

**Technology**

Method of growing cells in culture that form three-dimensional aggregates

**Inventor**

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**Key Features**

- Multiple applications including drug discovery, vaccine research, cell function research
- Produces three-dimensional cells and tissue
- Cells retain differentiation and gene-expression patterns
- Does not require cell culture support matrices

**Stage of Development**

Reduced to practice with successful demonstration

**Keywords**

Research Tool  
- Cell culture  
- Three-dimensional cells  
- Native tissue  
- Culture medium

**Patent Status**

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## Optimization of Three-Dimensional Cell Culture System for Models of Infectious Disease and Chemosensitivity

(VA Reference No. 01-066)

*Unique method of growing cells in culture that form three-dimensional aggregates mimicking the structure and function of native tissue*

**Technology**

The Department of Veterans Affairs has developed a method of growing cells in culture that form three-dimensional aggregates mimicking the structure of native tissue and that retain expression of their differentiated characteristics.

**Opportunity**

This cell culture method developed by the VA provides a medium that enables the human cell and tissue to closely resemble that found *in vivo*. The method involves the use of a rotating wall vessel with culture medium that is cultured for a period of hours to days. The cell culture method provides a valuable opportunity for studying infectious diseases, developing and testing vaccines and other therapeutic treatments, and studying cancerous cells and response to chemotherapy.

**Competitive Advantage**

Current cell culture methods produce either a monolayer of cells or three-dimensional cells through growth on support matrices. Both methods result in loss of cell differentiation and pathogenicity.

This invention:

- Provides a medium in which to study pathogenic organisms that fail to grow outside a host organism or rapidly mutate when grown in a substitute host.
- Enables cells to maintain their characteristic features and typical gene-expression patterns.
- Does not require materials used as support matrices, which introduces confounding variables.
- A reliable way of studying patterns of pathogenicity, infectivity and chemosensitivity in the authentic host tissue.

**Status**

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license, and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).