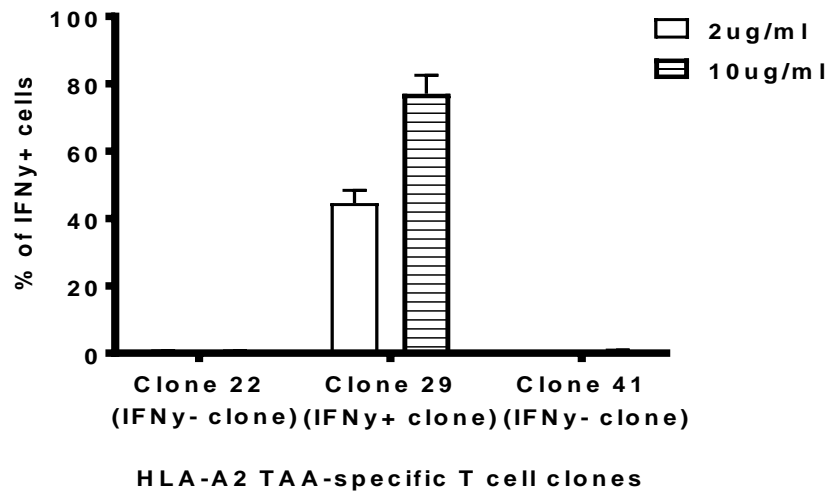
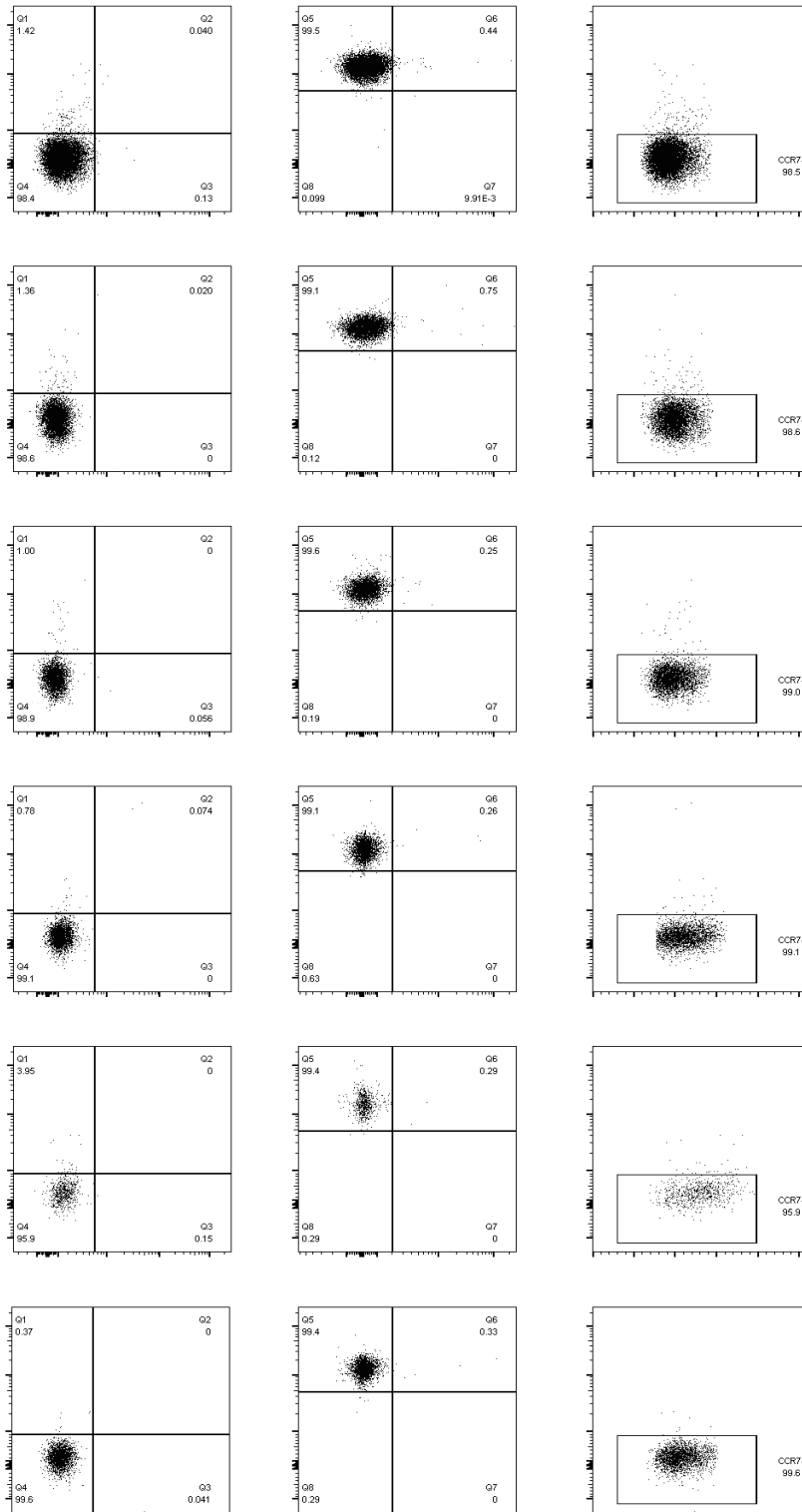


