Supplementary table 1a

Patient baseline characteristics, Cohort A (n=30)					
Patient ID	**Previous treatment**	**M-stage**	**PD-L1 status**	**BRAF status**	**LDH elevation (yes/no)**
MM1636.01	None	M1c	<1%	Wildtype	Yes
MM1636.02	None	M1a	<1%	Mutated	Yes
MM1636.03	None	M1c	>1%	Mutated	Yes
MM1636.04	1. line ipilimumab	M1b	<1%	Wildtype	No
MM1636.05	None	M1c	>1%	Wildtype	Yes
MM1636.06	Adjuvant ipilimumab	M1a	>1%	Mutated	No
MM1636.07	None	M1a	>1%	Wildtype	No
MM1636.08	1. line ipilimumab	M1c	<1%	Wildtype	Yes
MM1636.09	None	M1c	<1%	Wildtype	No
MM1636.10	None	M1c	>1%	Mutated	No
MM1636.11	None	M1a	<1%	Mutated	No
MM1636.12	None	M1a	>1%	Mutated	No
MM1636.13	None	M1c	>1%	Wildtype	Yes
MM1636.14	None	M1c	<1%	Mutated	No
MM1636.15	None	M1c	<1%	Wildtype	Yes
MM1636.16	None	M1c	> 1%	Mutated	No
MM1636.17	None	M1b	> 1%	Wildtype	No
MM1636.18	None	M1b	< 1%	Wildtype	No
MM1636.20	None	M1c	< 1%	Mutated	No
MM1636.22	None	M1b	>1%	Wildtype	No
MM1636.23	None	M1c	<1%	Wildtype	No
MM1636.24	None	M1c	>1%	Wildtype	No
MM1636.27	None	M1c	>1%	Mutated	No
MM1636.29	None	M1b	> 1%	Wildtype	No
MM1636.34	None	M1c	< 1%	Wildtype	Yes
MM1636.35	None	M1c	> 1%	Wildtype	Yes
MM1636.37	None	M1a	<1%	Mutated	No
MM1636.38	None	M1a	>1%	Wildtype	Yes
MM1636.39	None	M1b	>1%	Wildtype	No
MM1636.42	None	M1c	>1%	Wildtype	Yes

Supplementary table 1b

Sub-group information, Cohort A (n=30)						
Characteristic - no.	**M1a+b** (n=13)	**M1c** (n=17)	**PD-L1 >1%** (n=17)	**PD-L1 <1%** (n=13)	**LDH non-elevated** (n=19)	**LDH elevated** (n=11)
Previous treatment						
None	11	16	16	11	17	10
1. line ipilimumab	1	1	0	2	1	1
Adjuvant ipilimumab	1	0	1	0	1	0
BRAF status						
Mutated	5	6	6	5	9	2
Wildtype	8	11	11	8	10	9
LDH status						
Elevated	2	9	6	5		
Non-elevated	11	8	11	8		
PD-L1 status						
<1%	5	8			8	5
>1%	8	9			11	6
M stage						
M1a+b			8	5	8	2
M1c			9	8	11	9

Supplementary table 2

Detailed treatment information, Cohort A (n=30)						
Patient ID	BOR	vaccines series	Number nivolumab series (3mg/kg)	Number nivolumab series (6 mg/kg)	Reason to stop treatment	Subsequent treatment
MM1636.01	CR	15	24	5	Grade 3 rash	
MM1636.02	PD	5	5		Progression	Dabrafenib/Trametinib
MM1636.03	CR	15	24	9	Maximum benefit	None
MM1636.04	PD	5	5		Progression	Radiotherapy, Temodal
MM1636.05	CR	13	21		Grade 2 pneumonitis	None
MM1636.06	CR	15	24	9	Progression	Dabrafenib/Trametinib
MM1636.07	CR	8	12	2	Grade 2 pneumonitis	Reinduction Nivolumab
MM1636.08	PR	11	16		Progression	Ipilimumab, Radiotherapy
MM1636.09	PD	5	5		Progression	None
MM1636.10	PR	15	24	7	Progression	Encorafenib/Binimetinib
MM1636.11	PD	3	3		Progression	Dabrafenib/Trametinib, Ipilimumab
MM1636.12	CR	15	24	8	Maximum benefit	None
MM1636.13	PR	15	24	13	Reached 2 years of treatment	None
MM1636.14	CR	11	16		Grade 2 colitis	None
MM1636.15	PR	15	24	11	Reached 2 years of treatment	None
MM1636.16	PR	9	12		Progression	T cell therapy CT ID: NCT02278887
MM1636.17	PD	6	6		Progression	None
MM1636.18	CR	5	5		Grade 5 toxicity due to nivolumab	None
MM1636.20	CR	11	18	2	Maximum benefit	None
MM1636.22	CR	15	24	1	Grade 3 arthralgia	None
MM1636.23	CR	15	24	3	Maximum benefit	None
MM1636.24	CR	15	24		Maximum benefit	None
MM1636.27	CR	15	24	3	Maximum benefit	Encorafenib/Binimetinib
MM1636.29	PR	15	24	4	Apoplexia and Grade 3 hepatitis	Pembrolizumab
MM1636.34	PD	3	3		Progression	None
MM1636.35	PR	15	24	10	Reached 2 years of treatment	None
MM1636.37	PR	7	8		Progression	Encorafenib/Binimetinib
MM1636.38	CR	14	23		Maximum benefit	
MM1636.39	CR	13	19		Grade 2 dermatitis	
MM1636.42	PR	15	24	9	Reached 1,5 years of treatment	

