

Supplementary Table 2. Mutated tandem minigenes (TMGs) screened for subjects NCI-3998, 3784, 3903, and 3926

Patient ID	TMG#	Mutation type	Gene	Transcript ID	WT AA	Mut AA	AA position	Wild-type 25-mer	Mutated 25-mer
NCI-3998	TMG1	SNV	AMER1	uc022byb.1	P	L	686	SQISHRGITSAPPTASS EPDWRDF	SQISHRGITS AFLTTASSE PDWRDF
		SNV	LOC100133957	uc011mlt.1	A	V	141	RACEQGPSGNKPANG GLQKRRLEPM	RACEQGPSGNKPVNGG LQKRRLEPM
		SNV	CXorf22	uc004ddj.3	M	I	865	SNELVLRPRGFFMKTCTF RGTVRLYN	SNELVLRPRGFFIKTCFR GTVRLYN
		SNV	MAGEA6	uc022chf.1	E	K	168	DSLQLVFGIELMEVDPI GHVYIFAT	DSLQLVFGIELMKVDPI GHVYIFAT
		SNV	GPR112	uc010nsb.1	P	S	2870	EISFPNDDFDKDPYCSS P	EISFPNDDFDKDSYCSSP
		SNV	RBMXL3	uc011mte.1	D	N	577	GGCSADAYSGGHSSS QSNRYGGGG	GGCSADAYSGGHSSS QSNRYGGGG
		SNV	CHRD1	uc011mss.2	R	Q	226	TKQECKKIHCNRYPCCK YPQKIDGK	TKQECKKIHCNQYPCCK YPQKIDGK
		SNV	CDKN2B	uc022beo.1	E	K	3	MREENKGMPSGGGSD EGLASAAARG	MRKENKGMPSGGGSD
		SNV	CDKN2B	uc022beo.1	G	R	17	NKGMPSGGGSDEGLAS AAARGLVEK	NKGMPSGGGSDERLAS AAARGLVEK
		SNV	UBAC1	uc004cgt.3	E	K	276	SATDEEARDELTEIFKKI RRKREFR	SATDEEARDELTKIFKKI RRKREFR
		SNV	GOLGA2	uc011maw.2	A	V	785	ASAQKEPEAAPAPGT GGDSVCGET	ASAQKEPEAAPVPGT GGDSVCGET
		SNV	PAPPA	uc004bjn.3	R	Q	151	GLYDKCSYISRDRGWV VGIHTISDQ	GLYDKCSYISRDQGWV VGIHTISDQ
		SNV	OR13C5	uc011lvp.2	H	Y	176	VQLPFCRNIIINHFTCEI LAVMKLA	VQLPFCRNIIINYFTCEIL AVMKLA
		SNV	PSD3	uc003wza.3	H	Y	796	AVYKSGFLARKIHADM DGKKTPRGK	AVYKSGFLARKIYADMD GKKTPRGK
		SNV	CSMD3	uc011lhx.2	E	K	1460	FQCDPGYELQGEERITCI QVENRYF	FQCDPGYELQGEKRITCI QVENRYF
		SNV	PVRIG	uc003uuf.1	I	V	114	PARQARWETQSSISLILE GSGASSP	PARQARWETQSSVSLIL EGSGASSP
NCI-3998	TMG2	SNV	CYP3A43	uc003urz.1	E	K	144	LLSPAFTSVKFKEMVPII SQCGDML	LLSPAFTSVKFKKMVPIIS QCGDML
		SNV	ENSG000000021 461	ENST000000043 3277	E	K	93	LLSPAFTSVKFKEVK RK	LLSPAFTSVKFKKVRK
		SNV	SAMD9L	uc022ahh.1	R	Q	1188	ETENWSPQKSQRRYD MYNTACFLGE	ETENWSPQKSQRQYD MYNTACFLGE

		SNV	NPC1L1	uc011kbw.2	P	L	459	LQERLRHLQVWSPEAQ RNISLQDIC	LQERLRHLQVWSLEAQ RNISLQDIC
		SNV	FAM20C	uc003sip.3	P	L	224	FLSPGEEAAVDSYPNWL KFHIGINRY	FLSPGEEAAVDSYLNWLK FHIGINRY
		SNV	TCRBV22S1A2 N1T	uc022amx.2	E	K	39	QKVEFLVSFYNNKISEKS EIFDDQF	QKVEFLVSFYNNKISEKS EIFDDQF
