

Table S1 The variant allele frequency (VAF) values of all the related genes

Gene	Chr	Position	Ref	Alt	Tumor_Sample_Number	Tumor_Genotype	VAF	Type	Func.refGene	ExonicFunc
<i>SKI</i>	1	2161169	C	T	#2	0/1 209,23	0.10	snp	exonic	nonsynonymous SNV
<i>PRDM16</i>	1	3328659	C	T	#2	0/1 295,23	0.07	snp	exonic	nonsynonymous SNV
<i>ARID1A</i>	1	27105700	C	T	#2	0/1 64,9	0.12	snp	exonic	nonsynonymous SNV
<i>NT5C2</i>	10	104858719	A	G	#2	0/1 23,3	0.12	snp	exonic	nonsynonymous SNV
<i>NUMA1</i>	11	71720030	G	A	#2	0/1 95,6	0.06	snp	exonic	nonsynonymous SNV
<i>FAT3</i>	11	92086345	G	A	#2	0/1 63,6	0.09	snp	exonic	nonsynonymous SNV
<i>NAV3</i>	12	78598728	G	A	#2	0/1 67,5	0.07	snp	exonic	nonsynonymous SNV
<i>NTRK3</i>	15	88576178	C	T	#2	0/1 71,10	0.12	snp	exonic	nonsynonymous SNV
<i>CDH1</i>	16	68856080	C	G	#2	0/1 50,3	0.06	snp	exonic	nonsynonymous SNV
<i>MUC16</i>	19	9085966	C	G	#2	0/1 65,5	0.07	snp	exonic	nonsynonymous SNV
<i>LRP1B</i>	2	141283832	G	T	#2	0/1 58,4	0.06	snp	exonic	nonsynonymous SNV
<i>SIRPA</i>	20	1918195	T	C	#2	0/1 132,4	0.03	snp	exonic	nonsynonymous SNV
<i>PLCG1</i>	20	39794973	A	G	#2	0/1 250,5	0.02	snp	exonic	nonsynonymous SNV
<i>PLCG1</i>	20	39801512	A	G	#2	0/1 79,4	0.05	snp	exonic	nonsynonymous SNV
<i>FBLN2</i>	3	13613015	A	C	#2	0/1 102,4	0.04	snp	exonic	nonsynonymous SNV
<i>N4BP2</i>	4	40103767	G	T	#2	0/1 58,5	0.08	snp	exonic	nonsynonymous SNV
<i>PTPN13</i>	4	87685796	T	G	#2	0/1 64,4	0.06	snp	exonic	nonsynonymous SNV
<i>PTPN13</i>	4	87692393	G	A	#2	0/1 55,5	0.08	snp	exonic	nonsynonymous SNV
<i>TFEB</i>	6	41658481	C	T	#2	0/1 70,5	0.07	snp	exonic	nonsynonymous SNV
<i>CNTRL</i>	9	123906353	G	A	#2	0/1 50,4	0.07	snp	exonic	nonsynonymous SNV
