SUPPLEMENTARY MATERIAL

Protocol

<<submitted as separate file>>

Supplementary Table S1. Dose-Limiting Toxicities

Part A	Part B
Nonhematologic toxicities	
• Any grade ≥3 nonhematologic toxicity judged to be clinically significant, with the exception of self-limiting or medically controllable toxicities (e.g. chills, muscle ache, "flu-like" symptoms, nausea, vomiting, fatigue) lasting <3 days	• Same as part A
• Not applicable	• Grade 3 nonhematologic toxicity (not laboratory, specifically nausea, vomiting, and diarrhea) lasting >3 days despite optimal supportive care • Any grade 3 or 4 nonhematologic laboratory value if: o Medical intervention is required, or o The abnormality leads to hospitalization, or o The abnormality persists for >1 week • Grade 4 nonhematologic toxicity (not laboratory) • Prolonged delay (>2 weeks) in initiating cycle 2 due to treatment-related toxicity • Grade 5 toxicity
Hematologic toxicities	
• Febrile neutropenia not related to underlying disease (defined as grade 4 neutropenia with fever >38.5°C; both sustained over a 24-hour period) • Prolonged grade 4 neutropenia (>7 days or with sepsis), except for V937-related viremia	• Grade 4 hematologic toxicity lasting ≥7 days • Grade 3 or 4 febrile neutropenia: o Grade 3 is defined as ANC <1000/mm^3 with a single temperature >38°C (101° F) or a sustained temperature ≥38° C (100.4° F) for >1 hour

• Neutropenic infection: ≥ grade 3 neutropenia with ≥ grade 3 infection • Thrombocytopenia ≥ grade 3 with bleeding • Thrombocytopenia grade 4 lasting ≥ 7 days	○ Grade 4 is defined as ANC <1000/mm^3 with a single temperature >38°C (101° F) or a sustained temperature ≥38° C (100.4° F) for >1 hour, with life-threatening consequences and urgent intervention indicated • Thrombocytopenia <25,000/mm^3 if associated with: ○ A bleeding event that does not result in hemodynamic instability but requires an elective platelet transfusion, or ○ A life-threatening bleeding event that results in urgent intervention and admission to an Intensive Care Unit

17 ANC, absolute neutrophil count.

Supplementary Table S2. Most Common Treatment-Related Adverse Events by Grade (Parts A and B)

	Part A (V937 Monotherapy) N = 18		Part B (V937 + Pembrolizumab) N = 85		
Treatment-related AE,[a] n (%) of patients	**Grade 1–2**	**Grade 3–5**	**Grade 1–2**	**Grade 3**	**Grade 4–5**
Fatigue	5 (28)	0	30 (35)	1 (1)	0
Pyrexia	5 (28)	0	11 (13)	0	0
Pruritus	0	0	15 (18)	0	0
Influenza like illness	3 (17)	0	10 (12)	0	0
Myalgia	1 (6)	0	11 (13)	1 (1)	0
Diarrhea	1 (6)	0	10 (12)	1 (1)	0
Nausea	1 (6)	0	10 (12)	0	0
Decreased appetite	0	0	9 (11)	0	0
Rash	0	0	9 (11)	0	0
Chills	0	0	8 (9)	0	0

Arthralgia	1 (6)	0	5 (6)	1 (1)	0
Cough	0	0	6 (7)	0	0
Headache	1 (6)	0	5 (6)	0	0
Oropharyngeal pain	0	0	6 (7)	0	0
Vomiting	0	0	6 (7)	0	0
Hypothyroidism	0	0	5 (6)	0	0
Lethargy	3 (17)	0	2 (2)	0	0
Malaise	0	0	5 (6)	0	0
Rhinorrhea	0	0	5 (6)	0	0
Nasal congestion	0	0	4 (5)	0	0
Productive cough	0	0	4 (5)	0	0
Blood CPK increased	0	0	2 (2)	1 (1)	0
Dry skin	0	0	3 (4)	0	0
Dyspnea	0	0	3 (4)	0	0
Respiratory tract congestion	0	0	3 (4)	0	0

