

Figure S1. Correlation between the overall survival and pre-vaccination (A) c-reactive protein levels, (B) neutrophil numbers or (C) lymphocyte numbers in each of the 309 patients. The OS is individually presented for the group that completed the first cycle of PPV (blue line) and the group that did not (red line). PPV, personalized peptide vaccination.

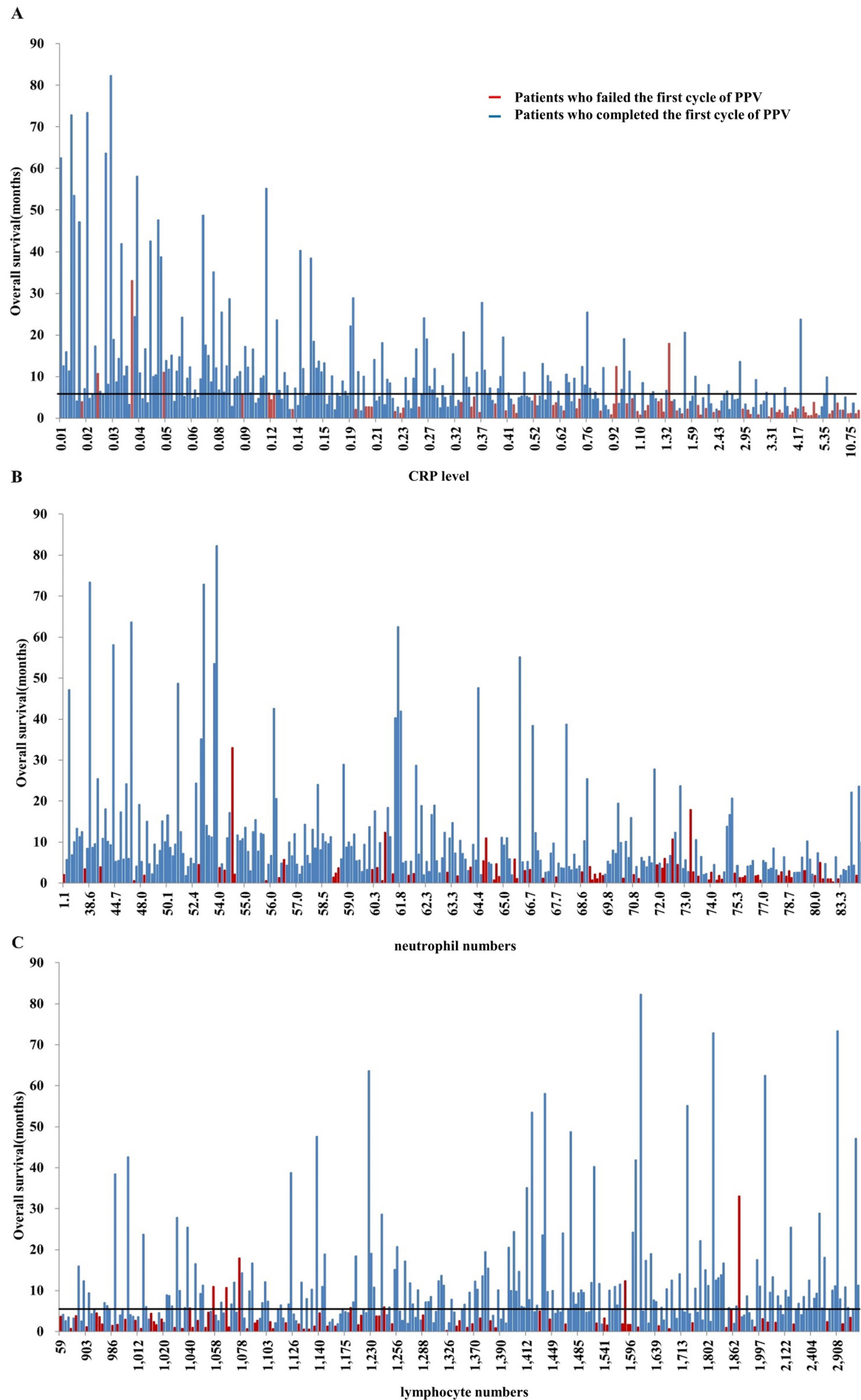


Figure S2. Correlation between the overall survival and the IgG levels of the vaccinated peptides in each of the 228 patients who completed at least the 1st cycle of the vaccination. PPV, personalized peptide vaccination; FIU, fluorescence intensity unit.

