投稿學會：細胞及分子生物學學會	收件編號：	分類編號：

第二十八屆生物醫學聯合學術年會 **ABSTRACT FORM （正本）**

利用電紡絲取代培養多能性幹細胞所需的細胞滋養層

Electrospun technology could replace the cell-based feeder system in cultureing pluripotent stem cells.

林韶姬, 劉詩平
Shao-Ji Lin, Shih-Ping Liu
中國醫藥大學 基礎醫學研究所
Graduate Institute of Basic Medical Science, China Medical University, Taichung, Taiwan

Backgrounds:

Embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs) were able to self-renewal and differentiation into ectodermal, endodermal, and mesodermal derivatives. Both of two cells have highly potential to clinical application. Traditionally, ESCs were cultured on mouse embryonic fibroblast (MEF) feeder layer in serum containing media. The concern over xenogeneic contaminants from the mouse feeder cells may restrict stem cell based therapy. For this reason, we wanted to find out a novel biomaterial to replace the cell-based feeder layer.

Materials and Methods:

In the study, we used poly-acrylonitrile (PAN) with biocompatibility and used electrospun technology to make up the feeder layer. We used ESCs culture with different density of electrospun (replaced the feeder layers) to test whether it was useful to maintain the pluripotency of ESCs. The stem cell markers staining, gene expression, microarray, and embryoid body formation was used to tests pluripotency of ESCs on electrospun-based feeder layer.

Results:

The results indicated higher expression levels of several stem cell markers in electrospun-cultured ES cells that compared with controls (feeder-free), including alkaline phosphatase, SSEA1, and Nanog. At the KEGG pathway analysis from microarray, the data showed ESCs turn on TGF-beta pathway that culture on electrospun. By Q-PCR, the gene expression levels of TGF-beta receptor, smad3, smad4 and Nanog increased.

Conclusion:

We demonstrated that electrospun-based feeder layer could maintain the pluripotency of stem cells. Furthermore, nano-fibrous scaffold could be a good candidate for feeder-free culture of ESCs and iPSCs for clinical application.

第一作者中文姓名： 林韶姬		傳真：
電話：02-2967-2205	手機：0928-859593	E-mail：yaki0819@hotmail.com
地址：台北縣板橋市大觀路二段 265 巷 18 弄 14-1 號		