19 AE, adverse event; CPK, creatine phosphokinase; $TCID_{50}$, 50% tissue culture infectious dose.

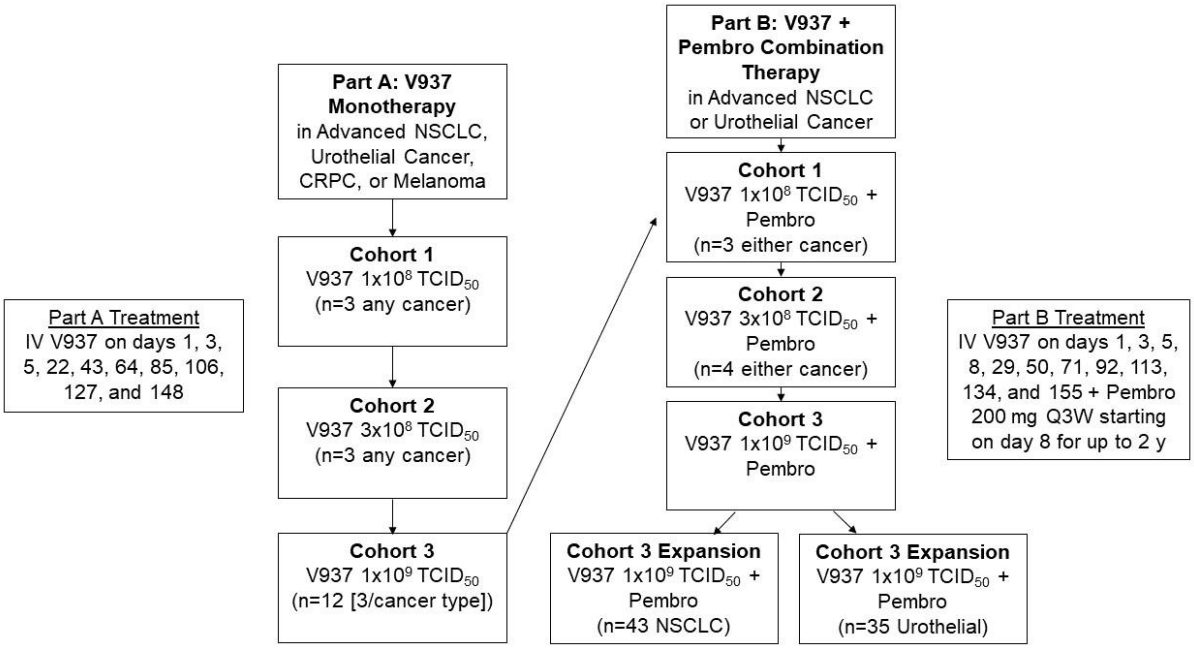
[a]Occurring in >2 patients in any cohort in either part A or B; graded by National Cancer Institute Common Terminology Criteria for Adverse Events, version 4.03.

Supplementary Table S3. Response Rates Based on RECIST Version 1.1

	Part A (V937 Monotherapy)			Part B (V937 + Pembrolizumab)			
	Cohort 1 1×10^8 **TCID$_{50}$** **(n = 3)**	**Cohort 2** 3×10^8 **TCID$_{50}$** **(n = 3)**	**Cohort 3** 1×10^9 **TCID$_{50}$** **(n = 12)**	**Cohort 1** 1×10^8 **TCID$_{50}$ + 200 mg (n = 3)**	**Cohort 2** 3×10^8 **TCID$_{50}$ + 200 mg (n = 4)**	**Cohort 3 NSCLC** 1×10^9 **TCID$_{50}$ + 200 mg (n = 43)**	**Cohort 3 Urothelial Cancer** 1×10^9 **TCID$_{50}$ + 200 mg (n = 35)**
BOR, n (%)							
Complete response	0	0	0	0	0	3 (7)	3 (9)
Partial response	0	0	1 (8)	0	0	1 (2)	4 (11)
Stable disease	2 (67)	2 (67)	5 (42)	0	0	5 (12)	8 (23)
Progressive disease	1 (33)	1 (33)	6 (50)	3 (100)	4 (100)	34 (79)	20 (57)
ORR, n (%)	0	0	1 (8)	0	0	4 (9)	7 (20)