Supplementary table 3

Immune-related adverse events, Cohort A (n=30)				
	Grade 1-2	%	**Grade 3-4**	%
Vaccine related				
Granuloma (injection site)	20	67%		
Injection site reactions	23	77%		
Redness (injection site)	7	23%		
Pruritus (injection site)	4	13%		
Pain (injection site)	4	13%		
Myalgia (injection site)	1	3%		
Respiratory				
Pneumonitis	4	13%		
Pleural effusion	1	3%		
Dyspnoea	7	23%		
Gastrointestinal				
Diarrhoea	9	30%	1	3%
Constipation	2	7%		
Abdominal pain	4	13%		
Colitis	2	7%	1	3%
Musculoskeletal				
Arthralgia	9	30%	2	7%
Myalgia	5	17%		
Endocrinal				
Adrenal insufficiency	2	7%	1	3%
Hypophysitis	2	7%		
Hypothyroidism	1	3%		
Hyperthyroidism	2	7%		
Skin				
Dry skin	8	27%		
Rash	14	47%	2	7%
Vitiligo	4	13%		
Pruritus	8	27%		
Vasculitis	1	3%		
Laboratory tests				
Increase ALAT	4	13%		
Increased amylase	6	20%		
Hyponatremia			1	3%
Other				
Infusion reaction	5	17%		
Fatigue	17	47%		
Xerostomia	5	17%		
Nausea	8	27%		
Stomatitis	2	7%		
Periorbital oedema	1	3%		
Nasal congestion	2	7%		
Peripheral neuropathy	1	3%		
Dry eyes	1	3%		
Hearing impaired	1	3%		