<i>CRLF2</i>	X	1314990	G	A	#2	0/1 22,3	0.12	snp	exonic	nonsynonymous SNV
<i>FBXO11</i>	2	48132690	G	GGCTGCTGCT	#2	0/1 15,5	0.25	indel	exonic	nonframeshift insertion
<i>FLNA</i>	X	153590657	TGA	T	#2	0/1 120,3	0.02	indel	exonic	frameshift deletion
<i>HMGA2</i>	12	66232315	G	T	#5	0/1 94,5	0.05	snp	exonic	nonsynonymous SNV
<i>RANBP2</i>	2	109367844	T	G	#5	0/1 346,7	0.02	snp	exonic	nonsynonymous SNV
<i>MPL</i>	1	43805088	A	G	#4	0/1 19,49	0.72	snp	exonic	nonsynonymous SNV
<i>MYOD1</i>	11	17741637	G	A	#4	0/1 208,168	0.45	snp	exonic	nonsynonymous SNV
<i>PIK3R1</i>	5	67592127	T	G	#4	0/1 103,34	0.25	snp	exonic	nonsynonymous SNV
<i>ROS1</i>	6	117686763	T	A	#4	0/1 36,28	0.44	snp	exonic	nonsynonymous SNV
<i>NFE2L2</i>	2	178095897	AACAGG GAGGTTAA TGATTTTCT	A	#4	0/1 118,59	0.33	indel	exonic	nonframeshift deletion
<i>PBRM1</i>	3	52668735	C	CTCCTAACTGTGTC ATAAAGCTGATAAA AAGGATTTGAAACA TCCATAAAGGAAG	#4	0/1 15,44	0.75	indel	exonic	nonframeshift insertion
<i>FCRL4</i>	1	157556201	C	T	#6	0/1 165,24	0.13	snp	exonic	nonsynonymous SNV
<i>POLQ</i>	3	121151243	C	T	#6	0/1 25,12	0.32	snp	exonic	nonsynonymous SNV
<i>PTEN</i>	10	89720852	C	T	#1	0/1 25,4	0.14	snp	exonic	stopgain
<i>FAT3</i>	11	92533704	G	A	#1	0/1 79,11	0.12	snp	exonic	nonsynonymous SNV
<i>FOXO1</i>	13	41134954	C	T	#1	0/1 115,16	0.12	snp	exonic	nonsynonymous SNV
<i>MYO5A</i>	15	52697558	G	A	#1	0/1 63,9	0.13	snp	exonic	stopgain
<i>SIN3A</i>	15	75722565	G	C	#1	0/1 81,4	0.05	snp	exonic	nonsynonymous SNV
<i>NTRK3</i>	15	88799319	C	T	#1	0/1 58,9	0.13	snp	exonic	stopgain
<i>CREBBP</i>	16	3786044	G	T	#1	0/1 66,4	0.06	snp	exonic	nonsynonymous SNV
<i>CBFB</i>	16	67070623	C	T	#1	0/1 83,6	0.07	snp	exonic	stopgain
<i>TP53</i>	17	7577551	C	A	#1	0/1 84,12	0.13	snp	exonic	nonsynonymous SNV