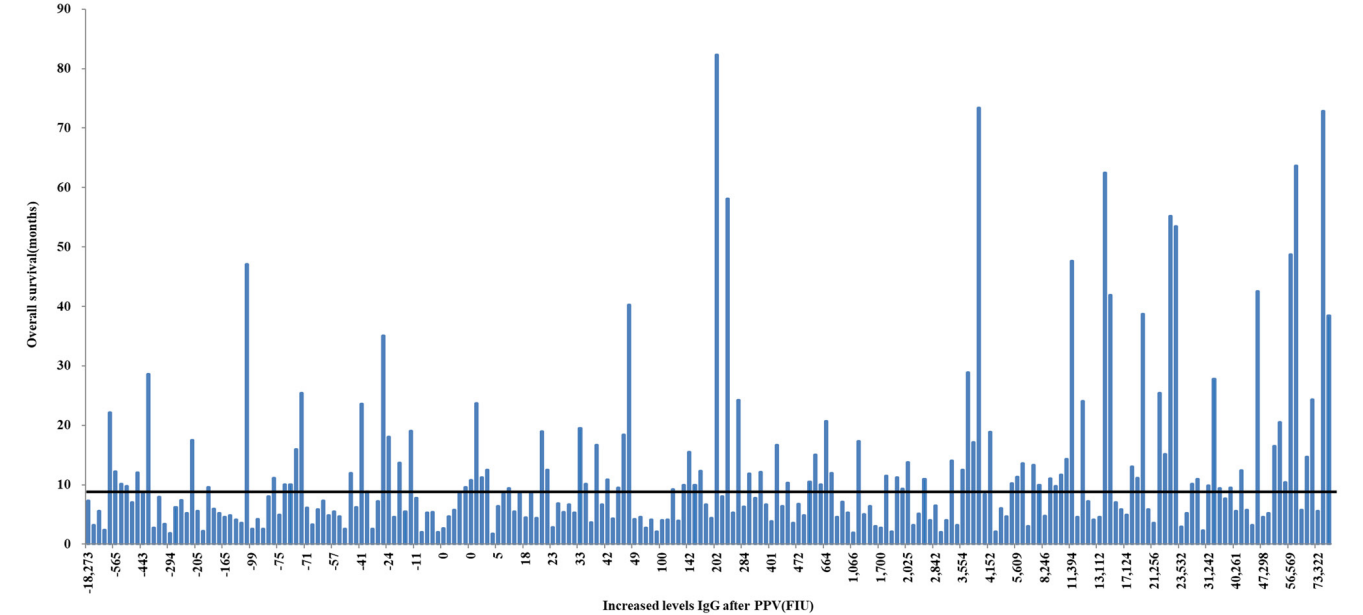


Table SI. Peptide candidates used for personalized peptide vaccination.

Peptide name	Original protein	Position	Sequence	HLA-IA restriction
CypB-129	Cyclophilin B	129-138	KLKHYGPGWV	A2/A3 supertype ^a
Lck-246	p56 lck	246-254	KLVERLGAA	A2
Lck-422	p56 lck	422-430	DVWSFGILL	A2/A3 supertype ^a
ppMAPkkk-432	ppMAPkkk	432-440	DLLSHAFFA	A2/A26
WHSC2-103	WHSC2	103-111	ASLDSDPWV	A2/A26/A3 supertype ^a
HNRPL-501	HNRPL	501-510	NVLHFFNAPL	A2/A26
UBE2V-43	UBE2V	43-51	RLQEWCSVI	A2
UBE2V-85	UBE2V	85-93	LIADFLSGL	A2
WHSC2-141	WHSC2	141-149	ILGELREKV	A2
HNRPL-140	HNRPL	140-148	ALVEFEDVL	A2
SART3-302	SART3	302-310	LLQAEAPRL	A2
SART3-309	SART3	309-317	RLAEYQAYI	A2
SART2-93	SART2	93-101	DYSARWNEI	A24
SART3-109	SART3	109-118	VYDYNCHVDL	A24/A24/A3 supertype ^a
Lck-208	p56 lck	208-216	HYTNASDGL	A24
PAP-213	PAP	213-221	LYCESVHNF	A24
PSA-248	PSA	248-257	HYRKWIKDTI	A24
EGF-R-800	EGF-R	800-809	DYVREHKDNI	A24
MRP3-503	MRP3	503-511	LYAWEPSFL	A24
MRP3-1293	MRP3	1293-1302	NYSVRYRPGL	A24
SART2-161	SART2	161-169	AYDFLYNYL	A24
Lck-486	p56 lck	486-494	TFDYLRSVL	A24
Lck-488	p56 lck	488-497	DYLRSVLEDF	A24
PSMA-624	PSMA	624-632	TYSVSFDSL	A24
EZH2-735	EZH2	735-743	KYVGIEREM	A24
PTHrP-102	PTHrP	102-111	RYLTQETNKV	A24
SART3-511	SART3	511-519	WLEYYNLER	A3 supertype ^a
SART3-734	SART3	734-742	QIRPIFSNR	A3 supertype ^a
Lck-90	p56 lck	90-99	ILEQSGEWWK	A3 supertype ^a
Lck-449	p56 lck	449-458	VIQNLERGYR	A3 supertype ^a
PAP-248	PAP	248-257	GIHKQKEKSR	A3 supertype ^a

