Method for Generating Unlimited Numbers of Macrophage/Dendritic Cells and Neutrophils

Tech ID: 19595 / UC Case 2005-114-0

FEATURES

Macrophage/dendritic cells and neutrophils orchestrate the inflammatory response, communicating with each other and with T and B cells to induce cell activation and cell proliferation, to recruit more inflammatory cells, to kill the invader, to protect the surrounding tissue, to induce longer-term protective immunity, and to down regulate the response once the microorganism has been eliminated. These same processes can become chronically activated, leading to a variety of human diseases, such as autoimmune disease, multiple sclerosis, liver cirrhosis, arthritis, atherosclerosis, vascular disease, and even cancer. However it is expensive and time-consuming to harvest these differentiated and non-mitotic innate immune cells for academic and industrial research, drug screening, and therapy applications. ***This invention provides a unique method to generate unlimited numbers of immature progenitors that can differentiate into mature, normal macrophage/dendritic cells or neutrophils when directed to do so.*** By selecting specific oncoproteins to block differentiation and immortalize progenitor cells of macrophage/dendritic cells and neutrophils. These progenitors proliferate indefinitely, having been expanded in the laboratory continuously. Following oncoprotein inactivation, they stop dividing and mature into cells having the typical morphology of macrophage/dendritic cells and neutrophils. When activated by pro-inflammatory stimuli, these mature cells secrete the normal broad array of pro-inflammatory cytokines.

BENEFITS

- Enables the creation of cultures of unlimited numbers of immature progenitors in a reproducible and cost-effective manner.
- The culture progenitors are controllably differentiated into mature immune cells and exhibit their characteristic morphology, markers and inflammatory response upon activation.
- Provides a nearly inexhaustible supply of macrophage/dendritic cells and neutrophils.
- Useful for investigating the molecular events underlying macrophage/dendritic cell and neutrophil differentiation.
- Useful for studying the role of innate immune cells in inflammatory human diseases.
- Useful for pharmaceutical investigation.
- May aid development of therapeutics for treatment of inflammatory diseases.

STATE OF DEVELOPMENT

This technology is offered exclusively or non-exclusively for US and/or worldwide territories. A commercial sponsor for potential future research application is sought

RELATED MATERIALS

▶ SD1999-053

OTHER INFORMATION

A provisional patent application has been filed on this invention.

CONTACT

University of California, San Diego
Office of Innovation and Commercialization
innovation@ucsd.edu
tel: 858.534.5815.



OTHER INFORMATION

KEYWORDS

Inflammatory disease, autoimmune disease, multiple sclerosis, liver cirrhosis, arthritis, atherosclerosis, vascular disease, macrophage, dendritic cell, neutrophils, progenitor, differentiation, immune system

CATEGORIZED AS

- **Medical**
  - Disease: Autoimmune and Inflammation
  - Disease: Cancer
  - Therapeutics

RELATED CASES

2005-114-0

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