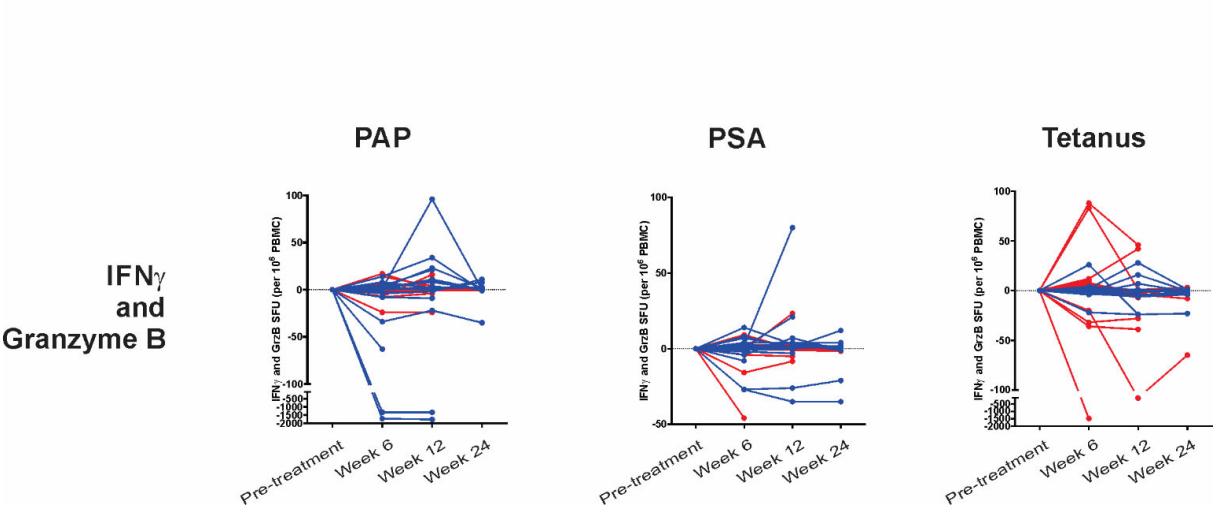
		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Endocrine						
	Adrenal insufficiency			2		
	Hyperthyroidism / decreased TSH	7	7	1		
	Hypothyroidism / increased TSH	1	13			
Gastrointestinal						
	Abdominal pain	1	1	1		
	Colitis		1	3		
	Diarrhea	9	2	4		
	Hepatitis			1		
	Nausea	7	3			
	Pancreatitis			1		
	Vomiting	3		1		
General						
	Chills	11				
	Injection site reaction	19				
	Infusion related reaction		3			
	Multi-organ failure					1
	Weight gain	1	1			
Lab investigations						
	Increased AST	3	1	2		
	Increased amylase	1	1	1		
Metabolism and Nutrition						
	Anorexia	5				
	Hyperglycemia	1	1		1	
Musculoskeletal and Connective Tissue						
	Arthralgias / arthritis	6	1			
	Back pain	1	2	1		
	Bone pain	2		1		
	Muscle weakness	1	1	1		
	Myalgia	5	2			
Nervous System						
	Dizziness	4	1			
	Headache	6				
	Syncope			1		
Respiratory, Thoracic						
	Cough	6				
	Hypoxia			1		
Skin and Subcutaneous						
	Pruritus	3		1		
	Rash maculo-papular	4	1	1		
Vascular						
	Thromboembolic event (pulmonary embolism)			1		