		SNV	BRAF	uc003vvc.4	V	E	600	LTVKIGDFGLATVKSRW SGSHQFEQ	LTVKIGDFGLATEKSRW SGSHQFEQ
		SNV	PRRT4	uc022aky.1	P	S	706	CRGFEGAAAANPAPSPA SSPCSDYTV	CRGFEGAAAANPASSPAS SPCSDYTV
		SNV	POP7	uc022ais.1	V	A	108	LQVAANTSTVELVDELE PETDTREP	LQVAANTSTVELADELE PETDTREP
		SNV	PRIM2	uc003pdx.3	R	W	79	TEQYQSKLESELRKLKFS YRENLED	TEQYQSKLESELWKLKFS SYRENLED
		SNV	TCTE1	uc003oxi.2	D	N	115	EHQQKVLNHLSPDLPLA VTANLIDS	EHQQKVLNHLSPNLPLA VTANLIDS
		SNV	SERAC1	uc031sqr.1	I	M	34	KSGTHWRDIRNIIKFTG SLILGGSL	KSGTHWRDIRNIMKFT GSLILGGSL
		SNV	AK9	uc003ptr.4	P	L	381	EEALKPFLNPRPYLLPP MPGPPCK	EEALKPFLNPRLYLLPP MPGPPCK
		SNV	CDH18	uc003jgd.3	M	I	569	SRTVQDVVYLPIMISDG GIPSLSSS	SRTVQDVVYLPPIISDGGI PSLSSS
		SNV	ZFP62	uc021yjo.1	L	F	794	CECGKSFNYRSVLDQHK RIHTGKKP	CECGKSFNYRSVFDQHK RIHTGKKP
NCI-3998	TMG3	SNV	SH3PXD2B	uc003mbr.3	N	S	278	KEGWAPASYLKKNSGE PLPPKPGPG	KEGWAPASYLKKSSGEP LPPKPGPG
		SNV	PPM1K	uc003hrm.5	A	V	181	KAFSSHARLSADATLLTS GTTATVA	KAFSSHARLSADVTLLTS GTTATVA
		SNV	PDS5A	uc003guv.4	Y	F	1000	MATEKLLSLLPEYVVPY MIHLLAHDPDFTRSQ	MATEKLLSLLPEFVVPY MIYLLAHDPDFTRSQ
		SNV			H	Y	1007		
		SNV	FAT1	uc003izf.3	S	L	2713	PKFSEPFYFTVSEDVPI GTEIDLI	PKFSEPFYFTVLEDVPI GTEIDLI
		SNV	TENM3	uc003ive.1	G	E	538	HVLDVQNGILYKNGE NQFISQQPP	HVLDVQNGILYKENGE NQFISQQPP
		SNV	CNOT10	uc011axj.2	S	L	511	SIQNTVYNDGQSSAIPV ASMEFAAI	SIQNTVYNDGQSLAIPV ASMEFAAI
		SNV	DLG1	uc011bue.2	S	L	481	LSGELRKGDRIIVNSVD LRAASHE	LSGELRKGDRIILVNSVD LRAASHE
		SNV	ZBTB21	uc021wjo.1	L	F	682	YICTYCGKAYRFLSQFKQ HIKMHPG	YICTYCGKAYRFFSQFKQ HIKMHPG

		SNV	TSHZ2	uc021wex.1	E	K	468	ELKKESKKERPEETSKDE KVVKSED	ELKKESKKERPEKTSKDE KVVKSED
		SNV	ADNP	uc002xvu.1	S	F	1032	QGDREQLKWKNSSYGK VEGFWSKDQ	QGDREQLKWKNSFYGK VEGFWSKDQ
		SNV	CST9	uc002wtl.3	G	S	20	KAMPWALSLLLMGFQL LVTYAWCSE	KAMPWALSLLLMSFQL LVTYAWCSE
		SNV	PCBP1-AS1	uc002sga.3	L	F	9	MVSVDGGFLWTLINQ LLFDSSAEP	MVSVDGGFFWTLINQ LLFDS
		SNV	SRBD1	uc010yoc.2	P	L	54	RNLRQLLLTSPVPGRTL MGVDPGYK	RNLRQLLLTSPVLGRTL MGVDPGYK
		SNV	CAD	uc010eyw.3	S	F	1947	TSSVQKGESLADSVQT MSCYADVVV	TSSVQKGESLADVFQT MSCYADVVV
		SNV	ENSG00000168 918	ENST0000045 5936	E	K	375	YADLLSHDQLLTERREQ KVFLHFEE	YADLLSHDQLLTKRREQ KVFLHFEE