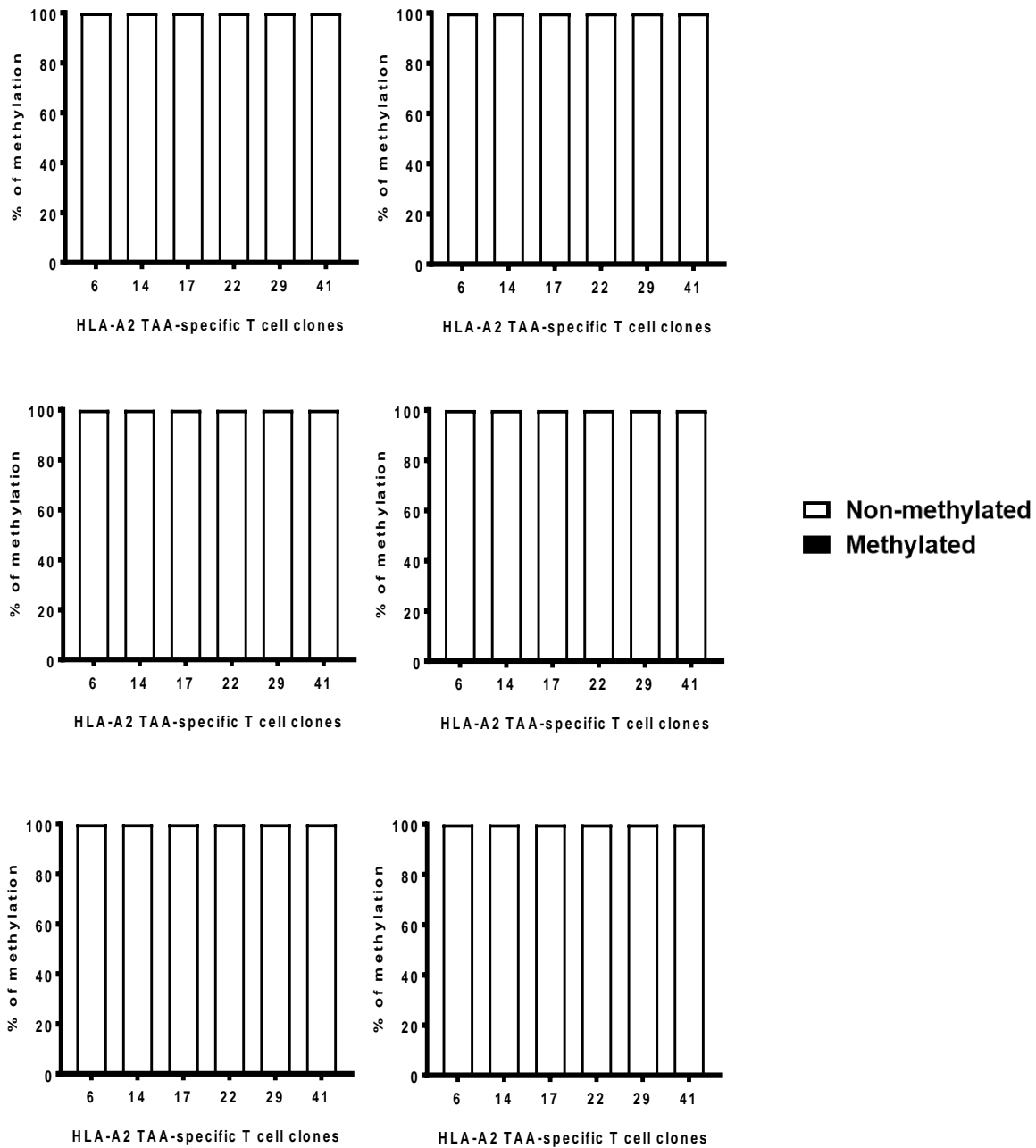
Supplementary Material



Supplementary Figure 1. Inability of T cell clone to express IFN γ at high antigen-stimulation. T cell clones 22 and 41 do not express IFN γ , even when co-cultured with 10 μ g/ml peptide-stimulated BCL. Only T cell clone 29 expresses IFN γ , at both 1 μ g/ml and 10 μ g/ml peptide-stimulated BCL. N, number of experimental repeats= 3. * represents P-value less than 0.5, analysis performed with one-way ANOVA with Tukey's multiple comparison test.



Supplementary Figure 2. Surface phenotype of SSX-2-specific T cell clones. Representative dot plots showing that all six T cell clones have surface expression of CD45RA, CD45RO, CCR7, CD27 and CD28 *in vitro*.



Supplementary Figure 3. CpG methylation of TNF α promoter. In contrast to IFN γ methylation, no presence of CPG methylation was found on each of the tumor-specific CTL clones tested.

Supplementary Table 1. The T cell receptor of the six SSX-2-specific T cell clones.

SSX-2-specific clone ID	TCR α	CDR3 (aa)	TCR β	CDR3 (aa)
Clone 6	TRAV 8-6 TRAJ 30	CAVSDQNRDDKIIFGKG	TRBV 6-1 TRBJ 2-7	CASSQGLTYGPSSYEQTFGPG
Clone 14	TRAV 8-6 TRAJ 30	CAVSDQNRDDKIIFGKG	TRBV 6-1 TRBJ 2-7	CASSQGLTYGPSSYEQTFGPG