<i>SUZ12</i>	17	30325752	G	T	#1	0/1 47,6	0.11	snp	exonic	nonsynonymous SNV
<i>SRSF2</i>	17	74732278	T	C	#1	0/1 249,26	0.09	snp	exonic	nonsynonymous SNV
<i>CANT1</i>	17	76989940	G	A	#1	0/1 190,4	0.02	snp	exonic	nonsynonymous SNV
<i>DNM2</i>	19	10870430	G	A	#1	0/1 121,4	0.03	snp	exonic	nonsynonymous SNV
<i>CALR</i>	19	13054387	A	G	#1	0/1 142,6	0.04	snp	exonic	nonsynonymous SNV
<i>CEP89</i>	19	33409162	G	A	#1	0/1 46,8	0.15	snp	exonic	nonsynonymous SNV
<i>BCL3</i>	19	45262696	G	A	#1	0/1 78,9	0.10	snp	exonic	nonsynonymous SNV
<i>FBXO11</i>	2	48059955	T	C	#1	0/1 148,6	0.04	snp	exonic	nonsynonymous SNV
<i>ACSL3</i>	2	223795353	A	G	#1	0/1 64,5	0.07	snp	exonic	nonsynonymous SNV
<i>SIRPA</i>	20	1918195	T	C	#1	0/1 154,23	0.13	snp	exonic	nonsynonymous SNV
<i>PLCG1</i>	20	39794973	A	G	#1	0/1 235,27	0.10	snp	exonic	nonsynonymous SNV
<i>GNAS</i>	20	57430359	A	G	#1	0/1 87,5	0.05	snp	exonic	nonsynonymous SNV
<i>TMPPRSS2</i>	21	42845313	C	T	#1	0/1 48,13	0.21	snp	exonic	nonsynonymous SNV
<i>SMARCB1</i>	22	24145582	C	T	#1	0/1 64,6	0.09	snp	exonic	stopgain
<i>PIK3CA</i>	3	178916854	G	A	#1	0/1 62,3	0.05	snp	exonic	nonsynonymous SNV
<i>SLC34A2</i>	4	25676135	G	A	#1	0/1 129,5	0.04	snp	exonic	nonsynonymous SNV
<i>FAT4</i>	4	126372790	A	G	#1	0/1 77,4	0.05	snp	exonic	nonsynonymous SNV
<i>PTPRK</i>	6	128505793	A	G	#1	0/1 71,7	0.09	snp	exonic	nonsynonymous SNV
<i>ARID1B</i>	6	157521869	G	A	#1	0/1 103,9	0.08	snp	exonic	nonsynonymous SNV
<i>MLLT4</i>	6	168370551	T	C	#1	0/1 101,3	0.03	snp	exonic	nonsynonymous SNV
<i>TRRAP</i>	7	98606006	G	A	#1	0/1 150,16	0.10	snp	exonic	nonsynonymous SNV
<i>CUX1</i>	7	101747669	A	G	#1	0/1 58,7	0.11	snp	exonic	nonsynonymous SNV
