

Video Article

## Reaggregate Thymus Cultures

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### Abstract

In the thymus, immature CD4+8+ thymocytes expressing randomly rearranged T-cell receptor  $\alpha$ - and b-chain genes undergo positive and negative selection events based on their ability to recognize self-peptide/major histocompatibility complex (MHC) molecules expressed by thymic stromal cells. In vivo analysis of the role of thymic stromal cells during intrathymic selection is made difficult by the cellular complexity of the thymic microenvironment in the steady-state adult thymus, and by the lack of appropriate targeting strategies to manipulate gene expression in particular thymic stromal compartments. We have shown that the thymic microenvironment can be readily manipulated in vitro through the use of reaggregate thymus organ cultures, which allow the preparation of three-dimensional thymus lobes from defined stromal and lymphoid cells. Although other in vitro systems support some aspects of T-cell development, reaggregate thymus organ culture remains the only in vitro system able to support efficient MHC class I and II-mediated thymocyte selection events, and so can be used as an effective tool to study the cellular and molecular regulation of positive and negative selection in the thymus.

### Video Link

The video component of this article can be found at <http://www.jove.com/details.php?id=905>

### Protocol

For more information on preparing reaggregate thymus cultures please visit [Springer Protocols](#).

### References