NCI-3998	TMG4	SNV	ZDBF2	uc031rqy.1	P	S	301	RMGTKGSLRVKSPSKLA VNPNTDM	RMGTKGSLRVKSSSKLA VNPNTDM
		SNV	TTN	uc031rqd.1	D	N	16446	TDIKAESCYLTWDAPLD NGGSEITH	TDIKAESCYLTWNAPLD NGGSEITH
		SNV	ZNF586	uc010euh.3	T	I	186	YTSSLIKHRRHHTGERPY ECSEGR	YTSSLIKHRRIHIGERPYE CSEGR
		SNV	NLRP2	uc021vbq.1	G	E	139	FKTEAQAFETETKGNVIC LGKEVFKG	FKTEAQAFETETKENVICL GKEVFKG
		SNV	NLRP2	uc010eso.3	G	E	136	LERFKTEAQETKGNVICL GKEVFKG	LERFKTEAQETKENVICL GKEVFKG
		SNV	NLRP2	uc010esn.3	G	E	115	RKPLSLAFTETKGNVICL GKEVFKG	RKPLSLAFTETKENVICL GKEVFKG
		SNV	ENSG00000022 556	ENST0000058 8619	G	E	139	FKTEAQAFETETKGN HPTMPLPVH	FKTEAQAFETETKEN HPT
		SNV	FAM90A27P	uc031rmv.1	E	K	7	MQEAWKEPAEDCLFLR HPTMPLPVH	MQEAWKKAEDCLFLR HPT
		SNV	C19orf73	uc002pmq.4	G	E	10	MRLKVGFGGGGCFRK DALCLEGGVS	MRLKVGFGGEGCFRKD ALCLEG
		SNV	RELB	uc021uvq.1	L	F	153	RYECEGRSAGSILGESST EASKTLP	RYECEGRSAGSIFGESST EASKTLP
		FS insertion	HNRNPL	uc021uui.1			291	VKFMKSKPGAAMVEM ADGYAVDRAI	VKFMKSKPGAAMVGD G
		SNV	RYR1	uc002oiu.3	H	Y	821	PCHEAVLPRERLHLEPIK EYRREGP	PCHEAVLPRERLYLEPIK EYRREGP
		SNV	NFIC	uc010xhj.2	R	W	122	DQKGMRRIDCLRQAD KVVRLDLVM	DQKGMRRIDCLWQA DKVVRLDLVM
SNV	LRP3	uc010edh.3	S	F	756	PLGVCRNPPPPCSPMLE ASDDEALL	PLGVCRNPPPPCFPMLE ASDDEALL		

		SNV	CSNK1G2	uc010dsu.3	P	S	328	LNSTNGELNADDPTAG HSNAPITAP	LNSTNGELNADDSTAG HSNAPITAP
NCI-3998	TMG5	SNV	ARRDC2	uc002nhv.3	P	L	202	IDRKGYPGEVIVFAEI DNGSTRP	IDRKGYPGEVILVFAEI DNGSTRP
		SNV	CTDP1	uc021ult.1	G	R	660	PGPEVRIYDSNTGKLIRT GARGPPA	PGPEVRIYDSNTRKLIRT GARGPPA
		SNV	SERPINB3	uc002lji.3	E	K	250	GKDLSMIVLLPNEIDGL QKLEEKLT	GKDLSMIVLLPNKIDGL QKLEEKLT
		SNV	HEXDC	uc002kew.3	A	V	63	YEGPLRLLRAKYAYSPSE IKEILHL	YEGPLRLLRAKYVYSPSEI KEILHL
		SNV	ENSG00000169 660	ENST0000057 8775	A	V	24	YEGPLRLLRAKYAYRLEC SGAILAH	YEGPLRLLRAKYVYRLEC SGAILAH
		SNV	EVPL	uc010wst.1	E	K	59	QSLGTEKETAQKECEAF LSTRPVGP	QSLGTEKETAQKKECAF LSTRPVGP
		SNV	MED13	uc002izo.3	P	S	1691	PHIKSTVSVQIIPCQYLL QPVKHD	PHIKSTVSVQIISCQYLLQ PVKHD
		SNV	HEATR6	uc010ddk.1	P	S	265	GEVICKCMGEADPSIQL HGAKLLEE	GEVICKCMGEADSSIQL HGAKLLEE
		SNV	ABCC3	uc002isl.3	E	K	209	FSAKNVDPNPYPETSAG FLSRLFFW	FSAKNVDPNPYPKTSAG FLSRLFFW
		SNV	PLEKHM1	uc010wjn.1	R	C	530	EEHTCVENCSSLRCEV GPAHSDGR	EEHTCVENCSSLCCESV GPAHSDGR
