

**Supplemental Table S4. RAS family/MAPK pathway genes from CancerGenes database and PTC-related genes located in the CNA/UPD region**

Cytoband	Genomic alteration	Case	Gene Symbol	Gene Name
1p36.32 - 1p11.1	Deletion	T17	RAP1GAP	RAP1 GTPase activating protein
1q12-1q44	UPD	T17	PTPN7	protein tyrosine phosphatase, non-receptor type 7
			RAB13	RAB13, member RAS oncogene family
			RIT1	Ras-like without CAAX 1
			RAB25	RAB25, member RAS oncogene family
			RASAL2	RAS protein activator like 2
1q12 - 1q44	UPD, Amplification	T17, T50	RAB7L1	RAB7, member RAS oncogene family-like 1
			RASSF5	Ras association (RalGDS/AF-6) domain family 5
			RAB4A	RAB4A, member RAS oncogene family
			NTRK1	neurotrophic tyrosine kinase, receptor, type 1
			AKT3	v-akt murine thymoma viral oncogene homolog 3 (protein kinase B, gamma)
			miR-181b	
3q26.31-3q29	UPD	T07	PIK3CA	phosphoinositide-3-kinase, catalytic, alpha polypeptide
4p15.1 - 4q12	UPD	T06	RHOH	ras homolog gene family, member H
			PDGFRA	platelet-derived growth factor receptor, alpha polypeptide
4q23 - 4q35.1	UPD	T06	RAB33B	RAB33B, member RAS oncogene family
			GAB1	GRB2-associated binding protein 1
			VEGFC	vascular endothelial growth factor C
			FGF2	fibroblast growth factor 2 (basic)
7q31.32 - 7q36.3	Amplification	T32	BRAF	v-raf murine sarcoma viral oncogene homolog B1
8p21.1 - 8q13.3	UPD	T07	FGFR1	fibroblast growth factor receptor 1 (fms-related tyrosine kinase 2, Pfeiffer syndrome)
			RAB2A	RAB2A, member RAS oncogene family
9p24.3 - 9q34.3	Deletion	T17	RASEF	RAS and EF-hand domain containing
10q11.21 - 10q23.1	UPD	T06	RASSF4	Ras association (RalGDS/AF-6) domain family 4
			RET	ret proto-oncogene
			KRAS	v-Ki-ras2 Kirsten rat sarcoma viral oncogene homolog
			SSPN	sarcospan (Kras oncogene-associated gene)
			RAB5B	RAB5B, member RAS oncogene family
			RASSF3	Ras association (RalGDS/AF-6) domain family 3
12p12.2 - 12q13.3, 12q13.2 - 12q21.2, 12q21.1-12q23.2	UPD	T23, T05	RAP1B	RAP1B, member of RAS oncogene family
			RAB21	RAB21, member RAS oncogene family
			IGFBP6	insulin-like growth factor binding protein 6
			DUSP6	dual specificity phosphatase 6
			PTPRR	protein tyrosine phosphatase, receptor type, R
12q24.13	Deletion	T17	RASAL1	RAS protein activator like 1 (GAP1 like)
			ERBB2	v-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)
17q12 - 17q24.2	UPD	T05	NKIRAS2	NFKB inhibitor interacting Ras-like 2
			RAB5C	RAB5C, member RAS oncogene family
			DUSP3	dual specificity phosphatase 3
22q11.1 - 22q13.33	Deletion	T21, T19, T17, T48	RASL10A	RAS-like, family 10, member A
Xq24 - Xq27.3	UPD	T06	RAB33A	RAB33A, member RAS oncogene family
			RAP2C	RAP2C, member of RAS oncogene family