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MiHA-loaded PD-L1/L2-silenced Dendritic Cell Vaccine

National Cancer Institute

Source

National Cancer Institute. MiHA-loaded PD-L1/L2-silenced Dendritic Cell Vaccine. NCI Thesaurus. Code C123921.

A dendritic cell (DC)-based vaccine composed of program death ligands 1 and 2 (PDL1/L2)-silenced DCs and loaded with the recipient's minor histocompatibility antigens (MiHA), with potential use for graft-versus-tumor (GVT) induction following allogeneic stem cell transplantation (allo-SCT). Donor DCs are electroporated ex vivo with MiHA mRNA and small interfering RNAs (siRNAs) designed to silence the expression of PD L1/L2. After allo-SCT and upon intravenous administration of the MiHA-loaded PD-L1/L2-silenced DC vaccine, the DCs induce the expansion and activation of MiHA-specific CD8-positive T-cells. These tumor antigen-reactive T-cells exert their GVT effect by killing miHA-positive tumor cells. PD-L1/L2, co-inhibitory ligands expressed on DCs, play key roles in preventing MiHA-specific CD8-positive T-cell expansion; silencing enhances MiHA-specific CD8-positive T-cell expansion and activity and improves the GVT effect. The MiHA are human leukocyte antigen (HLA)-bound peptides and are exclusively expressed by the recipient's hematopoietic tumor cells.