Supplemental Tables

Table 1: **Methods for Multispectral Immunofluorescence**

	Marker	Primary Antibody					Secondary Antibody			TSA Fluorophore	
		Species	Clone	Source	Final (ug/mL)	Incubation time (min)	Amplification	Source	Dilution (PBS)	Opal	TSA Dilution
1	Ki67	Mouse	MM1	Leica Biosystems	0.84	60	Mouse Powervision	Leica Biosystems	1:1	570	1:150
2	CD8	Mouse	4B11	Leica Biosystems	0.29	30	Opal Polymer	Akoya Biosciences	None	620	1:150
3	CD20	Mouse	L26	Leica Biosystems	0.24	60	Opal Polymer	Akoya Biosciences	None	520	1:300
4	PD-1	Rabbit	EPR4877	Abcam Inc	0.96	60	Rabbit Powervision	Leica Biosystems	1:1	650	1:150
5	PanCK	Mouse	AE1AE3	Agilent Technologies Inc	0.708	30	Opal Polymer	Akoya Biosciences	None	690	1:150
6	CD4	Rabbit	EP204	Milipore Sigma	0.18	120	Rabbit Powervision	Leica Biosystems	1:1	540	1:300

Slides were baked at 65°C for 3 hours before being loaded onto the Leica Bond (Leica Biosystems, Buffalo Grove, IL). Slides were heated at 60°C for 30 minutes then Dewax (Leica Biosystems) was applied to remove any paraffin. Antigen retrieval was performed using ER2 (Leica Biosystems) at 100°C for 40 minutes and then slides were washed. Non-specific staining was blocked using Blocking/Ab Diluent (Akoya Biosystems, Marlborough, MA) for 5 minutes, then the first primary antibody (i.e., Position 1) was applied followed by a series of washing steps. The secondary antibody corresponding to Position 1 was applied for 10 minutes, followed by washing and the addition of the Position 1 TSA-dye for 10 minutes (Opal 7 color kit, Akoya Biosystems). Slides were then heated using ER1 (Leica Biosystems) at 95°C for 20 minutes to strip the primary and secondary antibodies and washed again. The staining process was repeated for Positions 2–6. After the last round of antibody stripping, DAPI (Opal 7 color kit, Akoya Biosystems) was applied, the slides were washed for a final time and then coverslipped using ProLong™ Diamond Antifade Mountant (Life Technologies, Waltham, MA). mIF stained slides were scanned at 200x magnification using the Vectra Polaris and viewed using inForm (Akoya Biosystems, Marlborough, MA).

Table 2: Clinical Characteristics of Patients with Chronic versus Acute (i.e. non-chronic) Immune Checkpoint Inhibitor Pneumonitis

	Acute ICI-pneumonitis (n=42)[a]			Chronic ICI-Pneumonitis	p
	Melanoma (n=4)	NSCLC (n=37)	All (n=41)	All (n=6)	
Median age, y (IQR)	60 (4.25)	71 (10)	70 (12)	77 (11)	0.46
Female sex, n (%)	2 (50)	17 (45)	19 (46)	3 (50)	1
Race, n (%)					0.57
White	4 (100)	30 (82%)	34 (83)	4 (66)	
Black	0 (0)	6 (16)	6 (15)	2 (33)	
Asian	0 (0)	1 (2)	1 (2)	0 (0)	
Smoking Status, n (%)					0.54
Former	2 (50)	29 (78%)	31 (76)	4 (66)	
Never	2 (50)	6 (16%)	8 (20)	1 (17)	
Current	0 (0)	2 (6%)	2 (4)	1 (17)	
NSCLC Tumor histology, n (%)					0.7
Squamous cell	-	14 (38)	14 (38)	3 (50)	
Adenocarcinoma	-	18 (49)	18 (49)	2[b] (33)	
Other	-	5 (13)	5 (13)	1 (17)	
Tumor Stage					0.87
I	0 (0)	1 (3)	1 (2)	0 (0)	
II	0 (0)	5 (13)	5 (12)	0 (0)	
III	0 (0)	12 (32)	12 (29)	2 (33)	
IV	4 (100)	18 (48)	22 (54)	4 (66)	
Unknown	0 (0)	1 (3)	1 (2)	0 (0)	
Prior Chemotherapy, n (%)	0 (0)	25 (66)	25 (60)	3 (50)	0.9
Prior Surgery, n (%)	2 (50)	7 (19)	9 (21)	2 (33)	0.9
Prior Radiation, n (%)	-	14 (38)	14 (34)	2 (33)	1
ICI agent, n (%)					0.02
Nivolumab	0 (0)	27 (73)	27 (66)	1 (17)	
Pembrolizumab	1 (25)	2 (6)	3 (7)	0 (0)	
Durvalumab	1 (25)	0 (0)	1 (2)	0 (0)	
Ipilimumab/Nivolumab	2 (50)	7 (20)	9 (22)	5 (83)	

[a] The 6 patients adjudicated with chronic ICI pneumonitis were excluded from this group

[b] Both cases of adenocarcinoma in the chronic ICI-pneumonitis group were *KRAS*-mutant adenocarcinoma

IQR: Inter-quartile range; ICI: immune checkpoint inhibitor; NSCLC: Non-small cell lung cancer

Table 3: Median Corticosteroid Doses and Duration for Initial and Subsequent Episodes of Immune Checkpoint Inhibitor Pneumonitis

	All (n=6)		**Resolved (n=3)**		**Unresolved (n=3)**	
	Median	Range	Median	Range	Median	Range
Initial Steroid dose (mg)	60	(60-120)	60	-	120	(60-120)
Initial steroid duration (d)	42	(21-84)	42	(42-84)	38	(21-38)
Steroid dose at which CIP re-appeared (mg)	10	(0-20)	0	(0,15)	10	(10-20)
Repeat steroid dose (mg)	60	(30-120)	60	(30-120)	60	-
Total Steroid duration (d)	259	(70-602)	217	(70-602)	301	(98-371)

d=day; mg=milligram