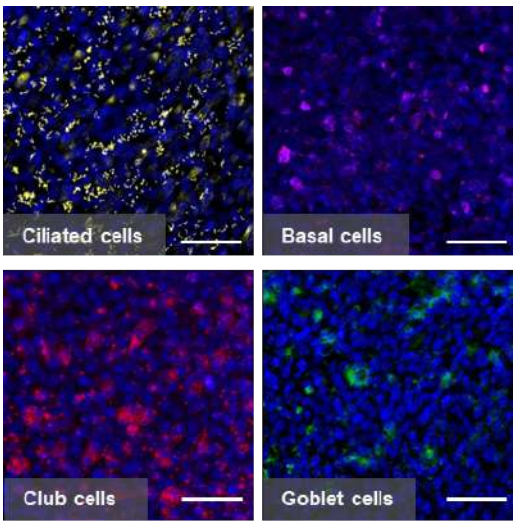
HEALTHY AIRWAY

Physiologically Relevant Airway Epithelium with Functional Cilia

Powered by our Organ-on-Chip (OoC) and Chip MPS platform, we accelerate small airway epithelial cell differentiation. The optimized microenvironment supports stable growth of primary and sensitive cell types, ensuring consistent, physiologically relevant outcomes.

The healthy airway-on-chip model forms a mature small airway epithelium with key cell types — ciliated, goblet, club, and basal cells — after 28 days of air-liquid interface culture. Dense, well-organized cilia enable effective mucociliary clearance.

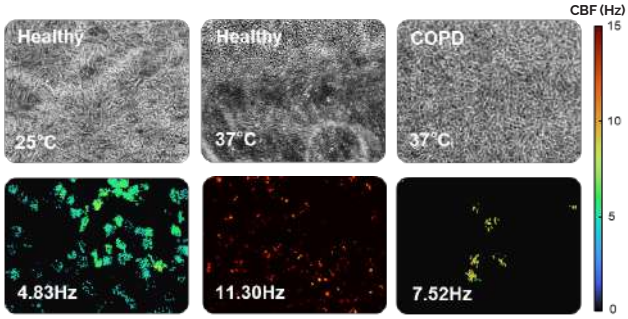
High-content imaging quantifies ciliary beating frequency (CBF) in real time, with physiological rates of 4.83 ± 0.29 Hz at 25˚C and **11.3 ± 0.63 Hz at 37˚C, ensuring alignment with in vivo respiratory function.**



COPD

Clinically Relevant Airway Dysfunction Model

COPD-on-Chip replicates key disease features — impaired cilia structure, reduced beating frequency, and epithelial disruption. The model's ciliary beating frequency (CBF) of 7.52 ± 0.28 Hz at 37˚C aligns **closely with patient data 7.52 ± 0.28 Hz**, ensuring clinical relevance.



Data Source	Sample Type	Environmental Temperature	Ciliary Beating Frequency (CBF)
Clinical Data	Healthy	Physiological Temperature (~37°C)	11.15 ± 3.37 Hz
	COPD		7.89 ± 3.39 Hz
Organ-on-Chip	Healthy	25°C	4.83 ± 0.29 Hz
		37°C	✓ 11.30 ± 0.63 Hz
	COPD	37°C	✓ 7.52 ± 0.28 Hz

MOLECULAR DEVICES

Key Features

- Full differentiation of airway epithelial cell types
- Equipped with a **well-structured** and **dense cilia network** for efficient functional clearance.
- Clinically validated ciliary function **matching healthy and COPD patient data.**