		SNV	SLFN14	uc010ctu.1	R	C	827	IAILCRRGEDRGRYRLAL LKAMELI	IAILCRRGEDRGCYRLAL LKAMELI
		SNV	TVP23B	uc002gum.2	S	F	148	VLWVIFAFSALFSFRVK WLAVVIMG	VLWVIFAFSALFFFRVK WLAVVIMG
		SNV	KCNG4	uc010voc.2	R	W	257	DLRAEEDQGECSRKY IFIVETIC	DLRAEEDQGECSWKY YIFIVETIC
		SNV	ADAMTS18	uc002ffc.4	P	S	265	FCGRRKKYAPKPPTEDT YLRFDEYG	FCGRRKKYAPKPSTEDT YLRFDEYG
SNV	ENSG00000140 873	ENST0000044 9265	S	F	266	CGRRKKCICSQASHRGH LSKV	CGRRKKCICSQAFHRGH LSKV		
NCI-3998	TMG6	SNV	TIGD7	uc021tcc.1	R	Q	130	DFKASTGWLFRFRNRH AIGNRKGC	DFKASTGWLFRFQNRH AIGNRKGC
		SNV	CIITA	uc010bup.1	G	E	225	SSSSLSCLNLPEGPIQFV PTISTLP	SSSSLSCLNLPEEPIQFVP TISTLP
		SNV	EFTUD1	uc002bgu.1	E	D	427	QDGSAIETCPKGEEPRG DEQQVESM	QDGSAIETCPKGDEPRG DEQQVESM
		SNV	FAH	uc010unl.2	R	Q	159	RLFLSAACYQRNHVQ GQGEVDA	RLFLSAACYQRQNHVQ GQGEVDA
		SNV	FAH	uc002bfn.2	G	R	68	DFYSSRQHATNVGIMF RDKENALMP	DFYSSRQHATNVRIMFR DKENALMP

		SNV	NOP10	uc001zie.1	T	I	47	FSPDDKYSRHRITIKKRF KVLMTQQ	FSPDDKYSRHRIIKKRF VLMTQQ
		SNV	ENSG00000182 117	ENST0000055 7912	P	S	28	TLKMTNTLDTESPSRNA SRCS	TLKMTNTLDTESSRNA SRCS
		SNV	STON2	uc010tvu.3	P	S	724	GFSANRDPLTQVPCEN VMIRYPVPS	GFSANRDPLTQVSCENV MIRYPVPS
		SNV	SLC8A3	uc001xlz.3	R	C	889	RRPHLGGEELGGPRGCK LATTWLFVS	RRPHLGGEELGGPCGCKL ATTWLFVS
		SNV	OR4K1	uc001vwj.2	A	V	150	RRLCVIFVSISWAVGVL HSVSHLAF	RRLCVIFVSISWVVGVL HSVSHLAF
		SNV	AHNAK2	uc010axc.1	M	V	2187	SVDVSPPKVEADMSLPS MQGDLKTT	SVDVSPPKVEADVSLPS MQGDLKTT
		SNV	HTR2A	uc010acr.4	P	S	405	RYIQCCQYKENKKPLQLIL VNTIPAL	RYIQCCQYKENKKSLLQLIL VNTIPAL
		SNV	NBEA	uc021rid.1	P	L	2468	REDEVVVNDVDLPPWA KKPEDFVRI	REDEVVVNDVDLLPWA KKPEDFVRI
		SNV	KMT2D	uc001rta.4	S	F	654	SPMSPPPEVSRLSPLPV VSRLSPPP	SPMSPPPEVSRLFPLPV VSRLSPPP
		SNV	LRRK2	uc009zjw.3	P	L	689	LLVNPDPQRLTIPISQIA PDLILAD	LLVNPDPQRLTILISQIAP DLILAD
		SNV	EP400	uc010tbo.2	P	S	61	RKGGKISFCAHTPLNCM FGFFCFVK	RKGGKISFCAHTSLNCM FGFFCFVK
		SNV	HECTD4	uc021reb.1	P	S	2876	ISESKVNMDVNFPGAA FVVVSCKES	ISESKVNMDVNFSGAAF VVVVSCKES
NCI-3998	TMG7	FS insertion	SWAP70	uc001mhw.3			99	KIEFNRMCWTLCKVKKN LTKNPLLIT	KIEFNRMCWTLCKVKKK HKESPAHYRRRCI
		FS insertion	ENSG00000133 789	ENST0000052 6358			117	RLNSIGCVGPSVSKKTS QRIPCSLQ	RLNSIGCVGPSVSKKNLT KNPLITEEDAFKIWVIF NFLSEDKYPLA
