Mouse Microglia Cell Line SIM-A9
Spontaneously Immortalized from Cerebral Cortex

The University of North Dakota has developed SIM-A9, a microglia cell line derived from mouse cerebral cortex. This cell line has been characterized to behave comparably to cultured primary microglia in response to inflammatory stimuli, and can be used as a cost-effective tool for neuroinflammatory disease research.

SIM-A9 as an In Vitro Model for Neuroinflammatory Disease Research

Microglia are immune cells of the nervous system and thus an important therapeutic target for neuroinflammatory diseases such as Alzheimer’s and Parkinson’s diseases. Microglia cultures provide an advantageous in vitro model system allowing direct access to live microglia for treatments and observations, though preparation of primary cultures requires a lengthy and expensive procedure. In contrast, microglial cell lines are simple to maintain and offer economical alternatives to the primary cells. We have isolated a clonal microglial cell line, SIM-A9, from a primary microglial culture that had exhibited spontaneous transformation. Unlike most microglia cell lines available today, the SIM-A9 cells are genetically more comparable to their primary counterpart because they do not contain viral genes used to immortalize cells. The SIM-A9 cell line therefore offers an excellent research tool for investigation of diseases with microglial pathology.

SIM-A9 as a Drug Screening Tool

Characterization of the SIM-A9 cells has demonstrated their similarities to primary microglia upon inflammatory stimulation, substantiating their suitability as a screening tool for immunomodulatory drugs that target microglia. Since the SIM-A9 cells proliferate in serum-containing medium indefinitely, they can be quickly propagated to the number and density required for an experiment of any size. The adherent nature of the SIM-A9 cells allows them to be plated and treated in multi-well culture dishes for various assay procedures.

Advantages:
- Spontaneously immortalized cell line contains no foreign genes
- Exhibits morphology and behavior comparable to cultured primary microglia
- Easy to grow and maintain

For more information, contact:
Michael F. Moore, CLP
Associate VP, IP Commercialization & Economic Development
University of North Dakota
(701) 777-6709 / Michael.f.moore@research.und.edu

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