Methods and Compositions of Generating Immunoevasive Endothelial Cells

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Description:

- Endothelial cells (ECs) play important roles in many physiological processes. ECs can spontaneously self-assemble into blood vessels, which are required for perfusion and survival of complex tissues and organs. However, non-autologous human ECs will trigger immune responses, causing rejection of implanted tissue-engineered constructs.

- Immunoevasive human ECs have been developed using CRISPR/Cas9 gene editing technology by knocking out the genes (CIITA, a class II major histocompatibility complex transactivator, and CD58) whose products are responsible for ECs’ immunogenicity.

- These immunoevasive ECs retain the capacity to self-assemble into vascular structures in vivo and can be readily cultured from cord blood. Therefore these cells offer great potential for tissue repair or graft perfusion without eliciting immunorejection.

- Intellectual property – A provisional patent application has been filed on Version 1


- Stage of Development – Proof of principle in vivo studies are currently under development.

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