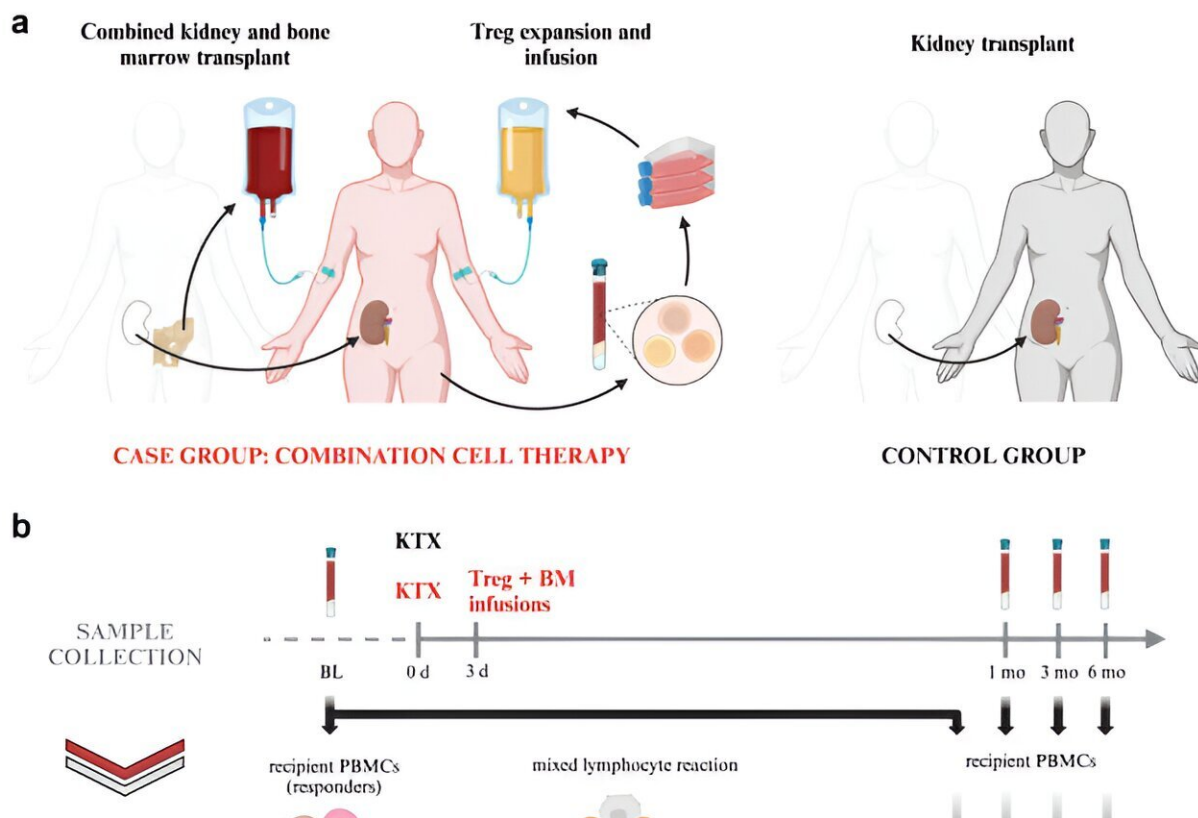


Kidney transplantation: Combined cell therapy found to reduce donor-specific immune response

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Summary of study design and experimental workflow. Credit: *eBioMedicine* (2024). DOI: 10.1016/j.ebiom.2024.105239

A new combined cell therapy for kidney transplants can help to reduce

the donor-specific reaction against the transplanted organ without the need for maintenance triple immunosuppression. The overall diversity of the T-cell receptor repertoire, which is important for immune defense, is preserved. This is shown by an international study led by MedUni Vienna, which was recently [published](#) in the journal *eBioMedicine*.

Normally, patients have to take lifelong maintenance immunosuppressive medication after a transplant to prevent their immune system from rejecting the new organ. The new approach investigated by the study team uses a combination of [bone marrow](#) cells from the donor and special immune cells (Treg cells) from the recipient. The results come from an ongoing clinical trial investigating the safety and efficacy of the combination therapy.

Using a complex technique (high-throughput sequencing), the researchers led by Rainer Oberbauer (Division of Nephrology and Dialysis, Department of Medicine III) in collaboration with Thomas Wekerle (Division of Transplantation, Department of General Surgery) from MedUni Vienna, together with partners from Austria, Germany and the U.S., characterized the changes in the TCR repertoires of six kidney transplant recipients.

In addition to the donor organ, they had also received bone marrow from the same donor and an infusion of polyclonal (with a large number of different T cell receptors) autologous Treg cells instead of the usual myelosuppression (reduction in bone marrow function). The TCR repertoire is the totality of the different T cell receptors (TCRs) in an individual. This diversity is crucial for the [immune system](#)'s ability to recognize and respond to a wide range of antigens.

In the [transplant patients](#), the combined cell therapy led to a reduction in the T cells that can react against the donor organ by means of targeted removal (selective deletion). "Overall, our data show that the

combination of Treg cell therapy with combined kidney and [bone marrow transplantation](#) selectively reduces the [immune response](#) to transplanted kidneys in humans," explain the study authors. The results of this study may help to further pursue this therapeutic method as a promising approach to transplantation in further studies.

More information: Ana F. David et al, Combination cell therapy leads to clonal deletion of donor-specific T cells in kidney transplant recipients, *eBioMedicine* (2024). [DOI: 10.1016/j.ebiom.2024.105239](https://doi.org/10.1016/j.ebiom.2024.105239)

Provided by Medical University of Vienna

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