

Appendix

Retroviral TCR-transfer. Publications on human TCR gene transfer into T cell lines and primary T cells.

TCR-specificity	Retroviral vector	Redirected cells	Functional assays	Additional assays	Reference
Melanoma-specific antigens					
MART-1	SAMEN internal SR α	PBL selected or cloned	target cells: T2 + pep. and melanoma cell lines cytokine secretion, lysis assay	1 st TCR transfer into PBL comparison with parental clone	(Clay <i>et al.</i> , 1999)
MART-1	MSGV internal PGK or IRES	SupT1, PBL and nonreactive TIL bulk	target cells: T2 + pep (titrated) and melanoma cells cytokine secretion, lysis assay, proliferation assay and CD107a mobilisation	TCR from ACT study by Dudley <i>et al.</i> (Dudley <i>et al.</i> , 2002) comparison with parental clone	(Hughes <i>et al.</i> , 2005)
MAGE-A1	Stitch/Bullet for each chain	PBL sorted	target cells: pep. pulsed cells and melanoma cells cytokine secretion, lysis assay	ζ -chain chimeric TCR, no hybrid TCRs comparison of sc and tc TCR comparison with parental clone	(Willemssen <i>et al.</i> , 2000)
MAGE-A1	Stitch for each chain	PBL sorted	target cells: melanoma cells cytokine secretion and lysis assay	ζ -chain chimeric TCR cotransduction with CD8 α , dependence of CD4 cells on CD8 chain comparison with parental clone	(Willemssen <i>et al.</i> , 2005a)
MAGE-3	LZRS with IRES	Jurkat/MA	target cells: T2 and melanoma cells + pep. Luciferase activity		(Calogero <i>et al.</i> , 2000)
gp100	Bullet for each chain	PBL bulk	target cells: T2 + pep. and melanoma cells cytokine secretion and lysis assay	CTL isolation peptide fine specificity is TCR dependent comparison with parental clone	(Schaff <i>et al.</i> , 2003b)
gp100	Bullet for each chain	Jurkat and PBL bulk and enriched	target cells: T2 + pep. and melanoma cells Luciferase activity, cytokine secretion, lysis assay	comparison with anti-G250 CAR and anti-gp100 chimeric tcTCR cotransduction of Jurkat with CD8 and cotransfection of NFAT-Luc and lacZ	(Schaff <i>et al.</i> , 2003a)
gp100	GCsam internal PGK or IRES	SupT1, PBL and nonreactive TIL bulk	target cells: T2 + pep. and melanoma cells cytokine secretion, lysis assay	comparison IRES and internal PGK CD8 independent TCR dual specificity comparison with parental clone	(Morgan <i>et al.</i> , 2003)
Tyrosinase	SAMEN internal SR α	58 α β ⁻ bulk and cloned	target cells: T2 + pep. and melanoma cells cytokine secretion	CD8 independent TCR fine specificity function correlates with TCR expression comparison with parental clone	(Roszkowski <i>et al.</i> , 2003)
Tyrosinase	SAMEN internal SR α	Jurkat and PBL bulk and cloned	target cells: T2 + pep. and melanoma cells cytokine secretion, lysis assay	CD8 independent TCR comparison with parental clone	(Roszkowski <i>et al.</i> , 2005)
CAMEL	LZRS with IRES	Jurkat/MA bulk and cloned	target cells: T2 + pep. and melanoma cells (poorly) Luciferase activity	Impact of CD8 α chain tool for peptide screening comparison with parental clone	(Aarnoudse <i>et al.</i> , 2002)
NY-ESO-1	MSGE1 internal PGK or IRES	SupT1 and PBL of metastatic melanoma patients; bulk	target cells: T2 + pep., melanoma and nonmelanoma cell lines cytokine secretion and lysis assay	isolation of TIL comparison of IRES and internal PGK CD8 independent TCR	(Zhao <i>et al.</i> , 2005)

TCR-specificity	Retroviral vector	Redirected cells	Functional assays	Additional assays	Reference
Other tumour-specific antigens					
HA-2	LZRS for each chain	α/β^- Jurkat and PBL sorted or cloned	target cells: EBV-LCL and CML cells cytokine secretion, lysis assay, and CML growth inhibition	TIL isolation correlation of tetramer MFI and lysis chimeric receptors	(Heemskerk <i>et al.</i> , 2003)
HA-2	LZRS for each chain	CMV ^{A2} -spec PBL sorted or cloned	target cells: T2 + pep., EBV-LCL and CML cells lysis assay, CML growth inhibition	dual specificity Ag-spec. expansion comparison with parental clone	(Heemskerk <i>et al.</i> , 2004)
WT1	CS II (SIN lentivirus) internal EF-1 α and IRES	PBL bulk	target cells: LCL + pep., transduced and leukaemia samples cytokine secretion and lysis assay	CD8 independent TCR, although CD4 cells are less reactive Restimulation with allo LCL + pep.	(Tsuji <i>et al.</i> , 2005)
UTY	MX for each chain	PBL sorted	target cells: EBV-LCL of donor and patients, partially + pep. cytokine secretion, lysis assay	antigenic peptide identification comparison with parental clone showed stronger effector function of transduced PBLs	(Ivanov <i>et al.</i> , 2005)
RCC (antigen unknown)	MP71 and LX IRES	HuT78 and PBL bulk and sorted	target cells: RCC cell line cytokine secretion and lysis assay	comparison of retroviral vectors comparison with parental clone TCR expression for more than 100 days	Chapter 3
Virus-specific antigens					
HIV Gag	LHPGK LNPGK	PBL selected and cloned	target cells: LCL + pep. and HIV transfected LCL or Jurkat lysis assays	correlation of MFI and lysis in diff. clones	(Cooper <i>et al.</i> , 2000)
HIV Pol	MX for each chain or IRES	TG40/CD8 bulk and selected	target cells: C1R + pep. IL-2 secretion	one β two α -chains, of which one functional recognition of the same peptide presented by diff. HLA molecules, diff. affinities	(Ueno <i>et al.</i> , 2002)
HIV Pol	GCsam for each chain	α/β^- Jurkat and PBL sorted	target cells: 221-CD4-B*3501 + pep. or HIV infected cytokine secretion, lysis assay, and in vitro HIV replication inhibition	one β two α -chains, of which one functional comparison with parental clone	(Ueno <i>et al.</i> , 2004)
LMP-2a	SAMEN internal SR α	PBL selected	target cells: LCL or T2 + pep. cytokine secretion, lysis assay	CTL cloning unspec. restimulation (PHA)	(Orentas <i>et al.</i> , 2001)
LMP-2a	SAMEN internal SR α	PBL cloned	target cells: T2 + pep. lysis assay	steady-state lysis and lysis kinetics TCR cloning real-time PCR for TCR quantification	(Orentas <i>et al.</i> , 2003)
HPV 16E7	LZRS for each chain	JurkatMA and PBL sorted or cloned	target cells: E7 + pep. (titrated), A2 transfected SiHa Luciferase activity, cytokine secretion, lysis assay	TCR cloning comparison with parental clone	(Scholten <i>et al.</i> , 2005)