

# Generation of Human Universal Donor Stem Cells via Genome Editing

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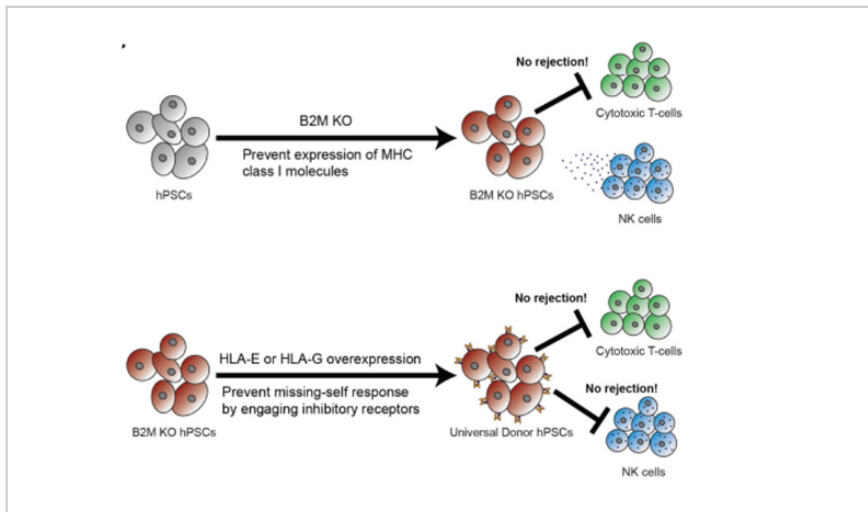


Figure 1. Schematic of the universal donor stem cell design strategy.

## Technology Summary

Human pluripotent stem cells (hPSCs) offer unlimited self-renewal and differentiation into any desired therapeutic cell type, making them ideal candidates for a universal donor cell line. However, a composition and method to reduce the transplanted cells from being rejected by the recipient's immune cells is needed. Researchers have found genome editing tools to prevent T and natural killer cell-mediated lysis towards our transplanted cells. With this genome editing of hPSCs, these modified cells will become universal donor stem cells and will not be rejected by recipient's immune cells.

## Application & Market Utility

This technology can be used to combine with many stem cell differentiation processes to generate cell products without immune rejection concerns, such as pancreatic cells, cardiac cells, blood cells, and neurons. As of 2021, the market for stem cells was estimated to be approximately \$12 billion dollars with a future for exponential growth, estimating \$31 billion dollars in market size by 2030. The proposed invention could be easily used to supplement the human pluripotent stem cells in order to limit the rejection of a recipient's immune cells during therapies.

## Next Steps

The next step for the technology is to license the invention to a company focused on utilizing stem cells with a need for universal donor stem cells. With the wide applicability of stem cells, there are many avenues of use.

TECHNOLOGY READINESS LEVEL

4

### Seeking

Investment | Licensing | Research

### Keywords

- Stem Cells
- Immune Response
- hPSCs

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