

## **A TCL1-specific TCR-based immunotherapy against B cell lymphoma**

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T-cell leukemia/lymphoma Antigen1 (TCL1) is a B-cell oncoprotein that is overexpressed in multiple forms of B-cell lymphoma. In our previous study, we have identified a HLA\*A0201-restricted T cell epitope from TCL1 that can stimulate CD8+ T cells to specifically lyse lymphoma cells. In this study, we have cloned the TCL1<sub>70-79</sub> peptide-specific T-cell receptor (TCR) gene that after transduced into T cells can direct the normal donor's T cells to specifically lyse TCL1<sub>70-79</sub> peptide-pulsed but not control peptide-pulsed T2 cells. TCL1<sub>70-79</sub> peptide-specific TCR-transduced CD8+ T cells efficiently lysed HLA-A\*0201+, TCL1-overexpressing human lymphoma cell lines and primary lymphoma cells, but not HLA-A\*0201- control tumor cells. Adoptive transfer of TCR-transduced T cells into the tumor-engrafted mouse model lysed the tumor cells and significantly extended the survival of mice. Collectively, our data demonstrate the efficiency of TCL1-specific TCR-based immunotherapy against human B-cell lymphoma.