



**Supplementary Figure S1. Double IIF staining with anti-pituitary antibodies (APAs) and anterior pituitary hormone antibodies**

APA-positive cells, which were stained with serum collected at baseline from a patient (Pem092) who developed pembrolizumab-induced IAD, were merged with those stained with anti-ACTH (A), anti-TSH (B), and anti-FSH antibodies (C), but not with anti-LH (D), anti-PRL (E), and anti-GH antibodies (F).

Scale bars: 50  $\mu\text{m}$ .

1 **Supplementary Table S1. List of primary and secondary antibodies used in this study**

## 2 List of primary antibodies

Protein	Mono/poly	Host	Catalog No.	Company	Dilution
GH	Polyclonal	Goat	AF1067	R & D Systems	1 : 200
PRL	Polyclonal	Goat	sc-7805	Santa Cruz Biotechnology	1 : 150
ACTH	Polyclonal	Goat	abx430970	Abxexa	1 : 50
TSH	Polyclonal	Goat	sc-7815	Santa Cruz Biotechnology	1 : 10
FSH	Polyclonal	Goat	sc-7797	Santa Cruz Biotechnology	1:200
LH	Polyclonal	Rabbit		Dr. Parlow's Lab (National Hormone and Peptide Program (NHPP), Harbor-UCLA Medical Center)	1 : 50

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## 4 List of secondary antibodies

Host	Reactivity	Wavelength	Catalog no.	Company	Dilution
Goat	Rabbit IgG (H+L), highly cross-adsorbed	Alexa Fluor 568	A-11036	Molecular Probes	1 : 500
Donkey	Human IgG (H+L), AffiniPure F(ab') <sub>2</sub> Fragment	Alexa Fluor 488	709-546-149	Jackson	1 : 400
Donkey	Goat IgG (H+L)	Alexa Fluor 568	A-11057	Molecular Probes	1 : 500

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6 **Supplementary Table S2. Pituitary cells recognized by anti-pituitary antibodies at baseline**  
 7 **in each patient**

Case	Malignancy	Pit-irAE	ACTH	TSH	FSH	LH	GH	PRL
Ipi008	MM	IAD	+	-	+	-	-	-
Ipi024	MM	IAD	+	-	+	-	-	-
Niv033	MM	IAD	+	-	+	-	-	-
Niv060	NSCLC	IAD	+	-	+	-	-	-
Niv096	MM	IAD	+	-	+	-	-	-
Niv115	HN	IAD	+	-	+	-	-	-
Pem021	NSCLC	IAD	+	-	+	-	-	-
Pem035	NSCLC	IAD	+	+	+	-	-	-
Pem047	NSCLC	IAD	+	+	+	+	-	-
Pem092	MM	IAD	+	+	+	-	-	-
IpN002	RCC	IAD	+	+	+	-	-	-
Pem049	NSCLC	control	+	-	+	-	-	-

- 8 Abbreviations: Pit-irAE, pituitary immune-related adverse events; MM, malignant melanoma;  
 9 NSCLC, non-small cell lung carcinoma; HN, head and neck cancer; RCC, renal cell carcinoma;  
 10 IAD, isolated ACTH deficiency

11 **Supplementary Table S3. Pituitary cells recognized by anti-pituitary antibodies at onset in**  
 12 **each patient**

Case	Malignancy	Pit-irAE	ACTH	TSH	FSH	LH	GH	PRL
Ipi001	MM	Hypo	+	+	+	+	+	+
Ipi005	MM	Hypo	+	+	+	-	+	-
Ipi011	MM	Hypo	+	+	+	+	+	-
IpN027	MM	Hypo	+	+	+	+	-	+
Ipi008	MM	IAD	+	-	+	+	+	-
Ipi024	MM	IAD	+	+	+	+	+	-
Niv033	MM	IAD	+	-	+	+	+	-
Niv060	NSCLC	IAD	+	+	+	+	-	-
Niv096	MM	IAD	+	+	+	+	-	-
Niv115	HN	IAD	+	+	+	+	+	-
Niv209	RCC	IAD	+	+	+	-	-	-
Pem007	MM	IAD	+	+	+	+	+	-
Pem021	NSCLC	IAD	+	+	+	+	-	-
Pem035	NSCLC	IAD	+	+	+	+	-	-
Pem047	NSCLC	IAD	+	+	+	+	+	-
Pem092	MM	IAD	+	+	+	-	-	-
Pem098	MM	IAD	+	+	+	-	-	-
Pem110	MM	IAD	+	+	+	+	+	+
IpN002	RCC	IAD	+	+	+	+	-	-

13 Abbreviations: Pit-irAE, pituitary immune-related adverse events; MM, malignant melanoma;

14 NSCLC, non-small cell lung carcinoma; HN, head and neck cancer; RCC, renal cell carcinoma;

15 Hypo, hypophysitis; IAD, isolated ACTH deficiency