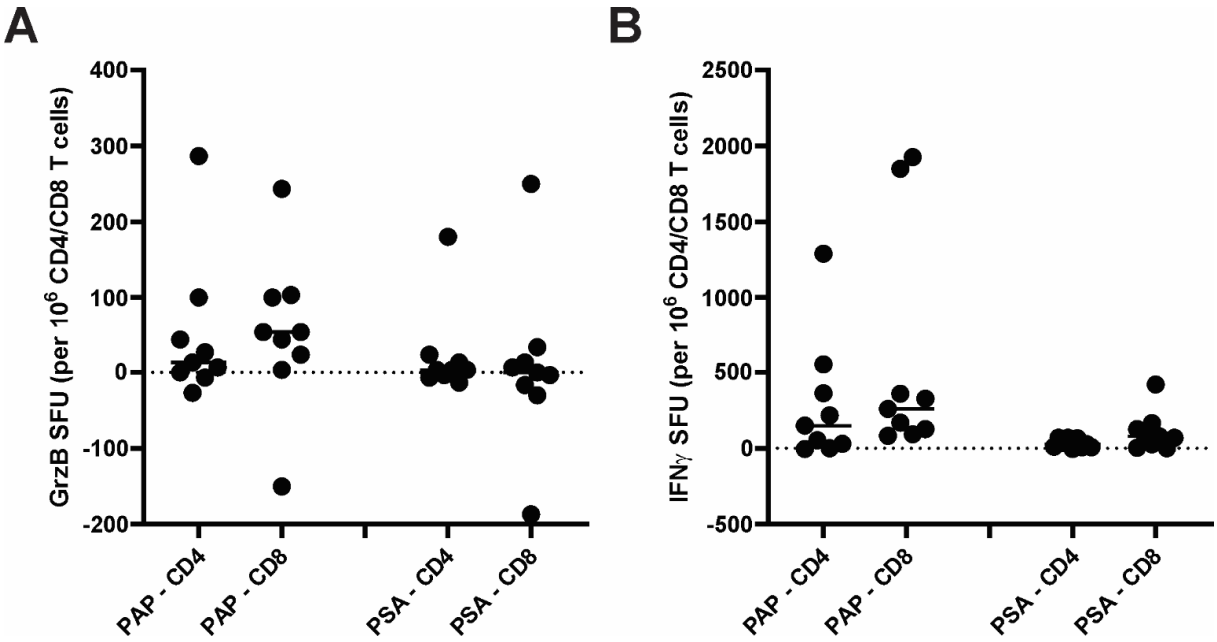
Supplemental Table 1: Adverse Events for All Study Patients. All adverse events with a frequency >5%, and any adverse events with grade > grade 2, that were believed to be at least possibly related to treatment, are shown for all trial arms. The numbers represent the number of patients experiencing a particular event at any point during the treatment period, with the highest grade reported for any single individual.

Subject ID	MSI^{hi} or HRR mutation	Best PSA change from baseline (%)	rPFS (months)	Time on trial (months)
30005 (Arm 3)	MSI^{hi} and MSH3	-90.1	11.0	11.3
40011 (Arm 4)	MSI^{hi}	38.2	5.3	8.2
20002 (Arm 2)	ATM	(not evaluable)	5.5	5.5
20012 (Arm 2)	ATM	22.5	0	2.5
30007 (Arm 3)	BRCA1	5.5	5.4	5.9
30008 (Arm 3)	FANCA, MLH3	32.4	2.5	3.4
30014 (Arm 3)	BRCA1	-38.0	2.6	3.0
30017 (Arm 3)	MSH2, MLH1	52.5	2.6	3.7
30018 (Arm 3)	MSH6	65.2	2.8	4.0
40009 (Arm 4)	BRCA2	24.2	1.4	1.4
40014 (Arm 4)	BRCA1	41.7	2.5	2.8