		SNV	ZFP91	uc001nmy.4	T	I	233	EEIPFKDDPRDETYKPHL ERETPKP	EEIPFKDDPRDEIYKPHL ERETPKP
		SNV	PRDM11	uc031qab.1	R	W	216	SERIYFRACRDIRPGEW LRVWYSED	SERIYFRACRDIWPGEW LRVWYSED
		SNV	MOB2	uc001ltp.1	S	F	176	LLWGWGLLSQRPFFPL TPPLPASPG	LLWGWGLLSQRPFFPLT PPLPASPG
		SNV	LGI1	uc021pwk.1	E	I	84	LSFVRSGFTEISEGSFLFT PSLQLL	LSFVRSGFTEISIGSFLFT PSLQLL
		SNV	MYOF	uc001kio.3	E	D	1477	LKIYNCELENVAEFEGLT DFSDFTK	LKIYNCELENVADFEGLT DFSDFTK
		SNV	POLR3A	uc001jzn.3	G	A	1066	HFAGVASMNITLGVPRI KEIINASK	HFAGVASMNITLAVPRI KEIINASK
		SNV	C10orf120	uc001lgn.3	H	Y	334	IWKERM RKATPYHY	IWKERM RKATPYYY

		SNV	ACSL5	uc009xxz.3	S	F	148	GIFAQNRPEWIISELACY TYSMVAV	GIFAQNRPEWIIFELACY TYSMVAV
		SNV	PRKAA2	uc031pms.1	M	I	239	FYLASSPPSGSFMDDSA MHIPPGLK	FYLASSPPSGSFIDDSAM HIPPGLK
		SNV	ZBTB41	uc001gtx.1	P	L	425	NETEFHKKEHKPCYCNK LHASKKTL	NETEFHKKEHKCLYCNK LHASKKTL
		SNV	KCNT2	uc009wyu.3	G	E	129	FETILLGYLSYKGNIEQ ILRIPFI	FETILLGYLSYKENIWEQI LRIPFI
		SNV	INSRR	uc010pht.2	D	N	669	CHRGLRLPTSNNDRPF DGEDGDPEA	CHRGLRLPTSNNNPRFD GEDGDPEA
		SNV	PDE4DIP	uc021ouh.1	R	Q	2291	LLELRTKVSKQERLLQST TEHLKNA	LLELRTKVSKQEQLLQST TEHLKNA
		SNV	AP4B1	uc010owp.2	P	S	548	WLSLKVAHQQVLPWR GEFHPDTLQM	WLSLKVAHQQVLSWR GEFHPDTLQM

Patient ID	TMG#	Mutation type	Gene	Transcript ID	WT AA	Mut AA	AA position	Wild-type 25-mer	Mutated 25-mer
NCI-3784	TMG1	SNV	ABHD16A	NM_021160	P	S	322	WNHPGFAGSTGVFPF QNEANAMDVV	WNHPGFAGSTGVSFPO NEANAMDVV
		SNV	ALMS1	NM_015120	P	F	892	HLTEEALKVSIVPGPGD KKTGIPSA	HLTEEALKVSIVFGPGDQ KTGIPSA
		SNV	ANKHD1- EIF4EBP3	NM_020690	P	S	1555	RKNKKNKTKETPPTAH LILPEQHMS	RKNKKNKTKETPSTAHLIL PEQHMS
		SNV	ATP8B1	NM_005603	R	K	946	RLLLVHGRWSYIRMCK FLRYFFYKN	RLLLVHGRWSYIKMCKFL RYFFYKN
		SNV	ATR	NM_001184	L	F	1405	AYGLLMELTRAYLAYA DNSRAQDSA	AYGLLMELTRAYFAYADN SRAQDSA
		SNV	ATXN7	NM_000333	P	L	780	VNVRHDQSGRGPPTG SPAESIKRMS	VNVRHDQSGRGPPLTGSP AESIKRMS
		SNV	B4GALT5	NM_004776	S	F	326	VSRPEGDTGKYKSIPIH HHRGEVQFL	VSRPEGDTGKYKFIPIHHH RGEVQFL
		SNV	BLM	NM_000057	A	V	1351	MPASQRSKRRKTASS GSKAKGGSAT	MPASQRSKRRKTVSSGSK AKGGSAT
		SNV	BRAF	NM_004333	V	E	600	LTVKIGDFGLATVKS WSGSHQFEQ	LTVKIGDFGLATEKSRWS GSHQFEQ
