

Short section of DNA predicts kidney transplant success

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A landmark study has narrowed down the genes that best predict long term kidney transplant success, to a small stretch of DNA.

The first study of its kind to gather [transplant](#) data from across the UK and Ireland found patients have the best chance of long term survival where the donor and recipient have genetic matches in a section of DNA known as the HLA locus. This finding could help to personalise treatment and reduce costs to the NHS as patients need less treatment or spend less time in hospital.

Led by the National Institute for Health Research (NIHR) Biomedical Research Centre (BRC) at Guy's and St Thomas' NHS Foundation Trust and King's College London, the project aimed to find out how to improve long term success for kidney transplants.

Several genes had previously been thought to predict kidney transplant survival. But now the researchers have shown that it is only the matches in the HLA locus which predict [transplant success](#) in the long term.

Every kidney transplant centre in the UK and Ireland contributed anonymised DNA samples (via the UK and Ireland Renal Transplant Consortium), and EU samples were also included in the analysis. Through key collaborations with NHS Blood and Transplant and the Wellcome Sanger Institute, these DNA samples were analysed and linked with transplant and patient survival data.

The painstaking project took over ten years due to the level of collaboration involved, but the researchers believe international initiatives like this are key to improve patient care in the future.

Professor Graham Lord, Director of the NIHR BRC at Guy's and St Thomas', led the study. He said:

"Running a collaboration between so many centres was a real challenge. But it has paid off, as we identified that this area of DNA alone can tell us whether the match between a kidney donor and recipient will work in the long term. This has the potential to improve outcomes for [transplant patients](#) and deliver treatments that are more personalised to the health needs of individual patients."

While most genomics studies of this kind use just the data from the recipient or donor alone, this study looked at the data from two genomes - the patient donating the [kidney](#), and the patient receiving it.

The findings suggest that patients could be offered enhanced levels of personalised treatments, along with a reduced need for immunosuppression treatment, and a reduced rate of [kidney transplant rejection](#). Improvements like this could reduce costs to the NHS as patients need less [treatment](#) or spend less time in hospital.

This ground breaking study has also provided the platform for future work looking to understand why transplant [patients](#) are more susceptible to heart disease and cancer.

The collaboration was made possible by the NIHR Health Informatics Collaboration, which aims to make NHS clinical data more readily available to researchers and the NHS community, for the purpose of improving patient outcomes.

More information: Maria P. Hernandez-Fuentes et al, Long- and short-term outcomes in renal allografts with deceased donors: A large recipient and donor genome-wide association study, *American Journal of Transplantation* (2018). [DOI: 10.1111/ajt.14594](https://doi.org/10.1111/ajt.14594)

Provided by King's College London

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