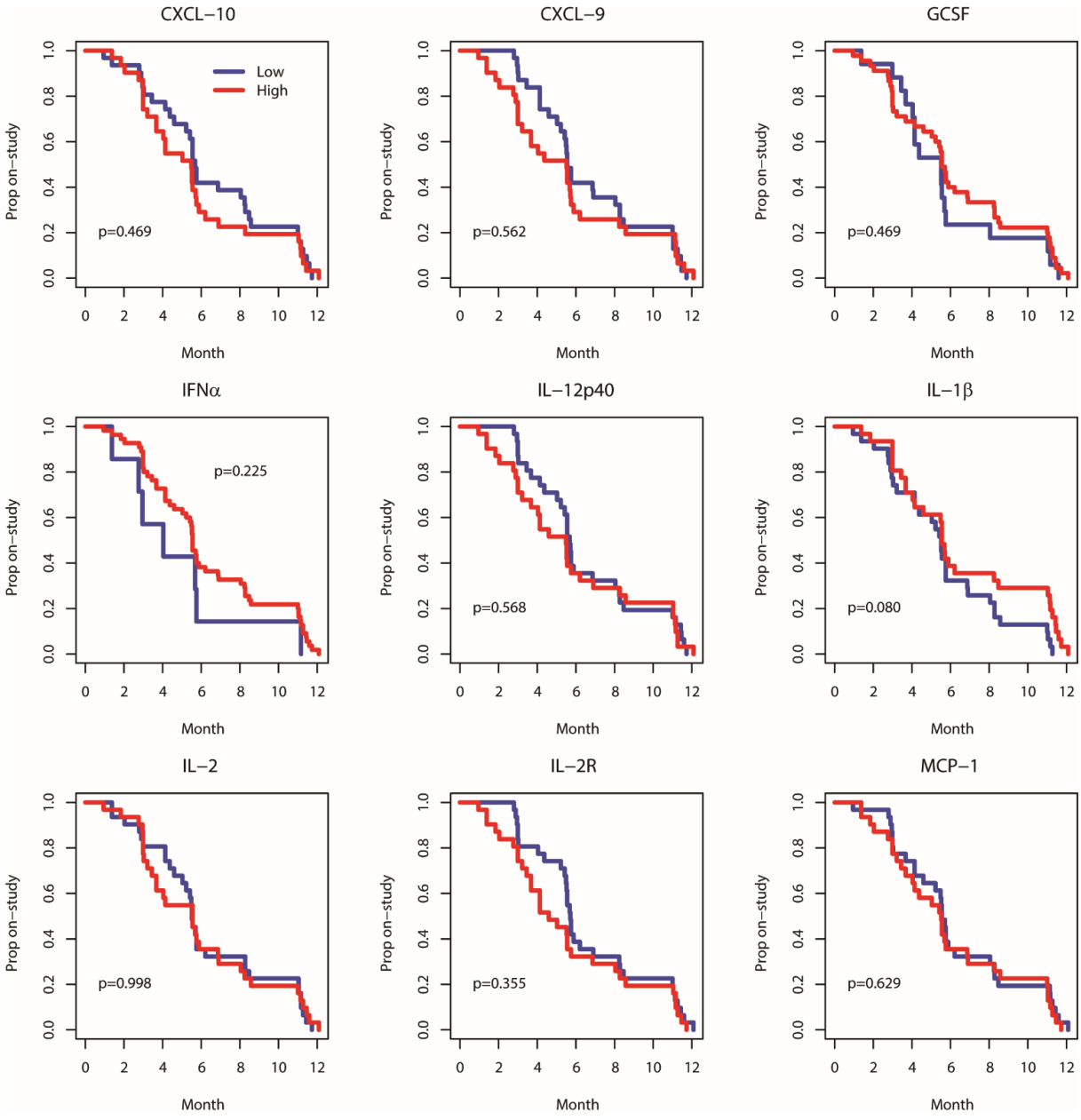
Supplemental Table 2: HRR mutations and patient outcomes. Pre-treatment plasma was available for 61/66 patients and evaluated for HRR mutations or MSI^{hi} tumor status by cfDNA testing (Tempus). Shown are the specific mutations and outcomes (best % PSA change from baseline, rPFS, and time on trial) for patients with identified mutations.