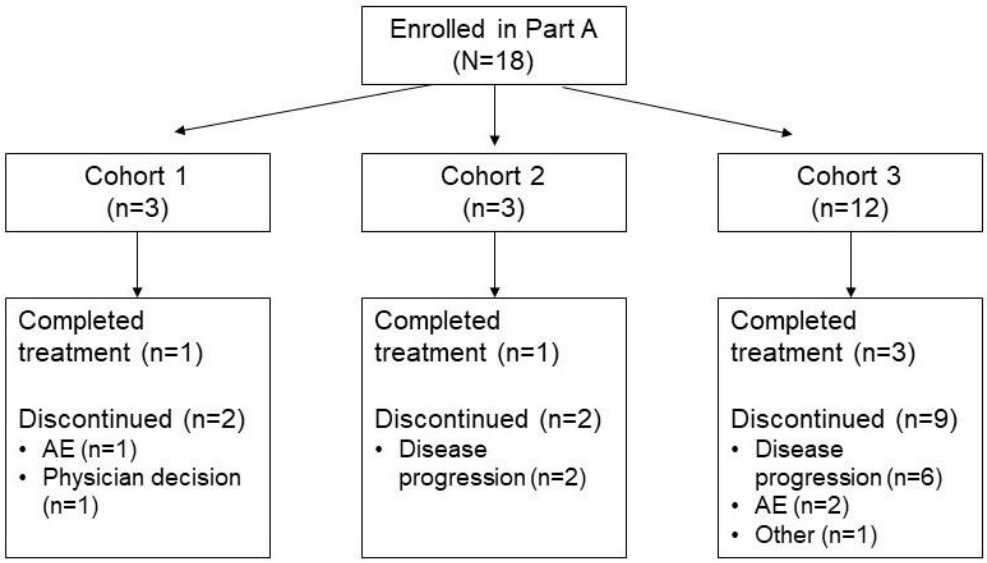
BOR, best overall response; RECIST, Response Evaluation Criteria in Solid Tumors; NSCLC, non−small-cell lung cancer; ORR, objective response rate; $TCID_{50}$, 50% tissue culture infectious dose.

Supplementary Figure S1. Study design. CRPC, castration-resistant prostate cancer; IV, intravenous; NSCLC, non–small-cell lung cancer; Pembro, pembrolizumab; Q3W, every 3 weeks; $TCID_{50}$, 50% tissue culture infectious dose.