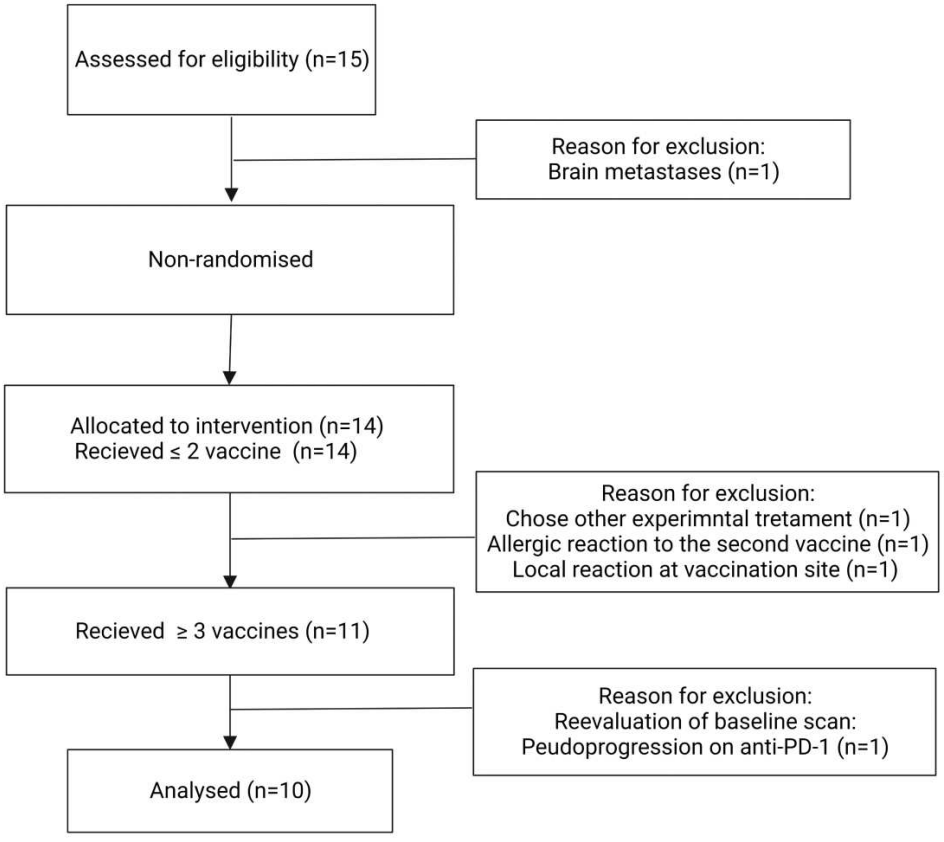
Supplementary table 4

Detailed patient baseline characteristics, Cohort B (n=10)					
Patient ID	**M-stage**	**Metastatic sites at baseline**	**LDH (U/L)**	**BRAF status**	**PD-L1 status**
MM1636.21	M1b	lungs, pleura	202	Wild-type	< 1%
MM1636.26	M1a	subcutis, intramuscular, cutis, toe	187	Wild-type	< 1%
MM1636.30	M1c	lungs, lymph nodes, subcutis, pancreas, spleen, liver, kidney, peritoneum, bones	324	Wild-type	?
MM1636.31	M1b	lungs	156	Wild-type	< 1%
MM1636.32	M1a	subcutis, cutis	159	Wild-type	< 1%
MM1636.33	M1c	adrenal glands, lungs	216	Wild-type	> 1%
MM1636.41	M1b	lung, muscle, subcutis	162	Wild-type	?
MM1636.47	M1a	lymph nodes	169	Wild-type	> 1%
MM1636.48	M1a	subcutis, lymph nodes	160	Wild-type	< 1%
MM1636.49	M1b	lungs	167	Wild-type	> 1%

Supplementary table 5

Treatment details, Cohort B (n=10)							
Patient ID	BOR	Nivolumab cycles (3mg/kg)	Nivolumab cycles (6mg/kg)	Vaccines	Rational for stopping treatment	Prior treatment	Subsequent treatment
MM1636.21	PD	6		6	PD	Pembrolizumab (7 cycles)	Ipilimumab
MM1636.26	PD	6		6	PD	Nivolumab (5 cycles)	Ipilimumab
MM1636.30	PD	4		4	PD	Ipilimumab (4 cycles), Pembrolizumab (16 cycles), IL-2 (4 cycles) Temozolomide (6 cycles)	None
MM1636.31	PD	6		6	PD	Pembrolizumab (16 cycles)	Ipilimumab, Phase I Robust trial, BP41628, PD1-IL2v. Temozolomide
MM1636.32	PD	6		6	PD	Nivolumab (5 cycles)	Ipilimumab
MM1636.33	SD	10	1	9	PD	Pembrolizumab (4 cycles) Ipilimumab (3 cycles)	Temozolomide
MM1636.41	PD	6		6	PD	Nivolumab (7 cycles)	Ipilimumab
MM1636.47	SD	12		9	PD	Pembrolizumab (7 cycles)	Ipilimumab
MM1636.48	PD	4		4	PD	Pembrolizumab (9 cycles)	None
MM1636.49	PD	5		5	Treatment ongoing	Pembrolizumab (6 cycles)	Ipilimumab

Supplementary table 6



Supplementary table 7

Immune-related adverse events, Cohort B (n=10)				
	Grade 1-2	%	**Grade 3-4**	%
Vaccine-related				
Granuloma (injection site)	4	40%		
Injection site reaction	4	40%		
Redness (injection site)	1	10%		
Pruritus (injection site)	3	30%		
Respiratory				
Pleural effusion	1	10%		
Dyspnoea	1	10%		
Gastrointestinal				
Diarrhoea	2	20%		
Constipation	1	10%		
Abdominal pain	2	20%		
Endocrinal				
Adrenal insufficiency			1	10%
Hypophysitis			1	10%
Skin				
Rash	1	10%		
Dry skin	3	30%		
Pruritus	2	20%		
Vitiligo	1	10%		
Laboratory tests				
Increased amylase	2	20%		
Hyponatremia			1	10%
Infusion reaction				
Other				
Fatigue	3	30%		
Nausea	3	30%		
Xerostomia	1	10%		