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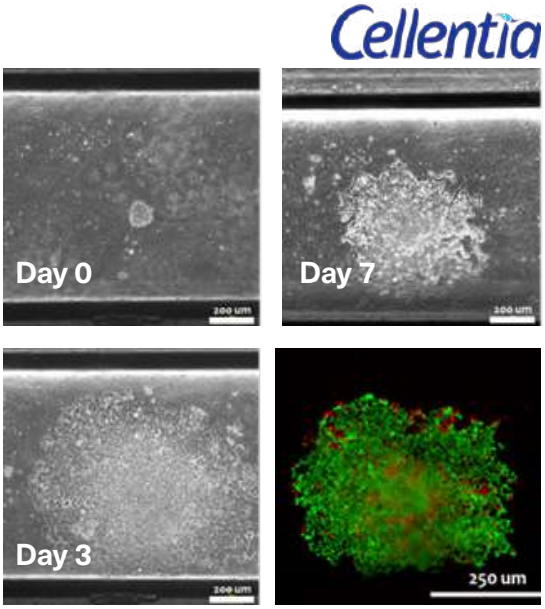
PATIENT CANCER

TUMOR MODELS: CTC-DERIVED ORGANOIDS

Patient-Derived Organoids for Personalized Cancer Research

Our tumor-on-chip platform enables the culture and expansion of CTC-derived organoids within a microfluidic chip environment, faithfully replicating patient-specific tumor biology. The system maintains high viability and proliferation over 7 days, allowing for sustained studies of tumor growth and drug response.

Through our dynamic perfusion technology, the platform mimics drug transport in the bloodstream and tumor tissue, enhancing the physiological relevance of cancer modeling. This provides a robust tool for tumor treatment evaluation, personalized therapy screening, and predictive efficacy analysis.



Live Dead

PATIENT SAMPLE

Patient-Derived Tumor Models for Translational Research

The lung cancer-on-chip platform enables robust modeling of patient-derived tumor cells directly from pleural effusion specimens. Designed to preserve tumor identity and cellular viability, our system supports dynamic tumor studies, drug response screening, and personalized medicine applications.

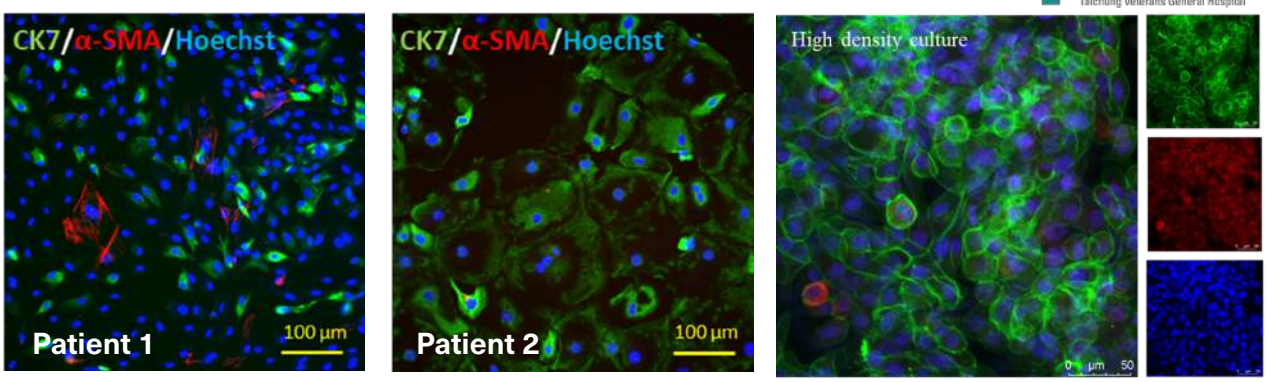
V Patient-on-Chip Success Pleural effusion-derived cells retain tumor markers (CK7⁺, α-SMA⁺) with high viability after transport.

V Tumor Heterogeneity Preserves inter-patient differences in morphology and density for clinically relevant models.

V Variable Density Culture Supports both high and low-density lung adenocarcinoma cultures with consistent marker expression.

V Stable Proliferation ECM coating and Ficoll isolation ensure stable attachment and growth post-transport.

