Antigen presentation in transplantation

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There are two main types of antigen presentation to T lympho cytes (Figure 88.7). Direct antigen presentation involves donor APCs showing intact and unprocessed donor HLA (class I or class II) molecules on their cell surface to recipient T cells. In contrast, indirect presentation is performed by recipient APCs. These internalise foreign donor HLA molecules from the g raft, process them into short peptide fragments and then load them into the peptide groove of recipient (self) HLA class II molecules. The donor peptide–recipient HLA class II complex is then expressed on the cell surface and presented to recipient 6–12 weeks after transplantation because this is the lifespan of the donor passenger APCs that are present in the allograft. As indirect presentation involves recipient APCs it is a long-liv ed - response.

(a) Direct antigen presentation A TCR MHC II Donor T cell APC CD4 (b) Indirect antigen presentation A TCR MHC II Recipient T cell APC CD4 Figure 88.7 Direct (a) and indirect (b) antigen presentation. A, antigen; APC, antigen-presenting cell; CD, cluster of differentiation; MHC II, major histocompatibility complex class II; TCR, T-cell receptor. (Adapted with permission from Clatworthy M, Watson C, Allison M, Dark J. Transplantation at a glance . John Wiley and Sons Ltd, 2012.)

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