Table S1 Prediction scores of the peptide derived from PL2L60 and its analogues.

Peptide	Sequence	Scores			
		BIMAS	NetCTL	SYFPEITHI	IEDB
P42	MLLKGEILL	134.369	1.1977	24	39.4
P49	LLLPELSFM	395.296	1.1088	24	29.0
P56	FMTGIPEKM	8.087	1.0595	16	139.0
P274	ILLQINCKL	134.369	1.1108	26	151.4
P281	KLGGELWGV	4199.202	1.3157	28	5.7
P317	FVASINLTL		1.3077	20	32.2
P400	YQPKMVVFV	410.344	1.1357	18	25.0
P418	YLAAPQNFV	1759.666	1.2931	26	3.0
P522	QLCENLFFL	6426.173	1.2191	26	10.7
COX-2_P321	ILIGETIKI	17.736	1.2064	28	

Table S2　The data of ESI-MS and the HLA-A*0201 binding affinity and stability of the candidate peptides.

Peptides	ESI–MS $[M+H]^+$		FI[a]	DC 50[b]
	Calculated	Observed		
P42	1029.4	1029.7	1.23	>4 h
P49	1062.3	1060.4	0.22	nd[c]
P56	1053.3	1053.6	0.065	nd[c]
P274	1057.4	1057.8	-0.19	nd[c]
P281	958.1	958.3	2.42	>4 h
P317	977.1	977.6	0.26	nd[c]
P400	1110.4	1110.3	0.24	nd[c]
P418	1022.2	1022.7	0.2	nd[c]
P522	1126.3	1126.3	0.07	nd[c]
COX-2_P321	999.6	1000.3	1.18	>4 h
HBcAg$_{18-27}$	1155.3	1155.6	1.2	>6 h

[a] FI = [mean fluorescence intensity (MFI) of the peptide−MFI background]/ [MFI background].

[b] DC_{50} was defined as the time (h) required for 50% dissociation of the HLA-A*0201/ peptide complex stabilized at t=0 h.
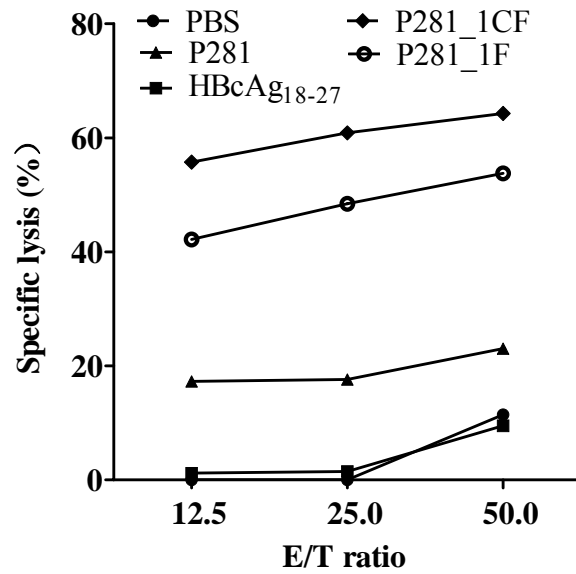
[c] Not determined.

Fig. S1 Cytotoxicity assay evaluated by using the CFSE fluorescent-based dye. The CTLs induced by each peptide from human PBMCs were used as effector cells. T2 cells were used as control target cells and MCF-7 cells as sensitive target cells. Acquisition was performed using a FACS can analyzer with CellQuest software. The percentage of specific lysis was calculated as follows: % specific lysis = [(number of sensitive target cells in control sample − number of sensitive target cells in test sample / number of sensitive target cells in control sample)] × 100.
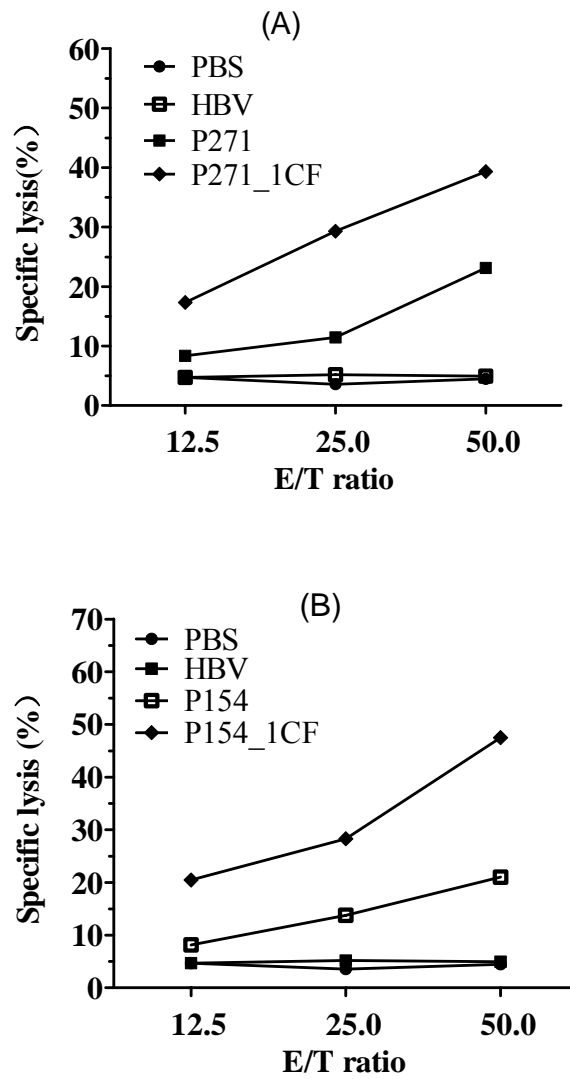
Fig. S2 The cytotoxic activity of the CTLs induced by (A) P271 (MAGE-3) and its 4-Cl-Phe substituted analogue, or (B) P154 (gp100) and its 4-Cl-Phe substituted analogue. HLA-A2 positive MCF-7 cells (MAGE-3$^+$, gp100$^+$) were used as target cells.