

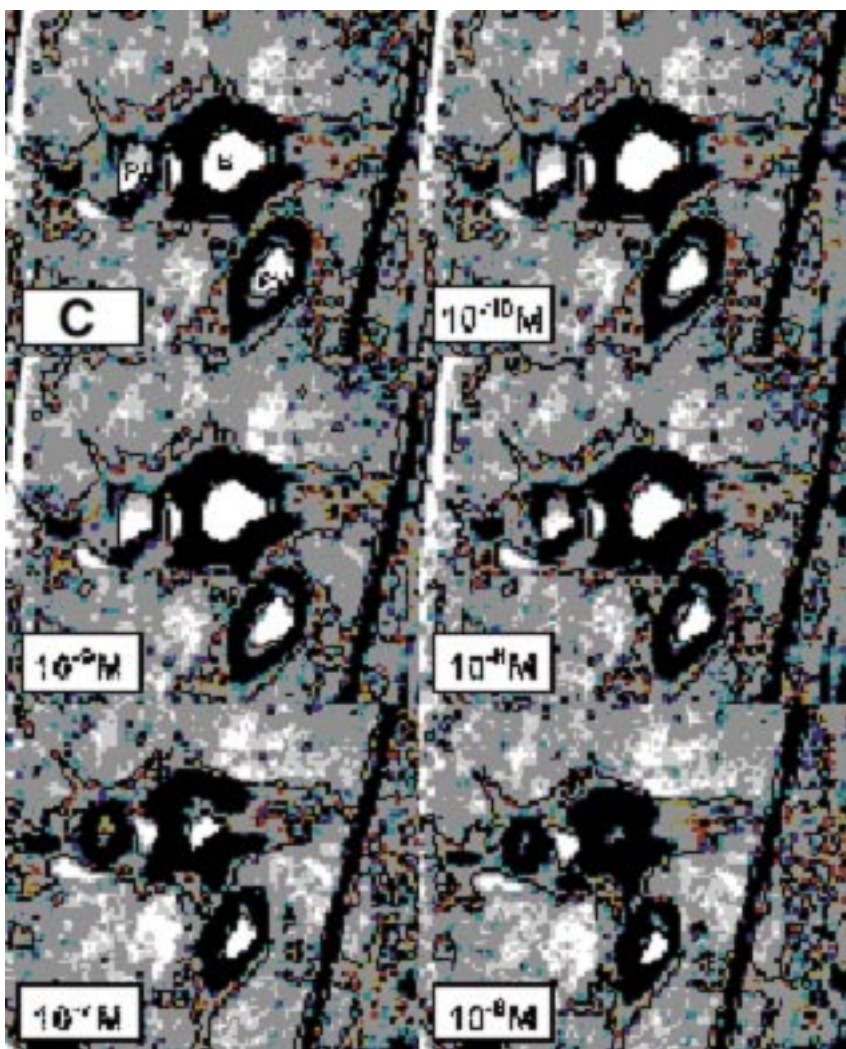
HSE-Harvard Lung Slices Chamber

Example of an Application

As an example Fig. shows exposure of a slice to increasing concentrations of endothelin-1. Shown is a lung slice containing an airway (B), a pulmonary artery (PA) and a pulmonary vein (PV). The pulmonary artery and the airway contracted almost completely, while the pulmonary vein area decreased to only 50% of its initial area. These responses are now easily quantified by digital imaging technique.

It is a distinct advantage of this technique that in many ways precision-cut slices can be treated like a cell culture. Thus, the slices can be incubated under various conditions and gene as well as protein expression or mediator release be determined. In contrast to cell culture models, in slices the anatomical structure of the lung is largely maintained, so that the functional consequences of gene expression and mediator release can be evaluated.

The table below compares various in vivo and in vitro techniques that have been used to assess lung functions. Thus as a method, precision-cut lung slices possess all the advantages of an in vitro technique, but still maintain many functions of the intact organ.



Catalog No.	Product
CGS 8874.73	Incubation Chamber for Precision Lung Slices
CGS 8875.73	Thermostatic Circulator E 103, Bath Volume 3 L
CGS 8876.73	Roller Pump Reglo Analogue ISM 827, 4 Channels, 0.002 to 30 ml/min

Lung Slices Chamber	PCLS	In Vivo	Perfused Lung	Tracheal Rings	Lung Cells
Parameters					
Viable For	> 70 h	–	8 h	24 h	> 100 h
Experiments/Day	> 10	> 10	< 3	> 10	> 10
Experiments/Animal	> 20	1	1	8 to 10	> 10
Technical Requirements	Medium	High	High	Low	Low
Human Tissue	Yes	Yes	Difficult	Yes	Yes
Accessible Functions/Parameters					
Bronchoconstriction	Yes	Yes	Yes	Yes	No
Vasoconstriction	Yes	Yes	Yes	No	No
Relate Vessel Size to Function	Yes	Difficult	Yes	No	No
Relate Airway Size to Function	Yes	Difficult	No	No	No
Edema	No	Yes	Yes	No	Yes
Ciliary Beat Frequency	Yes	No	No	No	Yes
Gas Exchange	No	Yes	Yes	No	No