

Supplemental Table 1 Summary of NY-ESO-1 Immune responses

Patient ID	Clinical status		Ab responses		CD4 ⁺ T Cell responses		CD8 ⁺ T cell responses	
	wk12	wk24	Pre-therapy	Post-therapy	Pre-therapy	Post-therapy	Pre-therapy	Post-therapy
09-079-1	PD	PR	-	+++	-	+++ (5)	-	+++ (2)
09-079-7	PD	PD	++	+++	-	++ (2)	-	-
09-079-10	PD	SD	+++	++++	+ (2)	+++ (6)	+ (1)	+ (1)
09-079-17	PD	SD	++++	++++	+++ (6)	+++ (6)	+ (1)	++ (2)

Antibody responses: reciprocal extrapolated titer: -, <10²; +, 10²-10³; ++ 10³-10⁴; +++, >10⁴-10⁵; +++++, >10⁵-10⁶

T cell responses: % CD4⁺IFN γ ⁺ T cells -, <0.1% or less than 3x of negative control; +, 0.1-0.5%; ++, 0.5-5%; +++, >5%. The total number of NY-ESO-1 individual peptide recognition by ELISPOT is shown in parenthesis.

Supplemental Figure 1 NY-ESO-1 antigen-specific CD4⁺ T cell lines were CD8 negative.

Purified CD4⁺ T cells from four patients after ipilimumab treatment were cultured for 20 days after pre-sensitization with NY-ESO-1 overlapping peptides. NY-ESO-1 single peptide-specific CD4⁺ T cell lines were isolated by CD40L sorting after 6 hours *in vitro* restimulation (**A**). CD8 staining was performed on these CD4⁺ sorted T cells. There were no contaminating CD8⁺ T cells after CD40L sorting (**B**). NY-ESO-1-specific CD4⁺ T cell lines were stained for CD8 and did not co-express CD8 after re-stimulation in the ICS assay (**C**).