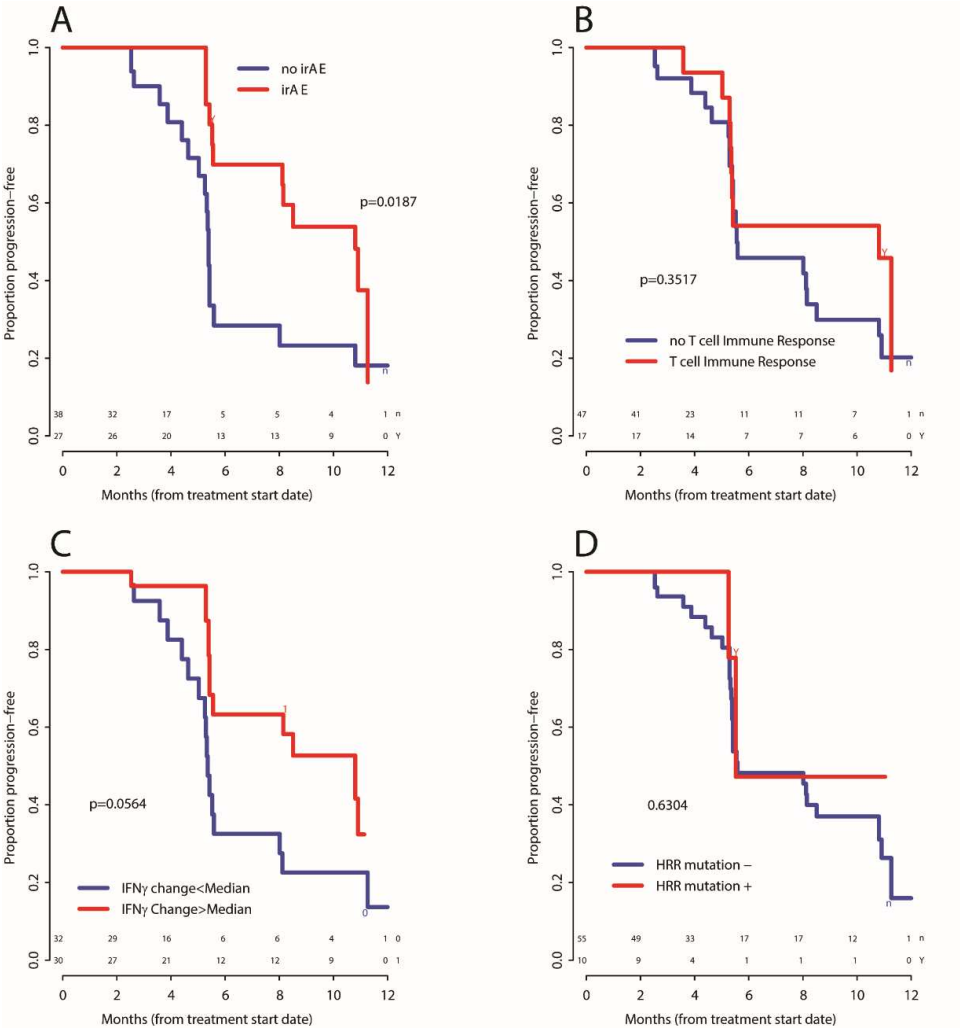
Supplemental Figure 1: Immunological response - IFNγ and Granzyme B fluorescent ELISPOT. Peripheral blood mononuclear cells were collected from subjects at baseline, 6 weeks, 12 weeks, and 24 weeks and evaluated for antigen-specific secretion of both IFNγ and granzyme B by fluorescent ELISPOT. Shown are the spot-forming units (SFU) following stimulation with a PAP peptide library, PSA peptide library (non-specific control), or tetanus (positive control) for each patient. Patients treated in Arm 3 are colored red, and patients treated in Arm 4 are colored blue.



Supplemental Figure 2: Immunological response - IFNγ and Granzyme B fluorescent ELISPOT. Cryopreserved peripheral blood mononuclear cells collected from 9 subjects after 24 weeks of treatment were separated into CD4, CD8 and CD14 cells by magnetic selection. CD4 or CD8 T cells were cultured with CD14 cells at a 10:1 ratio in the presence of PAP or PSA peptide libraries for 48 hours, and evaluated for granzyme B (panel A) or IFNγ (panel B) secretion by ELISPOT. Shown are the spot-forming units (SFU) for each condition, with background (media only, no peptide library) subtracted from each.



Supplemental Figure 3: Association of changes in cytokines with time on trial. Time on trial was assessed with respect to changes in CXCL-10, CXCL-9, G-CSF, IFNα, IL-12p40, IL-1ß, IL-2, IL-2R, and MCP-1. For each panel, time on trial is plotted with respect to changes greater (red) or less than (blue) the median for each patient. No statistically significant differences were observed (log-rank test).



Supplemental Figure 4: Radiographic progression-free survival correlative analyses. Radiographic progression-free survival was assessed with respect to the development of grade 2 or higher immune-related adverse events (panel A), T-cell immune response to PAP (panel B), increases in serum IFNγ (panel C), and the presence of baseline HRR mutations (panel D). Statistical comparisons are made using a log-rank test, with $p<0.05$ considered statistically significant.