

## **Device for Controlled Apical Flow in Hanging Cell Culture Inserts**

Technology #18185

### **Applications**

The invention describes a device that inserts into the upper side of a well and allows fluid flow on the apical side of the well membrane. This device has broad applications for *in vitro* tissue modeling.

### **Problem Addressed**

There exists a great need to model precisely the complex physiological processes that occur in the human body. Apical flow over a cell culture more accurately replicates various configurations of *in vivo* cellular interactions; however, current strategies include fully specialized systems that may not be compatible with other cell culture equipment. Additionally, lack of familiarity with these new methods may hinder adoption. This invention provides a simple device that can couple with commercially available, commonly used laboratory equipment to mimic essential fluid flow dynamics in human cellular processes.

### **Technology**

This technology is a device for controlling apical flow in a cell culture grown in a cell culture insert. It comprises an apical insert with a projecting portion, a contact surface, inlet and outlet channels, and a sealed apical chamber for contamination prevention. The projecting portion extends to a lesser depth into the cell culture insert, and the contact surface maintains a spatial relationship between the projecting portion and the cell culture insert. Sensors positioned on the projecting portion can then measure biological conditions like temperature, oxygen concentration, pH, and transepithelial electrical resistance. Additionally, for the culturing of strict anaerobes in the presence of a human colon, or other mucosal barrier, this device exhibits control of oxygen down to completely anaerobic conditions. Generally, this innovative device more accurately envisions *in vitro* models for complex cell systems.

### **Advantages**

- Integrates easily into commercially available tools and methods
- Simple design
- Inexpensive
- Oxygen control in strict anaerobic conditions
- Realistic functionality for *in vitro* tissue models

### **Categories For This Invention:**

Life Sciences

Research Tools

## Intellectual Property:

Device for controlled apical flow in hanging cell culture inserts  
Issued US Patent

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## External Links:

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## Image Gallery:

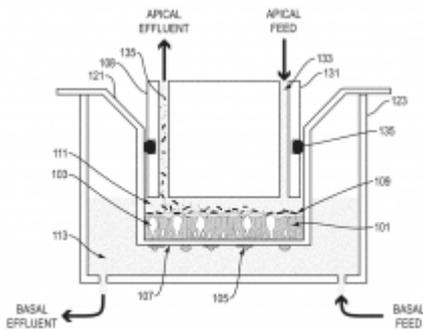


FIG. 1