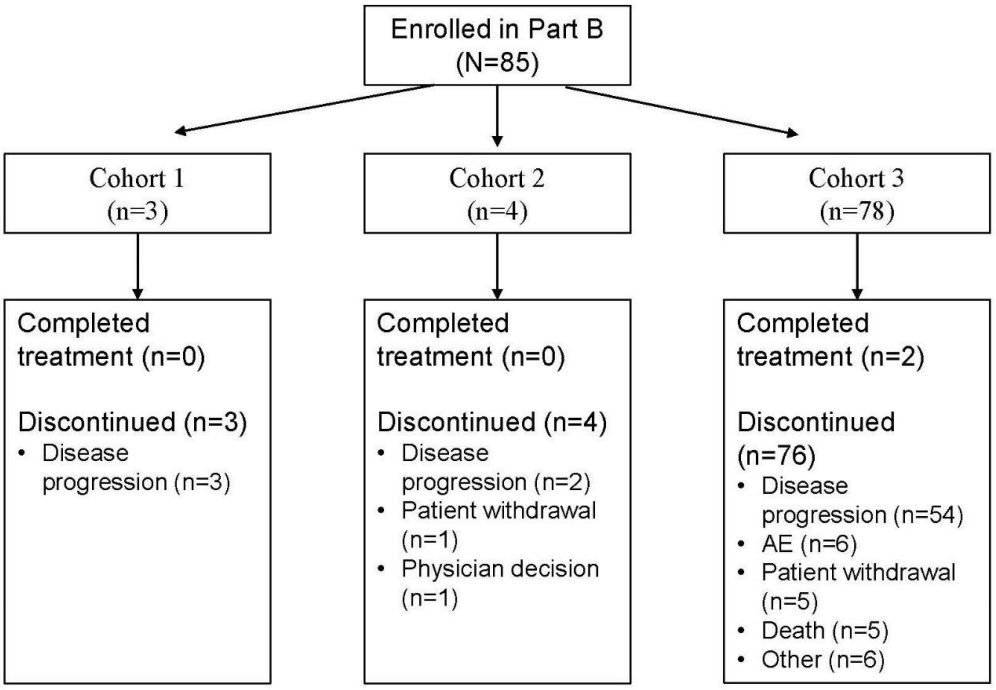


Supplementary Figure S2. Patient disposition by cohort. AE, adverse event.

