

## **Investigation of Therapeutic Potential of Exosomes Derived from hiPSCs for Treating Hair Loss Patients**

(hiPSC 衍生的外泌體治療脫髮患者的潛力研究)

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### **Summary of Proposal**

Alopecia, a condition characterized by partial or complete hair loss, can have a significant impact on individuals' quality of life. Current treatment options for alopecia are limited, and there is a need for innovative approaches to address this challenge.

In this proposal, we focus on exploring the therapeutic potential of DPCs derived from hiPSCs. It has been well reported that DPC plays a crucial role in hair follicle development and hair growth regulation. By generating hiPSC-DPCs, we obtained the opportunity to study and manipulate these cells in order to develop new treatments for alopecia. The generation of hiPSC-DPCs allows for the production of a potentially unlimited supply of patient-specific DPCs.

With hiPSC-DPCs, we can investigate the underlying mechanisms of hair growth and hair loss. In addition, we are allowed to study the molecular and cellular interactions involved in the formation and maintenance of hair follicles, as well as the factors that contribute to hair loss. By understanding these processes, we can identify potential targets for therapeutic intervention. Additionally, hiPSC-DPCs can be used for drug screening and development. We can test various compounds or molecules to identify potential candidates that can stimulate hair growth or prevent hair loss. This screening process can be performed in vitro using hiPSC-DPCs, providing a platform for evaluating the efficacy and safety of potential medications. Moreover, we can explore the potential of using hiPSC-DPCs as a cell-based therapy for alopecia. These cells can be transplanted into the scalp or affected areas to provide a source of functional DPC, potentially promoting hair follicle regeneration and enhancing hair growth. This approach may offer a personalized and regenerative medicine approach to treating alopecia.