Clone 17	TRAV 8-6 TRAJ 30	CAVSDQNRDDKIIFGKG	TRBV 6-1 TRBJ 2-7	CASSQGLTYGPSSYEQTFGPG
Clone 22	TRAV 8-6 TRAJ 30	CAVSDQNRDDKIIFGKG	TRBV 6-1 TRBJ 2-7	CASSQGLTYGPSSYEQTFGPG
Clone 29	TRAV 8-6 TRAJ 30	CAVSDQNRDDKIIFGKG	TRBV 6-1 TRBJ 2-7	CASSQGLTYGPSSYEQTFGPG
Clone 41	TRAV 8-6 TRAJ 30	CAVSDQNRDDKIIFGKG	TRBV 6-1 TRBJ 2-7	CASSQGLTYGPSSYEQTFGPG

Supplementary Table 2. PCR forward and reverse primers used to identify and sequence IFN γ gene locations containing CpG positions.

CpG position	Location	Gene sequence
1	-295	GGC <u>CG</u> AAG
2	-186	CAT <u>CG</u> TCA
3	-54	ATAC <u>CG</u> TAA
4	+122	TCT <u>CG</u> GAA
5	+128	AAAC <u>CG</u> ATG
6	+171	CAT <u>CG</u> TTT

← Reside in
transcription
factor binding site

Supplementary Table 3. HLA-restriction and antigen-restriction by each antigen-specific T cells from different cancer patients

Patient ID	T cells' HLA-restriction	Antigen specificity
8059	HLA-A2	Influenza-specific CY9 peptide (CTELKLNDY)
435	HLA-A2	SSX2 ₄₁₋₄₉ KV9 peptide (KASEKIFYV)
N002	HLA-A2	NY-ESO-1 ₁₅₇₋₁₆₅ SC9 peptide (SLLMWITQC)
C012	HLA-A2	NY-ESO-1 ₁₅₇₋₁₆₅ SC9 peptide (SLLMWITQC)
LUD0020	HLA-A2	NY-ESO-1 ₁₅₇₋₁₆₅ SC9 peptide (SLLMWITQC)
272762	HLA-A2	CMV-specific pp65 ₄₉₅₋₅₀₃ peptide (NVLPMVATV)
274364	HLA-A2	CMV-specific pp65 ₄₉₅₋₅₀₃ peptide (NVLPMVATV)