Missing self recognition of Ocil/Clr-b by inhibitory NKR-P1 NK cell receptors

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The NKR-P1 family of C-type lectin-like receptors is expressed on natural killer (NK) cells and NKT cells. Here, we report the cloning, expression, and function of Ocil/Clr-b as a ligand for the inhibitory NKR-P1B and NKR-P1D (CD161b/d) orphan NK cell receptors. Previously known as osteoclast inhibitory lectin (Ocil) / C-type lectin related-b (Clr-b), the NKR-P1B/D ligand belongs to a gene family linked to the NKR-P1 genes in the mouse NK gene complex (NKC). Expression of Ocil/Clr-b on mouse tumor cell lines inhibits NK cell mediated killing. Inhibition is blocked with a new mAb (4A6) specific for Ocil/Clr-b. Using 4A6 mAb, we demonstrate that Ocil/Clr-b is displayed at high levels on nearly all hematopoietic cells, with the exception of erythrocytes, in a pattern that is quite similar to that of class I MHC molecules. Remarkably, Ocil/Clr-b is frequently downregulated on mouse tumor cell lines, indicating a role for this receptor-ligand system in a new form of "missing self" recognition of tumor cells.

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