

**Supplementary Table 1. The prognostic signatures based on each type of AS events.**

<b>AS type (AA)</b>	<b>coef</b>	<b>AS type (AD)</b>	<b>coef</b>
PTGR1 87219 AA	-3.78	ALG3 67856 AD	-1.22
AGTRAP 670 AA	-2.15	TCIRG1 17286 AD	-6.14
DSN1 59309 AA	-18.44	TMEM150A 54307 AD	-2.18
MPV17 52976 AA	-1.01	ATG16L1 58040 AD	5.81
RNMT 44751 AA	-2.26	SMIM4 65231 AD	-5.31
C19orf60 48492 AA	-2.81	PON2 80536 AD	-2.32
FKBP8 48446 AA	-3.51	RMND1 78158 AD	-2.50
STX1A 80019 AA	-5.49	SNRNP70 50884 AD	-1.16
HSD17B7 8758 AA	1.85	MRM1 40499 AD	11.35
CASP1 18542 AA	-3.23	DDX11 20979 AD	2.60
TJAP1 76276 AA	-1.84	CPVL 79080 AD	3.76
		CPNE1 59205 AD	-1.55
<b>AS type (AP)</b>	<b>coef</b>	<b>AS type (AT)</b>	<b>coef</b>
PACS2 29633 AP	-4.78	AIG1 77971 AT	-5.20
SH3KBP1 88642 AP	-1.53	RBPMS 83289 AT	2.77
STAMBPL1 12469 AP	-1.59	FAM216A 24427 AT	4.11
APIP 14963 AP	-3.78	MOBP 64191 AT	-1.67
C5orf30 72920 AP	-3.45		
PKN1 47976 AP	-1.10		
<b>AS type (ES)</b>	<b>coef</b>	<b>AS type (ME)</b>	<b>coef</b>
RHOT1 40176 ES	-2.86	CNOT10 63822 ME	-2.59
CORO1B 387277 ES	-0.78	FYN 77273 ME	1.25
RMDN1 84377 ES	-4.83	CTSB 82667 ME	8.29
POLDIP3 62524 ES	21.94	CALCOCO2 42227 ME	14.90
DEF8 38194 ES	-1.81	PAQR3 69660 ME	3.29
ZNF644 3733 ES	-2.12	ZNF410 28326 ME	-2.25
SEZ6L2 35978 ES	-4.00	GLOD4 123198 ME	-1.36
FTSJ1 88968 ES	-7.51		
EMC4 29842 ES	-4.88		
SEPT10 54907 ES	-1.86		
TMEM159 34427 ES	-1.05		
FKTN 87134 ES	-2.19		
<b>AS type (RI)</b>	<b>coef</b>		
ZNF226 50292 RI	-2.72		
ABCC5 67820 RI	-0.97		
RBMX 90220 RI	-1.29		
KAT8 36242 RI	-3.80		
CASP1 18519 RI	-1.02		

**Supplementary Table 2. The clinical information of the discovery cohort.**

Clinicopathological features	Number
<b>Age</b>	
Mean (SD)	61.11 (12.07)
<b>Gender, n (%)</b>	
Male	145 (72.14%)
Female	56 (27.86%)
<b>Pathological diagnosis</b>	
Squamous cell carcinoma	201 (100%)
<b>Tumor grade</b>	
G1	27 (13.43%)
G2	127 (63.18%)
G3	47 (23.38%)
G4	0 (0.00%)
<b>TNM stage</b>	
Stage I	12 (5.97%)
Stage II	33 (16.42%)
Stage III	38 (18.91%)
Stage IV	118 (58.71%)

**Supplementary Table 3. The clinical information of the validation cohort.**

Clinicopathological features	Number
<b>Age</b>	
Mean (SD)	61.57 (12.03)
<b>Gender, n (%)</b>	
Male	146 (71.57%)
Female	58 (28.43%)
<b>Pathological diagnosis</b>	
Squamous cell carcinoma	204 (100%)
<b>Tumor grade</b>	
G1	28 (13.73%)
G2	126 (61.76%)
G3	49 (24.02%)
G4	1 (0.05%)
<b>TNM stage</b>	
Stage I	13 (6.37%)
Stage II	32 (15.69%)
Stage III	35 (17.16%)
Stage IV	124 (60.78%)