

# Inhibition of PTEN Tumor Suppressor Promotes the Generation of Induced Pluripotent Stem Cells

廖，紀元

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氏 名：廖 紀元

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(PTEN 機能抑制による高効率人工多能性幹細胞作製法の確立)

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### 論 文 内 容 の 要 旨

Induced pluripotent stem cells (iPSCs) can be generated from patients with specific diseases by the transduction of reprogramming factors and can be useful as a cell source for cell transplantation therapy for various diseases with impaired organs. However, the low efficiency of iPSC derived from somatic cells (0.01–0.1%) is one of the major problems in the field. The phosphoinositide 3-kinase (PI3K) pathway is thought to be important for self-renewal, proliferation, and maintenance of embryonic stem cells (ESCs), but the contribution of this pathway or its well-known negative regulator, phosphatase, and tensin homolog deleted on chromosome ten (Pten), to somatic cell reprogramming remains largely unknown. Here, we show that activation of the PI3K pathway by the Pten inhibitor, dipotassium bisperoxo(5-hydroxypyridine-2-carboxyl)oxovanadate, improves the efficiency of germline-competent iPSC derivation from mouse somatic cells. This simple method provides a new approach for efficient generation of iPSCs.