臺中榮民總醫院 Taichung Veterans General Hospital



EpCAM CK7 DAPI

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Organ-on-Chip Modeling

Biomimetic Organ Models | Versatile Disease Platforms

Dynamic MPS Perfusion

Dynamic Perfusion Module | Accurate Pharmacokinetic Simulation

Aerosol Delivery System

Aerosol Delivery Module | Clinical Inhalation Therapy Replication

AEROSOL DELIVERY SYSTEM CAPABILITIES

Programmable Aerosol Delivery for Pulmonary Drug Research

The aerosol delivery system enables tunable micro airflow (100 µL/min to 500 mL/min), allowing precise simulation of inhalation dynamics. This flexibility supports pulmonary studies tailored to user-defined parameters, facilitating real-time observation of drug deposition, mucus interaction, and tissue penetration.

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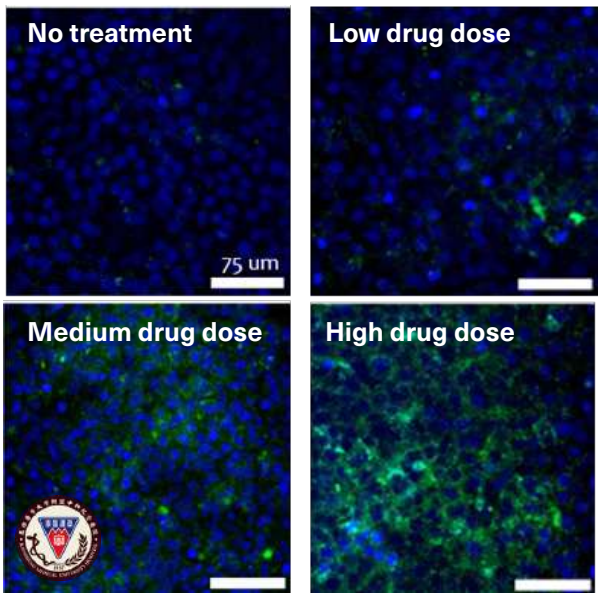
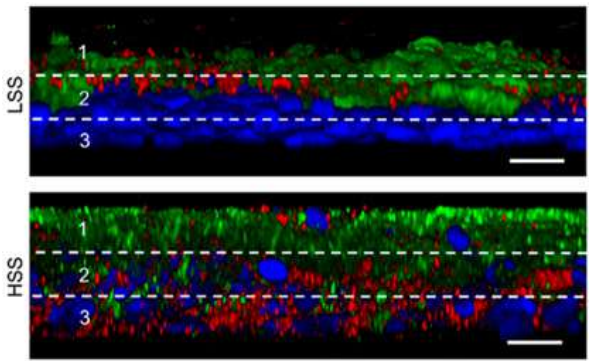


SP-C DAPI



MUCUS liposome DAPI

IINHALATION THERAPY FOR NEONATAL RDS

Dose-Dependent SP-C Recovery in Lung-on-Chip Models

This dataset showcases the outcomes of our collaboration with clinical partners, leveraging our Aerosol Delivery System to evaluate inhalation therapies for neonatal respiratory distress syndrome (RDS). Using our Lung-on-Chip platform, we simulated inhaled drug delivery across graded doses and demonstrated a clear dose-dependent recovery of surfactant protein C (SP-C), a critical marker for lung function.

The results validate the system's capability to replicate clinical dosing scenarios and measure biological responses with precision. This approach empowers pharmaceutical developers and hospitals to efficiently screen inhalation formulations, optimize therapeutic dosing, and accelerate translation into neonatal care solutions.

