

## Applications

- Model system of bronchial epithelial, ocular, and epidermal tissue
- Grow tissue on air-liquid interface subject to radial stretch

## Advantages

- Permits large scale tissue growth
- Radial mechanical stretch
- Air-liquid interface
- Variable membranes

## Inventors

[Dr. Rebecca Heise](#)

[Dr. Christopher Lemmon](#)

Kevin Lessard

Jiten Narang

## Contact

Afsar Q. Mir, MS

Licensing Associate

[miraq@vcu.edu](mailto:miraq@vcu.edu)

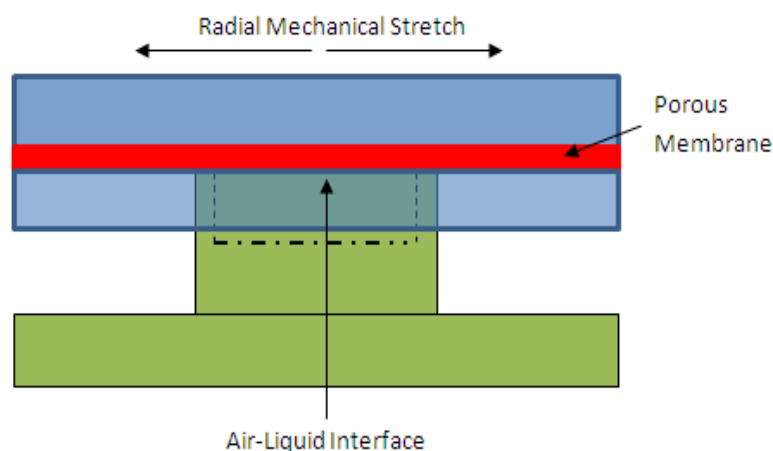
Direct 804-827-2213

## Market Need

Creating *in vivo* model systems that mimic physiological conditions and stresses is imperative to study tissue function. Specifically, devising a model system that replicates the unique conditions of lung tissue has presented unique challenges. Currently, two model systems have been developed; a system has been created that replicates the air-liquid interface (ALI) of the lung and one which mechanically stretches tissues growing on a membrane. Yet, no single model system is able replicate both the ALI and the mechanical stretch experienced by lung tissue on a commercially suitable scale. Thus, there exists a need to develop a large scale model system that replicates both properties of lung tissue.

## Technology Summary

VCU researchers and students have developed a bioreactor that permits tissue to be grown on a membrane at the ALI and can be subjected to radial mechanical stretch. This bioreactor enables the replication of lung, skin, or ocular tissue. Utilizing a unique method of creating the membrane, different membranes can be constructed that mimic the characteristics and stresses of different tissues. The device has been scaled to the size of a standard 12-well plate thus permitting the growth of these unique tissues on a commercial scale.



## Technology Status

Patent Pending: US and foreign rights available.

Prototype of the device has been created and tested.

This technology is available for licensing to industry for further development and commercialization.