

## Supplementary

**Table S1** The details of the clinical sample in the dataset

Characteristics	Group			P value	Test
	Test (n=46)	Train (n=46)	Total (n=92)		
OS, median (IQR), years	1.7 (1.2, 3.2)	2 (0.5, 3.6)	1.7 (1, 3.3)	0.662	Rank-sum test
Status, n (%)				>0.99	Chi-square test
Alive	30 (65.2)	30 (65.2)	60 (65.2)		
Dead	16 (34.8)	16 (34.8)	32 (34.8)		
Age, n (%), years				0.4	Chi-square test
>50	22 (47.8)	18 (39.1)	40 (43.5)		
≤50	24 (52.2)	28 (60.9)	52 (56.5)		
Stage, n (%)				0.552	Chi-square test
Stage I	14 (30.4)	10 (21.7)	24 (26.1)		
Stage II	13 (28.3)	20 (43.5)	33 (35.9)		
Stage III	11 (23.9)	8 (17.4)	19 (20.7)		
Stage IV	7 (15.2)	6 (13.0)	13 (14.1)		
Unknown	1 (2.2)	2 (4.3)	3 (3.3)		
Radiation response, n (%)				0.753	Fisher's exact test
Complete response	18 (39.1)	18 (39.1)	36 (39.1)		
Partial response	3 (6.5)	4 (8.7)	7 (7.6)		
Radiographic progressive disease	5 (10.9)	7 (15.2)	12 (13.0)		
Stable disease	2 (4.3)	0 (0)	2 (2.2)		
Unknown	18 (39.1)	17 (37)	35 (38)		

**Table S2** The gene names of univariate cox analysis results in the training cohort

Gene name
MYH7B
NKD1
NOTUM
PTGDR2
AGT
GPR83
TPH1
BEST3
CACNA1E
ABHD12B
NPTX1
TNFRSF11B
GALNT8
SLCO1C1
ASCL5
GRM8
AL590560.2
FRMPD1
PCDH18
C1orf127
AXIN2
SYN2
ETV1
KCNH8
KRT81
MT1A
DUSP4
FGF9
OPRD1
SLC12A1
NKAIN3
PTPRO
FAM189A1
SLC8A3
ADAMTS18
PROX1
FCAR
LIN7A
PRUNE2
SPRY4
PADI4
DDIT4L
SPRY1
FGD5
DNAH9
CDH17
IL23A
NFE2
ADAMTSL1
MFAP4
PI16
NODAL
MANSC4
RCOR2
MSX2
SHH
KCNE3
RIMBP2
PCDHGB5
CLIC5
ITGA9
POSTN
BMP4
ACSS3
SEC61G
AVPR2
PTPRD
PTX3
SUSD2
MICU3
SAXO1
B3GALT2
SCN5A
KCNMA1
NXPH3
ALPK2
TSPAN32
IL17C
SERPINI1
TUBB2B
SCN3B
PDE3A
MXRA8
H6PD
LGR6
DIRAS2
AP2A2
ZNF423
SLC35D3
CHGB
GABRA3
ETV5
ALOX12B
LDB2
POU3F2
AOC3

**Table S2** (continued)**Table S2** (continued)

Gene name
PPEF1
DIRAS3
TBX2
TMEM98
F10
SGCD
CASQ2
KCNA2
MTUS2
DACH1
LRRC66
FBN1
TNF
SPRY2
CHRM5
IGFL4
TNNC1
KCNQ1
CABP7
PROK2
PPP1R14A
CADM1
DKK4
GJB1
CDH2
GRIK3
TMEM158
TMEM233
RASL11B
TET1
PRKG1
CDHR5
TNN
GRIK2
PRSS35
KRT83
CLDN2
MT1F
DACT1
CKMT2
SH2D6
REEP6
STC1
IQCH
CROCC2
INPP1
P4HA3
CATIP
CERS4
MLLT11
MYL9
TAGLN3
CPXM2
C8orf34
G0S2
SEZ6
GJC2
COL3A1
CSRNP3
CNTN1
SORBS1
CXCR4
LHX9
SLC16A4
BRSK1
CPA2
SP5
TMEM163
LSAMP
GYG2
NACAD
NKD2
LRMDA
ATL1
SIX2
PALD1
NEB
APOBEC3B
SLC4A11
BEX5
SLIT3
CXCL8
ZNF660
PKD1L3
EFR3B
ADAMTS14
ENC1
DENND2A
TNFSF11
TWIST1
SLC52A1
PCOLCE
NFATC4
FMOD
WNT16
PCCA
TUBB4A
STK33