		SNV	BRAT1	NM_152743	T	I	418	APASSVGGHLCGTLAG CVRVQRAAL	APASSVGGHLCGILAGCV RVQRAAL
		SNV	BRD9	NM_023924	S	F	554	GGSRPSSNLSSLSNASE RDQHHLGS	GGSRPSSNLSSLFNASER DQHHLGS
		SNV	BRF1	NM_001519	T	I	109	GNQLQLNQHCLDTAF NFFKMAVSRH	GNQLQLNQHCLDIAFNF FKMAVSRH
		SNV	C11orf30	NM_020193	P	L	992	IHLQADQLQHKLPQM PQLSIRHQKL	IHLQADQLQHKLLQMPQ LSIRHQKL
		SNV	C2CD3	NM_015531	S	L	486	SKKISQSTALARSSKVL ESSDHKLK	SKKISQSTALARLSKVLESS DHKLK
		SNV	CAMKK2	NM_172226	P	L	124	GGSLDMNGRCICPSLP YSPVSSPQS	GGSLDMNGRCICLSLPYS PVSSPQS
SNV	CD164	NM_006016	L	P	50	PISNVTAPVTSPLPLVT TPAPETCE	PISNVTAPVTSPLPLVTP APETCE		
NCI-3784	TMG2	SNV	CDCA3	NM_031299	P	S	145	EEQMPPWNQTEFPSK QVFSKEEARQ	EEQMPPWNQTEFSSKQ VFSKEEARQ

		SNV	CDK13	NM_031267	R	W	757	FPITAIKILRQLTHQ SIINMKE	FPITAIKILWQLTHQSII NMKE
		SNV	CHPF	NM_024536	R	C	629	DTVLTPDFLNRCRMH AISGWQAFFP	DTVLTPDFLNRCMHAIS GWQAFFP
		SNV	CLEC4F	NM_173535	P	S	19	RFCTDNQCVSLSHPQE VDSVAMAPAA	RFCTDNQCVSLSHSQEVD SVAMAPAA
		SNV	COL5A2	NM_000393	G	E	1110	GQRGDPGSRGPIGPP GRAGKRGLPG	GQRGDPGSRGPIEPPGR AGKRGLPG
		SNV	COL7A1	NM_000094	G	E	1412	GDKGDRGERGPPGPG EGGIAPGEPG	GDKGDRGERGPPPEPGE GIAPGEPG
		FS deletion	CTSC	NM_148170			42	CTYLDLLGTWVFQVGS SGSQRDVNC	CTYLDLLGTWVFRWAPA VPSAMSTARLWDHKKKK
		SNV	CTTN	NM_005231	S	F	261	GWDHQEKQLLHESQK DYKTGFGGKF	GWDHQEKQLLHEFQKD YKTGFGGKF
		SNV	CTTN	NM_138565	S	F	261	GWDHQEKQLLHESQK DYSKGFGGKY	GWDHQEKQLLHEFQKD YSKGFGGKY
		SNV	DBF4	uc011khf.1	P	L	16	KELVVVHKKQEKPCSP FDVKPSSM	KELVVVHKKQEKLCSPFD VDKPSSM
		SNV	DBF4	NM_006716	P	L	249	TNMPFINYSIQKPCSPF DVKPSSM	TNMPFINYSIQKLCSPFD VDKPSSM
		SNV	DCLRE1A	NM_0012718 16	P	H	1009	YLEMKRFVQWLKPKQ IIPVNVGTW	YLEMKRFVQWLKHQKIIP TVNVGTW
		SNV	DDX42	NM_007372	P	L	565	VATDVAARGLDIPSIKT VINYDVAR	VATDVAARGLDILSIKTVI NYDVAR
		SNV	DHX16	NM_003587	P	S	573	STFFDDAPVFRIPGRRF PVDIFYTK	STFFDDAPVFRISGRRFPV DIFYTK
		SNV	DOLPP1	NM_020438	S	F	111	MPSSHSQFMWFFSVY SFLFLYLRMH	MPSSHSQFMWFFFVYSF LFLYLRMH
		SNV	DTNA	NM_032979	T	I	87	ELNVSRLAVALSTIFYQ LNKRMPPT	ELNVSRLAVALSIIFYQLNK RMPTT
NCI-3784	TMG3	SNV	DTNB	NM_183361	L	F	110	STHQISVEQSISSLLNF MIAAYDSE	STHQISVEQSISSLLNFMI AAYDSE
		SNV	ENSG00000006 634	ENST00000041 3643	P	S	229	KPFVKVEDMSQSPAV HLM	KPFVKVEDMSQSSAVHL M