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PULMONARY

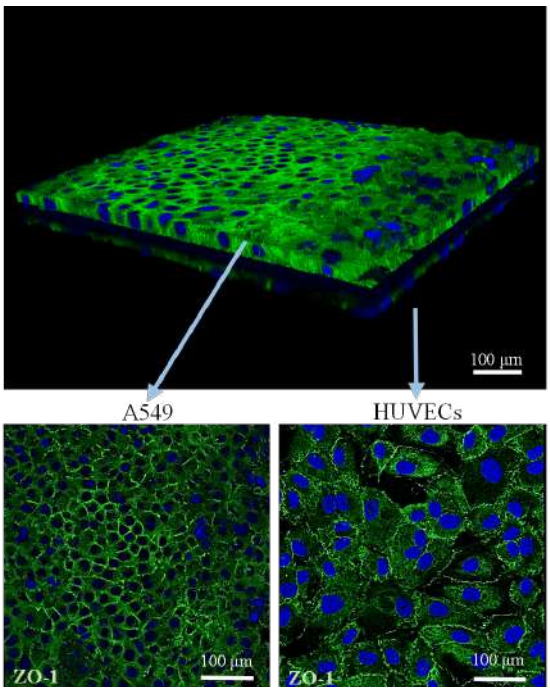
PM2.5-LIKE NANOPARTICLE PENETRATION

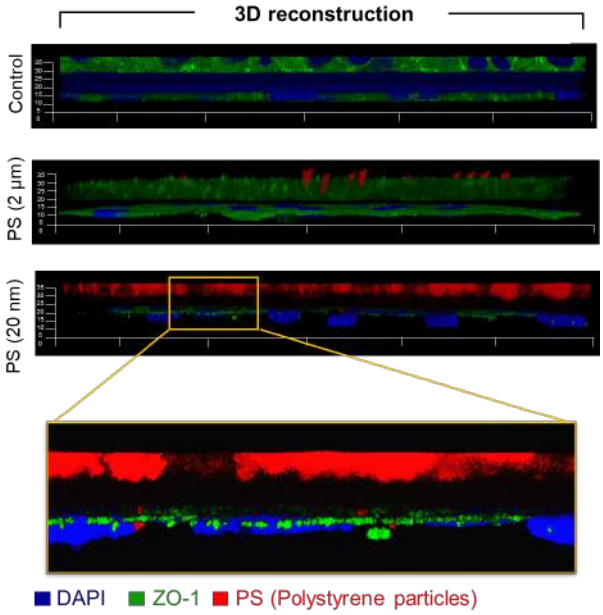
Advanced Modeling for Air Pollution Toxicity Screening

The Aerosol Delivery System offers a powerful solution for evaluating the health impacts of airborne pollutants, providing pharmaceutical and environmental sectors with a precision tool for toxicity screening. In this application, we simulated real-world exposure to PM2.5-like nanoparticles by delivering controlled aerosols onto a physiologically relevant lung-vascular barrier model.

The co-culture system features A549 alveolar epithelial cells and HUVEC endothelial cells, replicating the alveolar-capillary interface critical for assessing barrier integrity. ZO-1 immunofluorescence staining confirms the formation of tight junctions prior to exposure, ensuring reliable baseline measurements.

This platform supports in-depth evaluation of nanoparticle penetration, barrier disruption, and cell toxicity, including inflammatory and apoptotic responses. It equips researchers with the means to quantify pollution-induced risks in respiratory and cardiovascular systems, accelerating insights for both drug development and environmental health studies.





Building on this capability, we further demonstrated size-dependent nanoparticle penetration using polystyrene (PS) particles of 2 µm and 20 nm. Utilizing high-resolution 3D imaging, we observed that larger PS particles (2 µm) were primarily retained on the epithelial surface, while smaller nanoparticles (20 nm) effectively penetrated both epithelial and endothelial layers, distributing across the barrier interface.

This depth-resolved analysis highlights our platform's sensitivity in detecting particle translocation and barrier integrity compromise. The distinct localization patterns captured for varying particle sizes provide critical insights into how pollutant dimensions influence cellular permeability and systemic exposure risks

This positions the Aerosol Delivery System as a critical solution for simulating real-world inhalation exposures — accelerating pharmaceutical testing, environmental risk evaluation, and regulatory research on airborne pollutants.

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ACCELERATED
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DESIGN-TO-DELIVERY.
INTELLIGENT
AUTOMATION

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