Analytical Instrumentation, Methods & Materials

Methods of Finding, Selecting and Studying Cells in Heterogeneous Co-Cultures

View U.S. Patent No. 8,124,410 in PDF format.

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method of co-culturing heterogeneous primary cells, such as stem cells.

Overview

Current methods for isolating and culturing primary (stem/progenitor) cells remain unsatisfactory because most primary cells die when transferred to culture, and the remaining cells usually develop mutations rendering them unfit for an *in vivo* environment.

The Invention

UW-Madison researchers have developed a method of co-culturing heterogeneous primary cells. The cells are cultured in a very small, convection-free space, such as a microchannel, so they behave more as they would *in vivo*. Because there is no fluid flow, all movement of components in the environment is by diffusion. The culture contains at least one growth-promoting cell and at least one cell capable of proliferating.

Applications

- Drug screening
- Isolation, purification and/or identification of stem or progenitor cells
- Study of autocrine and paracrine regulation

Key Benefits

- Provides the ability to precisely direct and evaluate physical, chemical and biological interactions between cells and other factors in a controlled environment
- Physically constrains the diffusion of soluble factors, allowing cells to more closely imitate the *in vivo* environment
- Cells can come from a single source or from multiple sources
- Heterogeneous cells can be in cell-to-cell contact or spaced apart
- Uniquely enables the study of stem cells by avoiding problems associated with stem cell assays in standard tissue culture
- Avoids need for costly and time-consuming transplantation of cultured cells into a host to determine whether proliferation is occurring in a culture
- Molecular gradients of test agents or compounds can be established in the microenvironment
- May be used to determine the effect of a cancer treatment on proliferative capacity of an affected tissue

Additional Information

For More Information About the Inventors

- David Beebe

- Caroline Alexander

Tech Fields

- Analytical Instrumentation, Methods & Materials : Microfluidics
- Drug Discovery & Development : Preclinical testing
- Pluripotent Stem Cells : Tools

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846