		SNV	ENSG000000089 902	ENST00000056 0472	T	M	35	SGNMAEIFRQSQT	SGNMAEIFRQSQM
		SNV	ENSG000000099 995	ENST00000041 1423	S	F	32	KQPLVRRSVRRRSRSQ RKR	KQPLVRRSVRRRSRQRK R
		SNV	ENSG000000163 738	ENST00000043 3372	P	L	3	MDPRVSGILVQLPLPD HVDERTICN	MDLRVSGILVQLPLP
		SNV	ENSG000000164 124	ENST00000051 1532	P	L	160	EIPNNTCSMDTTLPLITE HGLQSCSD	EIPNNTCSMDTTLITEHG LQSCSD
		SNV	ENSG000000164 124	ENST00000051 4558	P	L	160	EIPNNTCSMDTTLPLITE HVSIV	EIPNNTCSMDTTLITEHV SIV
		SNV	ENSG000000187 098	ENST00000047 8490	P	L	103	KFEEQNRAESECPDG MLKTSSGKKEVPVAIK	KFEEQNRAESECLDG MLKTSSGKKEVPMIAIKTL
		SNV	EPHA2	NM_004431	V	M	643	TLKAGYTEK	KAGYTEK
		SNV	ESPL1	NM_012291	A	V	1380	VCPTESKPEVPQAPRV QQRVQTRLK	VCPTESKPEVPQVPRVQ QRVQTRLK
		SNV	EXOC3	NM_007277	A	V	49	ARKKASVEARLKAAIQ SQLDGVRTG	ARKKASVEARLKVAIQSQ LDGVRTG

		SNV	EXOC4	NM_021807	R	Q	423	EPSAQLSYASTGREFA AFFAKKKPQ	EPSAQLSYASTGQEFAAF FAKKKKPQ
		SNV	FKTN	NM_0011989 63	G	E	359	GKVEDSLELSFQKDD VKLDVFFFY	GKVEDSLELSFQEKDDVK LDVFFFY
		SNV	FLNA	NM_0011105 56	R	C	2049	VVISQSEIGDASRVRS GQGLHEGH	VVISQSEIGDASCVRVSG QGLHEGH
		SNV	FLNC	NM_001458	P	S	2595	IVGSPFKAKVTGPRLSG GHSLHETS	IVGSPFKAKVTGSRLSGG HSLHETS
		SNV	FREM1	NM_144966	G	E	1200	TQKPRHGLLIDRGFSK DFSENKQPA	TQKPRHGLLIDREFSKDFS ENKQPA
NCI-3784	TMG4	SNV	FSCN1	NM_003088	T	A	484	GDHAGVLKASAETVD PASLWEY	GDHAGVLKASAEAVDPA SLWEY
		SNV	GAA	NM_0010798 03	S	F	144	SYPSYKLENLSSEMGY TATLTRTT	SYPSYKLENLSSFEMGYT ATLTRTT
		SNV	GNB5	uc031qrz.1	P	S	84	DMKTALALYEFPPMG LLSALDHGII	DMKTALALYEFPSMGLLS ALDHGII
		SNV	GNB5	NM_016194	P	L	377	GHENRVSTLRVSPDGT AFCSGSWDH	GHENRVSTLRVSLDGTA FCSGSWDH
		SNV	GPATCH8	NM_0010029 09	S	F	865	RSRSGRRHSSHRSRR SYSSSDAS	RSRSGRRHSHRFSRRSY SSSDAS
		SNV	GPR98	NM_032119	R	Q	6009	YVLVMNDEHTERRYL FFLLSWGGLP	YVLVMNDEHTERQYLLFF LLSWGGLP
		SNV	GPRIN1	NM_052899	P	L	887	PMTPQAAAPPAPFEV RVRPGSALAA	PMTPQAAAPPAPFLEVRV RPGSALAA
		SNV	GSE1	NM_014615	R	Q	718	LKPGSPYRPPVPRAPD PAYIYDEFL	LKPGSPYRPPVPQAPDPA YIYDEFL
		SNV	HIF3A	NM_152795	E	K	17	LQRARSTTELKKEKSRD AARSRRSQ	LQRARSTTELKKEKSRDA ARSRRSQ
		SNV	HIF3A	NM_152794	E	K	15	WQDHRSTTELKKEKSR DAARSRRSQ	WQDHRSTTELKKEKSRD AARSRRSQ
