



## **MatTek Announces Breakthrough in Dendritic Cell Production Methodology**

### **Method Developed to Harvest, Culture Functional Dendritic Cells Expressing Key Markers**

**May 4, 2004** - MatTek Corp., Ashland, MA (USA) today announced a breakthrough in Dendritic Cell production methodology. MatTek's new Dendritic Cell methodology overcomes many of the problems that previously plagued dendritic cell research. The [MatTek Dendritic Cells \(Model DC-100\)](#) are phenotypically similar to their in vivo counterparts, and their in vitro function in immunological reactions mimics in vivo behavior. These cells have longer life span in culture and can be used in a broad range of immunology, virology, toxicology and other functional studies.

Dendritic cells (DC) play a key role in the immunological reactions throughout the body. Dendritic cells (DC) and their immature counterparts, Langerhans cells (LC), are highly specialized antigen-presenting cells (APC) located in the skin, mucosa, and lymphoid tissues. DC and LC play a key role in the induction phase of contact allergenicity, and it is likely that these cells can be used to develop in vitro assays for contact sensitization and other immunological reactions of the body.

The difficulty in harvesting and the short survival time of DC in culture has prevented their widespread use by researchers. Although improvements have been made, generating large number of cells has remained a limiting factor and the retention of basal (non-primed) functionality of the cells has been difficult to achieve. Finally, their response to external stimuli has often been inconsistent.

In response to this need, MatTek has developed a new method of generating DC from CD34+ progenitor cells harvested from umbilical cord blood. The generated DC are typically expanded 200 fold, thereby allowing multiple experiments in which the cell origin and functionality are constant. The cells express CD1a and HLA-DR, characteristic of DC, and can be maintained for at least 14 days with no significant changes in surface marker expression or functionality. Transmission electron microscopy showed the presence of Birbeck granules, a key ultrastructural marker of DC and LC. Upon stimulation with LPS and PMA, a reproducible, significant gene and protein expression was observed; IL-12, MIP-1a, MIP-3a, IL-6, and TNF-a were upregulated. Further, the DC are infectable with HIV and stimulate heterologous T cells (TC) and autologous TC following exposure to antigen.

**About MatTek** - MatTek Corp., founded in 1985, is an industry leader in tissue engineering. The company manufactures human cell-derived three-dimensional organotypic in vitro models for use in product development/efficacy, claims substantiation, safety assessment, drug discovery/development, and target organ research applications in the Pharmaceutical, Biotech, Cosmetics, Personal Care and Household Products industries. The current in vitro tissue product offering includes EpiAirway™, EpiDerm™, EpiDermFT™, EpiOcular™, EpiOral™, EpiVaginal™, and MelanoDerm™. MatTek's in vitro tissue models are used in numerous applications, from skin irritation assessment to transdermal drug delivery and ADME-Tox studies.

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