# MHC class II molecules on graft endothelium promote acute rejection

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A limitation of organ transplant is acute rejection of the graft by the host immune system. Graft rejection is mediated by the development of $CD8^+$ cytotoxic T cells that target donor MHC class I molecules, and in animal models, these cells have been shown to develop in secondary lymphoid organs. However, in humans, there is evidence that cytotoxic T cells mature within the graft without trafficking to secondary sites.

A new study in the inaugural issue of *JCI Insight* indicates that the development of graft-targeting $CD8^+$ cytotoxic T cells requires $CD4^+$ effector memory T cells. Specifically, Jordan Pober and colleagues at Yale University used a mouse model in which human artery segments are grafted into immunodeficient mice followed by adoptive transfer of human T cells that are allogenic to the graft.

Using this model, the researchers determined that $CD4^+$ effector memory T cells are activated by MHC class II molecules on graft endothelial cells and promote development of graft-targeting $CD8^+$ cytotoxic T cells. Moreover, eliminating class II MHC expression on endothelial cells prevented $CD8^+$ T effector memory cell responses.

The results of this study indicate that blocking interactions between $CD4^+$ effector memory T cells and class II MHC molecules should be further explored as a potential intervention to limit acute rejection.

**More information:** Parwiz Abrahimi et al. Blocking MHC class II on human endothelium mitigates acute rejection, *JCI Insight* (2016). DOI: 10.1172/jci.insight.85293