

Immunogenetics of allogeneic hematopoietic cell

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The availability of novel immunosuppressive regimens has facilitated the use of multi-locus human leukocyte antigen (HLA)-mismatched donors for the treatment of blood malignancies. In particular, transplantation from haploidentical related donors has greatly increased the availability of transplantation to patients who do not have suitable HLA-matched donors. The major complication after haploidentical transplantation today is relapse of disease, but the immunogenetics of relapse is not well understood. Recent data highlight an important role for the natural killer cell receptor group (NKG2) axis in relapse after haploidentical transplantation utilizing post-transplant

cyclophosphamide. The non-classical class I ligands MICA and MICB, and their NKG2D receptor, contribute to the risks of relapse and mortality. New evidence for a role for HLA-E and its NKG2 receptors in relapse and mortality demonstrates the complex pathways involved in the eradication of disease. Beyond the non-classical class I ligands, the class II region is also functional, where knowledge of haplotypes of HLA-DR-DQ provides new information on relapse and mortality risk. New immunogenetic associations provide a more complete understanding of relapse after haploidentical transplantation and offer potential approaches to lower risks for future patients.

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