

Table S5. Candidate driving genetic alterations of AYA cancers

No. AYA	Cancer Type	Oncogenic type	Altered gene	Mutation type	Allele Freq.	Protein change	R [†]	Class	Level
#01	Prostate cancer	M	ATAD5	nsSNV	0.12	G451D	0	C2	Lv3 TSG
			NF1	FS del	0.17	S1561fs [‡]	0	C1	Lv1 TSG
			NF1	LOH	-	-	-	CNV	Lv1 TSG
			RASA2	splicing	0.09	A742_splice	0	C2	Lv1 TSG
			RASA2	FS ins	0.09	D282fs	0	C2	Lv1 TSG
			SUZ12	LOH	-	-	-	CNV	Lv2 TSG
#02	Olfactory neuroblastoma	C	BRINP1	IF ins	0.58	681_682insT	0	C2	Lv3 TSG
			CARD11	FS ins	0.44	Y609fs	0	C1	Lv3 OG
			CDKN2C	nonsense	0.67	Q26* [‡]	0	C1	Lv1 TSG
			MEIS1	FS ins	0.08	R102fs	0	C2	Lv3 OG
			MINK1	nsSNV	0.64	E837K [‡]	0	C2	Lv3 TSG
			PPP6C	splicing	0.15	G80_splice [‡]	0	C2	Lv1 TSG
			TGFBR2	nsSNV	0.08	R49S	0	C2	Lv3 TSG/Lv3 OG
			TP53	nsSNV	0.57	M237V [‡]	>30	C1	Lv1 TSG
#04	Head and neck squamous cell carcinoma	C	ANK2	nsSNV	0.16	H2013Y	0	C2	Lv3 TSG
			AXIN1	LOH	-	-	-	CNV	Lv2 TSG
			BAP1	LOH	-	-	-	CNV	Lv2 TSG
			CDH1	LOH	-	-	-	CNV	Lv2 TSG
			CHD5	nsSNV	0.17	R1891W	0	C2	Lv3 TSG
			FAT1	FS ins	0.20	L3696fs	-	C2	Lv1 TSG/Lv3 OG
			FOXL2	nsSNV	0.30	P157A	0	C1	Lv3 OG
			ITGB4	nsSNV	0.10	E839V [‡]	0	C2	Lv3 OG
			LECT1	nsSNV	0.10	W325G [‡]	0	C2	Lv3 TSG
			MSX1	nsSNV	0.09	S208L	1	C2	Lv2 TSG
			NOTCH1	Focal del	-	-	-	CNV	Lv1 TSG
			NOTCH1	LOH	-	-	-	CNV	Lv1 TSG
			PTCH1	LOH	-	-	-	CNV	Lv2 TSG
			SETD2	Focal del	-	-	-	CNV	Lv2 TSG
			SETD2	LOH	-	-	-	CNV	Lv2 TSG
			SMAD4	Focal del	-	-	-	CNV	Lv1 TSG
			TP53	splicing	0.28	S33_splice [‡]	>5	C1	Lv1 TSG
			USP6	nsSNV	0.05	R133K	2	C2	Lv2 OG
#06	Urachal carcinoma	M	CDH1	LOH	-	-	-	CNV	Lv2 TSG
			KRAS	nsSNV	0.07	G13D [‡]	>100	C1	Lv1 OG
			USP6	nsSNV	0.08	R133K	2	C2	Lv2 OG
#09	Lung cancer	NA [§]	EML4-ALK	Fusion	-	-	-	OG	
#10	Liposarcoma	C	MDM2	Focal amp	-	-	-	CNV	Lv1 OG
			PRDM16	FS ins	0.12	A365fs [‡]	1	C2	Lv2 OG
			PTEN	Focal del	-	-	-	CNV	Lv1 TSG
			PTPRO	nsSNV	0.07	K680T [‡]	1	C2	Lv2 TSG
			URGCP	FS ins	0.06	F643fs [‡]	1	C2	Lv2 OG

*stop codon

†recurrence by cBio portal

‡ more than one NM number

§ not applicable