(A) Part A

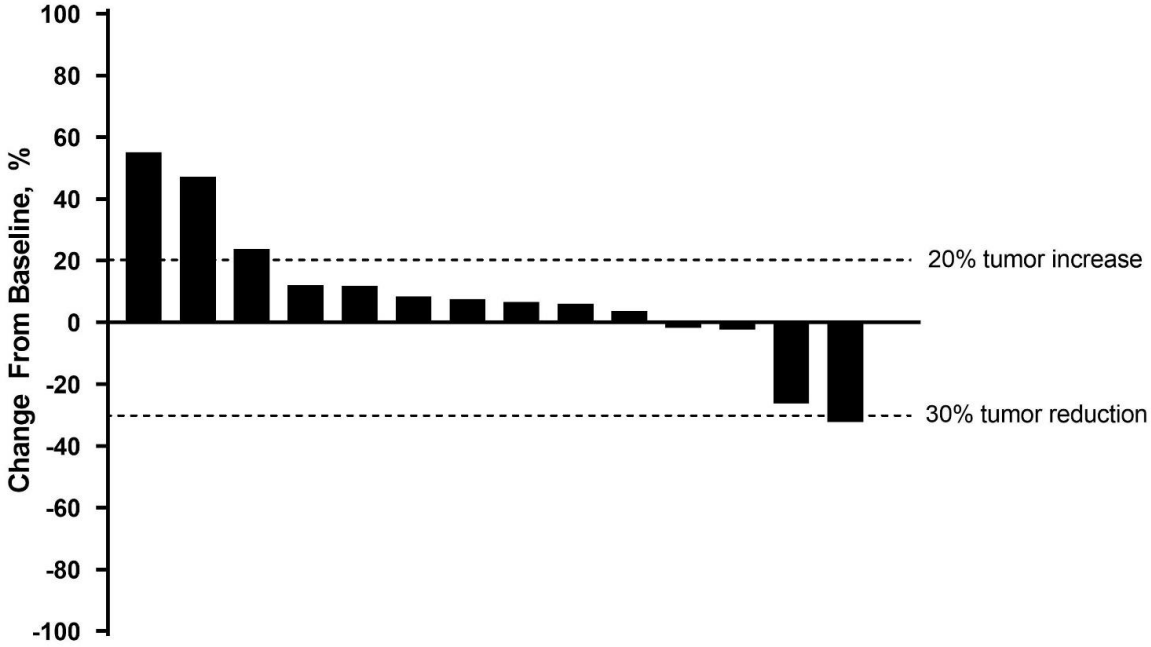


(B) Part B

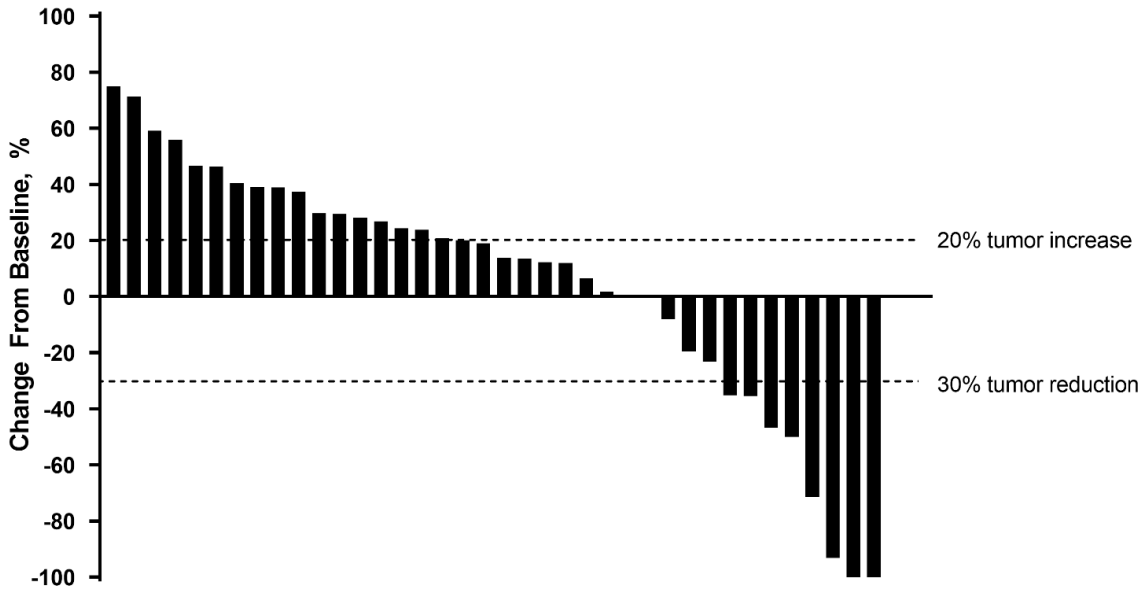


Supplementary Figure S3. Waterfall plot of best percentage change from baseline in sum of longest diameters for target lesions

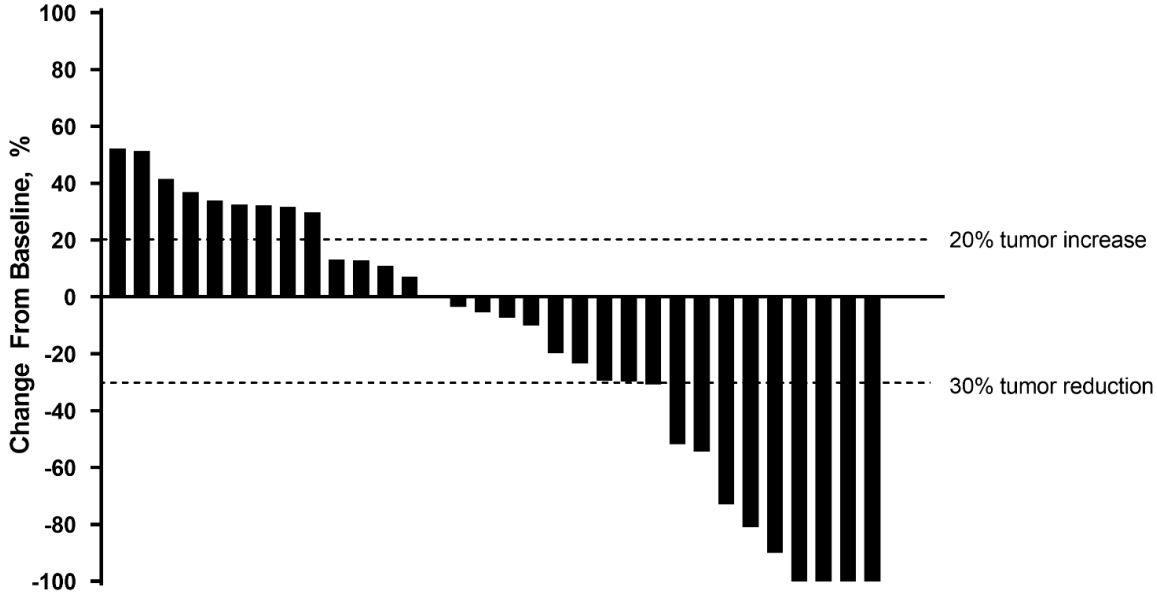
(A) Part A



(B) NSCLC dose-expansion cohort (Part B)



43 (C) Urothelial cancer dose-expansion cohort (Part B)



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