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Can HLA Eplet Matching Enhance Clinical Outcomes in Kidney Transplantation?

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After two decades since its introduction, efforts to incorporate the concept of eplet matching into clinical practice have not met initial expectations. For eplet matching to become an effective shiny tool in the field of transplantation, several obstacles must be addressed. First, there is a need for robust datasets from which clear scientific discoveries can be made. Previous studies utilizing eplet matching were mainly retrospective and faced limitations due to the complexity of eplet matching and the vast diversity of immune system between individuals. Without meticulously curated datasets, even advanced technology like AI and machine learning may produce limited results based on the input data. Application of cutting-edge technology won't be as effective unless robust datasets have been developed. Secondly, the validity of eplet matching as both a diagnostic tool and biomarker requires thorough evaluation. As a diagnostic tool based on HLA antibody testing and HLA genotyping information, there is still room for standardization regarding how individual immune status is interpreted at specific timepoints. Clinical utility can only be achieved once the technical validity of the assay and the clinical validity of the concept are firmly established. The National Kidney Registry and its paired kidney exchange program exemplify the clinical application of eplet matching to identify better donor-recipient pairs. Strict cutoffs for eplet matching may miss important details and result in unwanted outcomes, i.e. appearance of de novo donor-specific antibodies. A critical assessment of eplet matching methods is warranted to optimize their future application in kidney transplantation.

Keywords: eplet, epitope, matching, biomarker, validation

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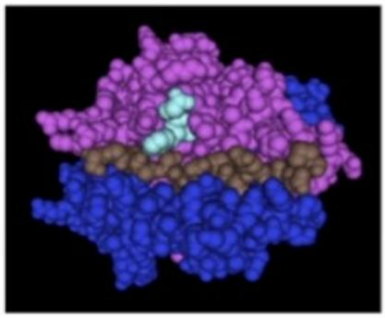
Eplet



Epitope