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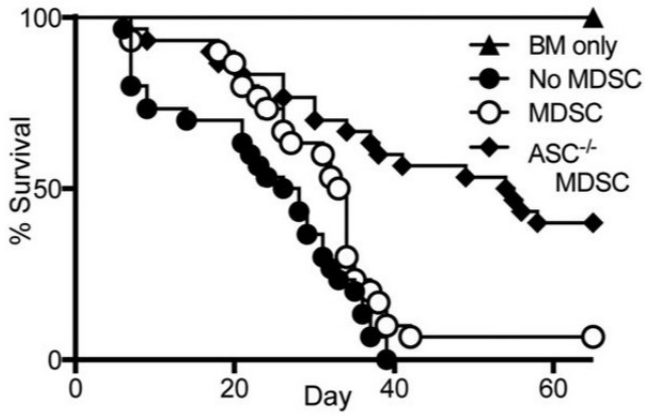
Modified myeloid-derived suppressor cells for treating GvHD

A novel cell therapy and associated methods for treating GvHD after allogenic hematopoietic cell transplantation.



Technology ID
20160072

Category
All Technologies
Life Sciences/Biologics
Life Sciences/Human Health
Life Sciences/Pharmaceuticals
Life Sciences/Therapeutics

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IP Status: US and International Patents Issued; US- 10,894,061, 12,234,480, CN- 108883131, EP-3682889, 3331538, JP- 6927499, as well as 20+ more

Applications

- Leukimia and Lymphoma treatment
- Allogeneic hematopoietic cell transplantation
- Graft-vs-host disease

Key Benefits & Differentiators

- **Improves the therapeutic benefit and survival outcomes of allogeneic hematopoietic cell transplantation:** Myeloid-derived suppressor cells deficient in the adaptor ASC inhibit assembly of inflammasome complexes
- **Reduces risk of Graft-vs-host disease:** Limiting in vivo MDSC inflammasome activation empowers MDSCs to maintain their suppressive potential

Technology Overview

Allogeneic hematopoietic cell transplantation is a potentially curative therapy for a variety of hematologic diseases, including leukemias and lymphomas. However, the risk of morbidity and mortality from graft-versus-host disease (GVHD) remains an obstacle to widespread use. Immune-suppressive cell therapy has the potential to control GVHD while reducing treatment side effects. Myeloid-derived suppressor cells (MDSCs) can suppress systemic immune

pathology via unique mechanisms. Early studies have shown that a single, early-posttransplant MDSC infusion transiently suppresses but does not eliminate GVHD.

Researchers at the University of Minnesota have developed a method and cells for treating GvHD that prevent MDSCs from activating inflammation pathways, resulting in increased survival rates. More specifically, genetic alteration of donor MDSCs to disable inflammasome activation results in increased GVHD survival relative to control MDSC therapy. These results have been demonstrated in vivo in mouse models, and the same pathways have been demonstrated in human MDSCs.

Phase of Development

TRL: 3
In vivo mouse, in vitro human data

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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Researchers

- **Bruce Blazar, MD** Professor, Pediatric Oncology, Division of Pediatric Blood and Marrow Transplantation & Cellular Therapy
- **Jeffrey Miller, MD** Professor, Division of Hematology, Oncology and Transplantation
- **Brent Koehn, PhD** Researcher, Department of Pediatrics

References

1. Brent H. Koehn, Petya Apostolova, Jessica M. Haverkamp, Jeffrey S. Miller, Valarie McCullar, Jakub Tolar, David H. Munn, William J. Murphy, Willie June Brickey, Jonathan S. Serody, Dmitry I. Gabrilovich, Vincenzo Bronte, Peter J. Murray, Jenny P.-Y. Ting, Robert Zeiser, Bruce R. Blazar(2015) , https://ashpublications.org/blood/article/126/13/1621/105433/GVHD-associated-inflammasome-mediated-loss-of, Blood, 126 (13), 1621-1628