^aHLA-A3 supertype included -A3, -A11, -A31 and -A33. HLA, human leukocyte antigen.

Table SII. Adverse events during PPV.

System organ class	PPV treatment					Number of events
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
CTCAE Term						
All	1,018	555	190	14	0	1,777
General disorders and administration site conditions						
Injection site reaction	403	55	8	0	0	466
Edema face	1	1	0	0	0	2
Edema limbs	17	14	2	0	0	33
Malaise	9	11	1	0	0	21
Pain	5	15	2	0	0	22
Fever	24	12	4	0	0	40
Chills	1	0	0	0	0	1
Gait disturbance	1	0	0	0	0	1
Gastrointestinal disorders						
Gastritis	0	1	0	0	0	1
Gastric hemorrhage	0	1	0	0	0	1
Gastroesophageal reflux disease	0	2	0	0	0	2
Ileus	0	0	1	0	0	1
Nausea	6	3	1	0	0	10
Colonic obstruction	0	0	0	1	0	1
Diarrhea	10	13	1	0	0	24
Duodenal obstruction	0	1	2	0	0	3
Upper gastrointestinal hemorrhage	0	0	2	0	0	2
Ascites	2	10	7	0	0	19
Abdominal pain	7	5	0	0	0	12
Bloating	2	3	0	0	0	5
Constipation	1	15	2	0	0	18
Lower gastrointestinal hemorrhage	0	1	0	0	0	1
Duodenal perforation	0	0	0	1	0	1
Esophageal varices hemorrhage	0	0	2	0	0	2
Pancreatic necrosis	0	0	1	0	0	1
Vomiting	0	3	0	0	0	3
Mucositis oral	2	4	1	0	0	7
Hemorrhoids	0	1	0	0	0	1
Gingival pain	1	0	0	0	0	1
Infections and infestations						
Hepatic infection	0	0	1	0	0	1
Tracheitis	0	1	0	0	0	1
Renal infection	0	0	1	0	0	1
Wound infection	0	0	1	0	0	1
Biliary tract infection	0	2	7	0	0	9
Bladder infection	0	1	0	0	0	1
Gum infection	0	1	0	0	0	1
Peripheral nerve infection	0	1	1	0	0	2
Hepatobiliary disorders						
Hepatobiliary disorders-Other, Liver dysfunction	0	1	0	0	0	1
Hepatobiliary disorders-Other, Ammonia brain tumor	0	0	1	0	0	1
Bile duct stenosis	0	1	0	0	0	1
Musculoskeletal and connective tissue disorder						
Arthralgia	1	1	0	0	0	2
Musculoskeletal and connective tissue disorder-Other, Lumbar contusion	0	1	0	0	0	1
Myalgia	2	0	0	0	0	2
Back pain	3	2	1	0	0	6
Bone pain	0	0	1	0	0	1
Osteoporosis	0	1	0	0	0	1
Blood and lymphatic system disorders						
Anemia	38	64	21	4	0	127

Table SII. Continued.

