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Dental pulp cells (DPCs) are one of the promising mesenchymal cell sources for regenerative cell therapy and future iPS cell banking. HLA haplotype-homo (HHH) donors have a couple of identical HLA gene sets, resulting in presentation of HLA molecules half in the variation. Therefore, cells derived from HLA haplotype-homo donors are expected to be successfully transplanted to a number of patients with less probability of immune rejection.


To find HHH donors, we are planning to collect baby teeth discarded as medial wastes. We are also establishing a convenient method for evaluation of cell morphology throughout the culture period using deep learning technology. After collecting enough number of HHH DPCs to cover Japanese population, we are going to induce iPS cells from them using our novel Yamanaka's factor, DLX4.

Frequencies in Japanese Population



99%



HLA hetero donor


 Match Unmatch

Non-self HLA type cells (x: foreign antigens)

 **Common Haplotype**
 **Uncommon Haplotypes**

1%



HHH donor


 Match Match

OCT3/4
SOX2
KLF4
DLX4



HHH DPCs and iPSCs

Rejection



Immune System

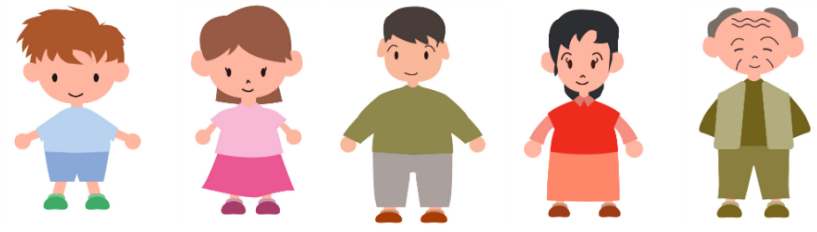


Recipient


 Match Unmatch

Tolerance

Tolerance



Allogeneic Transplantation