<i>FGFR1</i>	8	38279410	C	A	#1	0/1 124,13	0.09	snp	exonic	nonsynonymous SNV
<i>NCOA2</i>	8	71074996	G	A	#1	0/1 37,3	0.08	snp	exonic	nonsynonymous SNV
<i>UBR5</i>	8	103274258	T	C	#1	0/1 33,6	0.15	snp	exonic	nonsynonymous SNV
<i>JAK2</i>	9	5080355	C	A	#1	0/1 78,6	0.07	snp	exonic	nonsynonymous SNV
<i>STAG2</i>	X	123184136	G	A	#1	0/1 84,4	0.05	snp	exonic	nonsynonymous SNV
<i>BCORL1</i>	X	129149191	C	T	#1	0/1 204,25	0.11	snp	exonic	nonsynonymous SNV
<i>FLNA</i>	X	153587638	T	C	#1	0/1 177,24	0.12	snp	exonic	nonsynonymous SNV
<i>FLNA</i>	X	153587984	C	T	#1	0/1 177,13	0.07	snp	exonic	nonsynonymous SNV
<i>ARID1A</i>	1	27100175	AC	A	#1	0/1 101,11	0.10	indel	exonic	frameshift deletion
<i>JAK1</i>	1	65325832	CG	C	#1	0/1 82,11	0.12	indel	exonic	frameshift deletion
<i>BCL9</i>	1	147092680	T	TC	#1	0/1 242,9	0.04	indel	exonic	frameshift insertion
<i>MAX</i>	14	65560494	GT	G	#1	0/1 58,9	0.13	indel	exonic	frameshift deletion
<i>SETD2</i>	3	47058705	TA	T	#1	0/1 59,19	0.24	indel	exonic	stopgain
<i>ETV1</i>	7	13975472	TG	T	#1	0/1 45,4	0.08	indel	exonic	frameshift deletion
<i>UBR5</i>	8	103271319	AT	A	#1	0/1 97,10	0.09	indel	exonic	frameshift deletion
<i>FLNA</i>	X	153590657	TGA	T	#1	0/1 174,15	0.08	indel	exonic	frameshift deletion
<i>TAF15</i>	17	34144755	C	A	#3	0/1 134,3	0.02	snp	exonic	nonsynonymous SNV
<i>SETD2</i>	3	47162666	CTATT	C	#3	0/1 204,9	0.04	indel	exonic	frameshift deletion
<i>MLLT4</i>	6	168289983	TC	T	#3	0/1 151,14	0.08	indel	exonic	frameshift deletion
<i>CRYGB</i>	2	209010634	TCCACCC	T	#4	0/1 115,61	0.35	indel	exonic	nonframeshift deletion
<i>CRYGB</i>	2	209010641	TGATGGA	T	#4	0/1 118,61	0.34	indel	exonic	nonframeshift deletion
<i>CLDN9</i>	16	3063721	A	G	#1	0/1 159,18	0.10	snp	exonic	nonsynonymous SNV