System organ class	PPV treatment					Number of events
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
Vascular disorders						
Thromboembolic event	1	1	4	0	0	6
Hypertension	0	0	2	0	0	2
Respiratory, thoracic and mediastinal disorders						
Pleural effusion	3	3	1	0	0	7
Dyspnea	0	3	0	0	0	3
Hoarseness	1	0	0	0	0	1
Pneumonitis	0	3	3	0	0	6
Cough	0	2	0	0	0	2
Injury, poisoning and procedural complications						
Fracture	0	2	0	0	0	2
Renal and urinary disorders						
Cystitis noninfective	1	0	0	0	0	1
Renal and urinary disorders-Other, Urinary calculi	1	2	0	0	0	3
Nervous system disorders						
Depressed level of consciousness	0	2	0	0	0	2
Headache	0	1	0	0	0	1
Stroke	0	0	2	0	0	2
Dizziness	1	0	0	0	0	1
Peripheral sensory neuropathy	8	6	0	0	0	14
Dysgeusia	7	4	0	0	0	11
Cardiac disorders						
Supraventricular tachycardia	0	1	0	0	0	1
Psychiatric disorders						
Depression	0	1	0	0	0	1
Agitation	0	1	0	0	0	1
Insomnia	3	11	0	0	0	14
Anxiety	0	1	0	0	0	1
Metabolism and nutrition disorders						
Hyperkalemia	8	5	1	0	0	14
Hypercalcemia	0	0	1	1	0	2
Hyperglycemia	9	5	1	0	0	15
Hypertriglyceridemia	2	0	0	0	0	2
Hyperuricemia	1	0	0	0	0	1
Hypoalbuminemia	77	26	3	0	0	106
Hypokalemia	6	2	0	0	0	8
Hypocalcemia	4	1	0	0	0	5
Hypoglycemia	0	0	1	0	0	1
Hyponatremia	30	1	4	0	0	35
Anorexia	14	29	7	0	0	50
Glucose intolerance	0	5	7	0	0	12
Dehydration	0	0	1	0	0	1
Endocrine disorders						
Hypothyroidism	0	1	0	0	0	1
Skin and subcutaneous tissue disorders						
Rash acneiform	2	0	0	0	0	2
Purpura	6	0	0	0	0	6
Urticaria	1	0	0	0	0	1
Pruritus	0	2	0	0	0	2
Erythema multiforme	1	0	0	0	0	1
Nail loss	1	0	0	0	0	1
Skin ulceration	0	0	1	0	0	1
Skin hyperpigmentation	9	0	0	0	0	9
Bullous dermatitis	0	1	0	0	0	1
Alopecia	3	4	0	0	0	7

Table SII. Continued.

System organ class	PPV treatment					Number of events
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
Skin and subcutaneous tissue disorders-Other, Redness swelling of the pubic bone surrounding skin	0	1	0	0	0	1
Ear and labyrinth disorders Tinnitus	0	1	0	0	0	1
Eye disorders Eye disorders-Other, Diplopia	1	0	0	0	0	1
Watery eyes	1	0	0	0	0	1
Immune system disorders Autoimmune disorder	0	1	0	0	0	1
Neoplasms benign, malignant and unspecified Tumor pain	3	17	4	0	0	24
Neoplasms benign and malignant	0	0	0	1	0	1
Investigations ALP increased	32	21	3	0	0	56
ALT increased	39	14	4	0	0	57
AST increased	45	15	2	0	0	62
GGT increased	18	28	24	3	0	73
INR increased	4	0	1	0	0	5
Creatinine increased	7	1	0	0	0	8
Serum amylase increased	1	1	2	0	0	4
Neutrophil count decreased	2	6	7	1	0	16
Cholesterol high	7	0	0	0	0	7
Leukopenia	27	16	5	2	0	50
Investigations-Other, BUN increase	1	0	0	0	0	1
Investigation-Other, CRP-increased	3	6	0	0	0	9
Investigations-Other, LDH increased	3	0	0	0	0	3
Investigation-Other, Total cholesterol lowering	2	0	0	0	0	2
Investigations-Other, Total protein decreased	2	0	0	0	0	2
Lymphopenia	40	34	20	0	0	94
Thrombocytopenia	35	8	2	0	0	45
Bilirubin increased	8	10	3	0	0	21
Respiratory, thoracic and mediastinal disorders Hypoxia	0	1	2	0	0	3
Renal and urinary disorders Urinary tract pain	1	0	0	0	0	1

CRP, c-reactive protein; CACTE, Common Terminology Criteria for Adverse Events; ALT, alanine aminotransferase; ALP, alkaline phosphatase; AST, aspartate transaminase; GGT, γ -glutamyltransferase; INR, international normalized ratio; BUN, blood urea nitrogen; LDH, lactate dehydrogenase.