

LYMPHOCYTE RECEPTOR SEQUENCING TO MONITOR ALLOIMMUNE RESPONSE: A SYSTEMATIC REVIEW

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INTRODUCTION AND RATIONALE:

- We have few reliable ways of monitoring the T-cell response to the kidney donor after transplantation, so are unable to respond pro-actively to developing rejection
- Each of the millions of lymphocyte clones in the recipient recognizes just a single donor antigen target, and these clones expands dramatically as rejection occurs
- Monitoring the expansion of these clones offers a novel approach and a potential new tool to identify rejection at the earliest stage when it can be treated and abrogated
- We have conducted a systematic review to examine current research in lymphocyte receptor sequencing to do explore its potential use for transplant monitoring

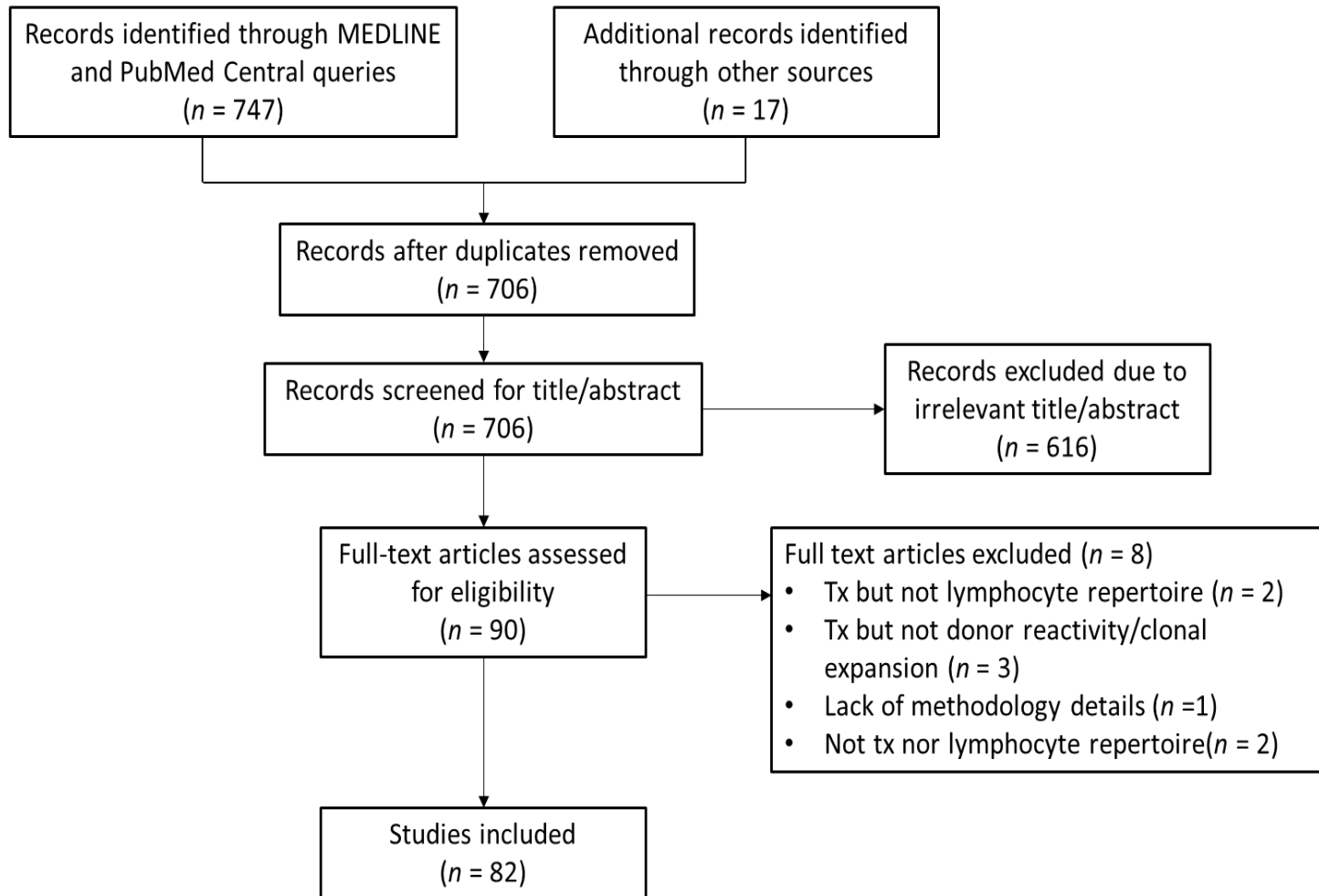
QUERIES YIELDED 764 ARTICLES OF WHICH 82 MET PREDEFINED INCLUSION CRITERIA

Identification

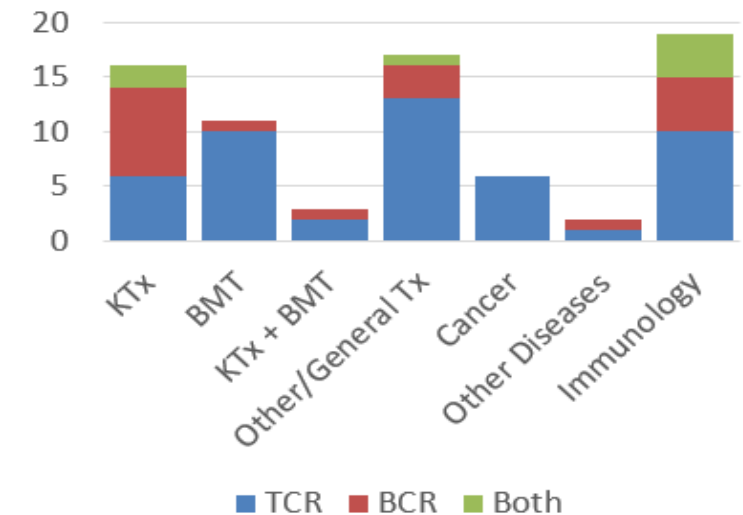
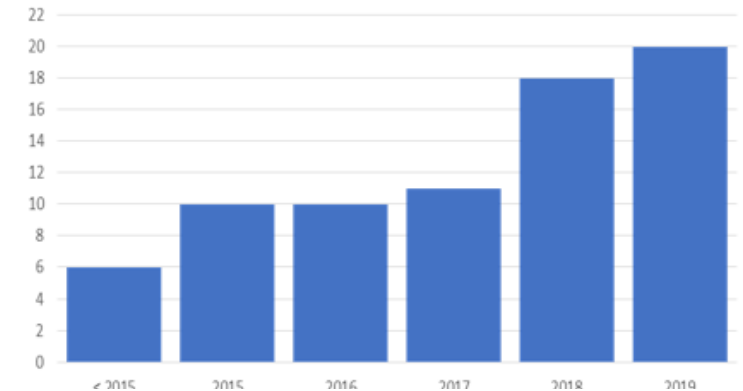
Screening

Eligibility

Included



Number of studies by year of publication



CONCLUSIONS AND DEVELOPMENT OF A NEW BIOMARKER FOR KIDNEY TRANSPLANTATION

- Sequencing of the T-cell receptor is now a viable technology to monitor the expansion of T-cell clones and to define their response to highly specific antigen targets
- A very specific set of genes known as the CDR3 region of the T-cell receptor beta chain is the preferred sequencing target due to their relevance in HLA-antigen recognition
- Transplant patients show lower repertoire diversity (making identification potentially easier) and specific expansion of T-cell and B-cell clones which persist after rejection
- Patients who develop tolerance to their donor after transplantation show deletion of these important T-cell clones so do not attack the donor graft
- These data suggest that T-cell receptor monitoring may be an exciting new biomarker for monitoring rejection or tolerance, and a key guide to adjusting immune suppression
- BC has launched detailed studies to confirm this assay and to introduce this new test into our provincial transplant monitoring program, the first such biomarker in Canada



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