<i>CLDN9</i>	16	3063721	A	G	#2	0/1 149,5	0.03	snp	exonic	nonsynonymous SNV
<i>NBPF20</i>	1	148252777	T	TCTC	#1	0/1 9,2	0.18	indel	exonic	nonframeshift deletion
<i>NBPF20</i>	1	148252777	T	TCTC	#3	0/1 10,2	0.17	indel	exonic	nonframeshift deletion
<i>NBPF20</i>	1	148252752	C	T	#4	0/1 13,3	0.19	snp	exonic	nonsynonymous SNV
<i>NBPF20</i>	1	148252777	T	TCTC	#7	0/1 17,2	0.11	indel	exonic	nonframeshift deletion

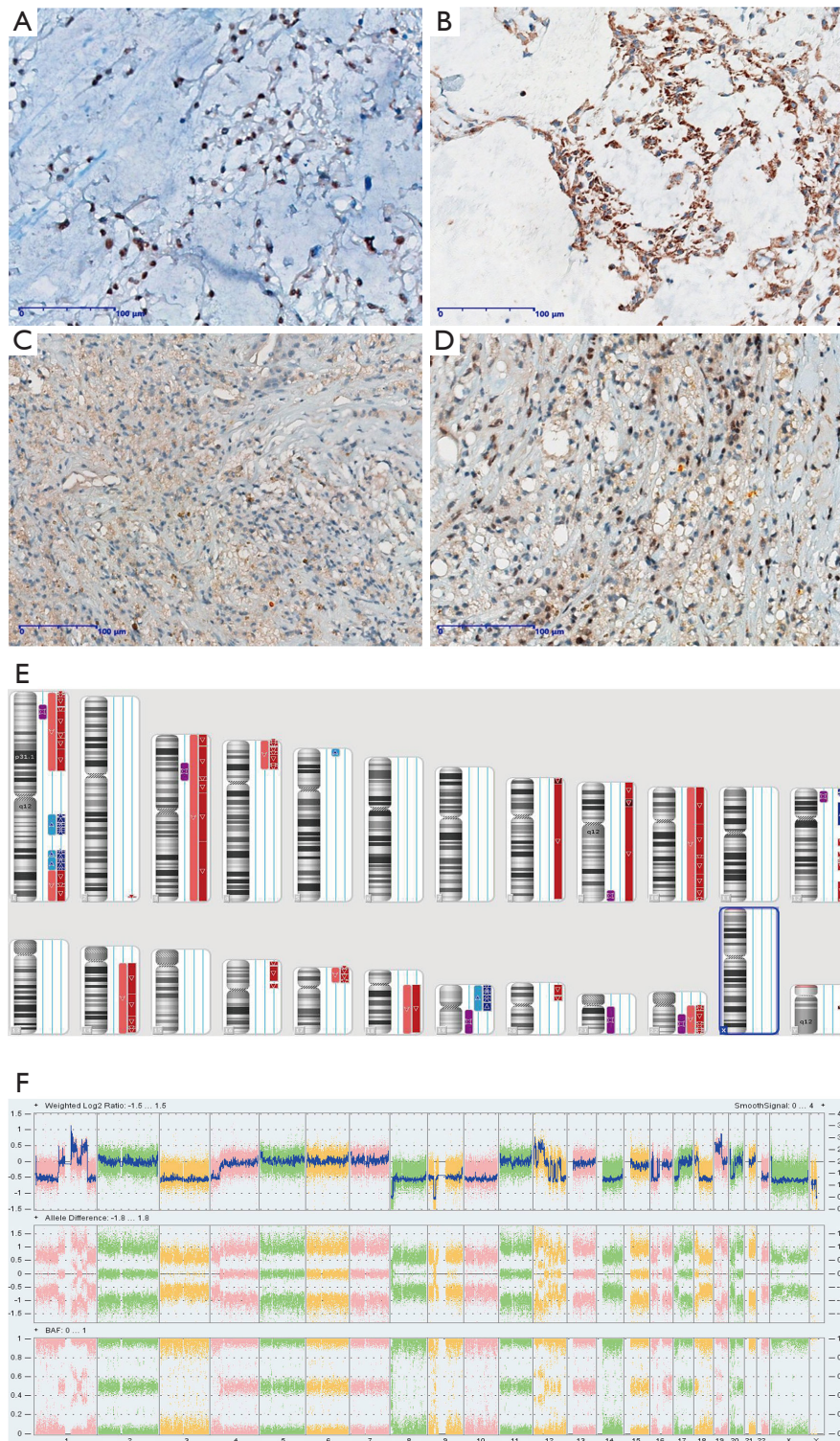
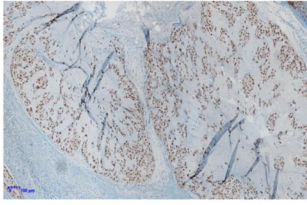
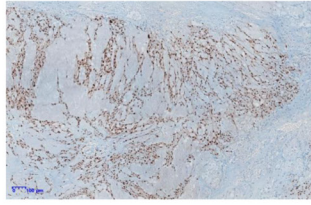


Figure S1 Immunohistochemistry and GeneChip assays of related samples. Representative immunohistochemical staining for (A) *CUX1*, (B) *CALR*, (C) *PIK3CA*, and (D) *ROS1* in the corresponding tumor samples according to *Figure 1A*. (E) The results of the GeneChip assay of Patient #4. (F) The whole genome view of Patient #4. *CUX1*, Cut Like Homeobox 1; *CALR*, Calreticulin; *PIK3CA*, Phosphatidylinositol-4,5-Bisphosphate 3-Kinase Catalytic Subunit Alpha; *ROS1*, ROS Proto-Oncogene 1, Receptor Tyrosine Kinase; BAF, b allele frequency.

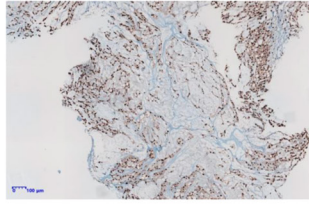
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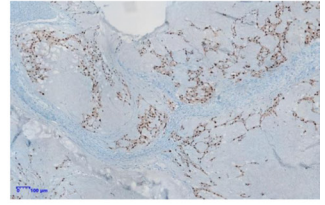
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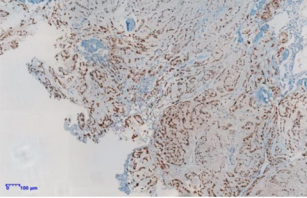
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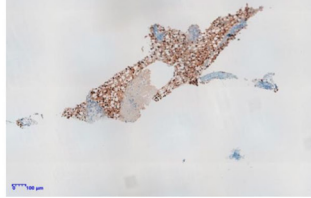
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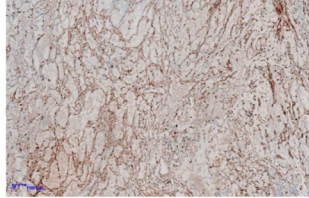
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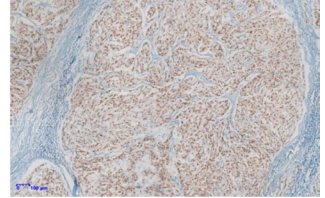


Figure S2 The immunohistochemistry results of the brachyury of all the samples were positive.