京都大学
KYOTO UNIVERSITY

Report of KU - UZH Joint Research Project

Section 1

Project title:	Establishment of cell purification method for the next-generation cell therapy
Project coordinator (KU) **Name** **Position** **Faculty, department**	 Hirohide Saito Professor Center for iPS Cell Research and Application(CiRA)
Project coordinator (UZH) **Name** **Position** **Faculty, department**	 Simon Philipp Hoerstrup Full Professor and Chairman of the Board Institute for Regenerative Medicine（IREM）
Period of project	From: September To: December
Project location	KU and UZH
No. of participants	[KU] Faculty members: 2 Students: 0 Others: 0 [UZH] Faculty members: 2 Students: 0 Others: 0 Others: *A participant list can be attached instead of completing the above section. The list should include the details above.
URL at which project outcomes can be viewed (e.g. workshop notifications/programs/reports, evidence of academic papers published or otherwise made available, etc.)	N/A
Photographs with captions	N/A

京都大学
KYOTO UNIVERSITY

Section 2

Summary of the project (approx. 200 words)
*Please submit a summary of the project in Japanese in addition to the English summary (approx. 400 characters).

サマリー (approx. 200 words)

人工多能性幹細胞(iPS 細胞)は将来の臨床応用に有望な細胞資源であり、 Hoerstrup グループは、心筋細胞や神経前駆細胞を GMP グレードで分化させる技術を開発してきた。しかし、iPS 細胞由来の分化細胞は不均一であり、移植によるテラトーマ形成の危険性がある。マイクロ RNA(miRNA)は、 その発現・活性レベルが細胞種間で異な るため、 細胞種特異的マーカーとして使用できる。 我々は、 標的細胞のタンパク質発現景を制御する miRNA 応答性 mRNA を作製し、 それを用いた細胞精製法を開発してきた 。本プロジェクトでは、 このスイッチを用 いた iPS 細胞由来内皮細胞の純化方法の検討を行った。

English summary (approx. 400 character)

Induced pluripotent stem cells (iPSCs) are promising cell resources for future clinical applications, and the Hoerstrup group has developed technology to differentiate cardiomyocytes and neuronal progenitor cells at GMP grade. However, differentiated cells derived from iPSCs are heterogeneous, and there is a risk of teratoma formation upon transplantation. MicroRNA (miRNA) can be used as a cell-type-specific marker, as their expression/activity level differs between cell types. We have developed miRNA-responsive mRNAs that regulate protein expression levels in target cells and designed cell purification methods using them. In this project, we investigated a purification method for iPSC-derived endothelial cells using this switch.