		SNV	IFIT5	NM_012420	G	E	98	SDKEEVRSLVTWGN AWVYHMDQL	SDKEEVRSLVTWENYAW VYHMDQL
		SNV	IFT140	NM_014714	R	K	1141	CSDFFIEHSQYERAVEL LLAARKYQ	CSDFFIEHSQYEKAVELL AARKYQ
		SNV	IK	uc003lgq.3	P	L	555	KKMEADGVEVKRPKY ELSGSDNVPYVTLTSSV	KKMEADGVEVKRLKY ELSGSDNVPYVILLSVIN
		SNV	INF2	NM_032714	T	I	196	INAVILGP	INAVILGP
		SNV	IRF2BP1	NM_015649	S	F	7	MASVQASRRQWCYLC DLPKMPWAMV	MASVQAFRRQWCYLCD LPK
		SNV	ITCH	NM_0012571 37	V	I	831	IDNEKRMRLQFVTGT CRLPVGGA	IDNEKRMRLQFITGT CRLPVGGA
NCI-3784	TMG5	SNV	ITPR3	NM_002224	H	N	290	SSNALWEVEVHHDP CRGGAGHWNG	SSNALWEVEVHHNDPCR GGAGHWNG
		SNV	KAZN	NM_015209	T	I	409	QRKSLDPGLFDGTAPD YYIEEDADW	QRKSLDPGLFDGIAPDYI EEDADW
		SNV	KDM7A	NM_030647	D	N	758	YSTCLQRQIQSTDCSG ERNLQDPS	YSTCLQRQIQSTNCSE ERNLQDPS
		SNV	KIF16B	NM_024704	L	P	1009	REKQREALERALARL ERRHSALQR	REKQREALERAPARLER RHSALQR
		SNV	KRT10	NM_000421	S	Y	547	SGGGGGYGGGSSG GGSSGGGYGG	SGGGGGYGGGSSG SSGGGGYGG
		SNV	LPHN2	NM_012302	R	Q	803	TQGCKLVDNKTTRTTC ACSHLTNFA	TQGCKLVDNKTQTTC ACSHLTNFA
		SNV	LTBP4	uc002ooj.1	P	L	281	DDFEALCNVLRPPAYS PPRPGGFG	DDFEALCNVLRPLAYSP RPGGFG

		SNV	MBNL2	NM_207304	G	S	119	GTPLHPVPTFPVGP GTNTAISFA	GTPLHPVPTFPVSPAIG NTAISFA
		SNV	MED4	NM_014166	R	W	173	VCAPLTWVPGDPRR YPTDLEMRSRG	VCAPLTWVPGDPWRPYP TDLEMRSRG
		SNV	MFI2	NM_033316	R	K	190	ETSYSESLCRLCRGDSS GEGVCDKS	ETSYSESLCRLCKGDSSGE GVCDKS
		SNV	MITF	NM_198177	P	L	194	KFEEQNRAESECPGM NTHSRASCMQ	KFEEQNRAESECLGMNT HSRASCMQ
		SNV	MOSPD3	NM_0010400 98	P	L	141	KDITSILRAPAYPLELQ GQDPAPR	KDITSILRAPAYLLELQGG PDPAPR
		SNV	MTHFD2L	NM_0011449 78	P	L	138	ELLDVTDQLNMDPRV SGILVQLPLP	ELLDVTDQLNMDLRVSGI LVQLPLP
		SNV	MYH9	NM_002473	R	Q	1576	AMKAQFERDLQGRDE QSEKKKQLV	AMKAQFERDLQGQDEQ SEKKKQLV
		SNV	NBPF9	uc010oye.3	M	I	217	VSAGPLSSEKAEMNIL EINEKLHPQ	VSAGPLSSEKAENILEINE KLHPQ
		SNV	NCLN	NM_020170	A	V	202	GVQSKAVSDWLIASVE GRLTGLGGE	GVQSKAVSDWLIVSVEG RLTGLGGE
NCI-3784	TMG6	SNV	NCOA2	NM_006540	S	F	593	DSKDCFLYGEPESEGT TGQAESSCH	DSKDCFLYGEPEFEGTTG QAESSCH
		SNV	NELL1	NM_201551	E	K	433	GYISVQGDSAYCEDID ECAAKMHYC	GYISVQGDSAYCKDIDEC AAKMHYC
		SNV	NFKB1	NM_003998	S	F	618	GADLSLLDRLGNSVLH LAAKEGHDK	GADLSLLDRLGNFVLHLA AKEGHDK
		SNV	NOL6	NM_139235	Q	L	380	TMSGYQVLRSVLQFLA TTDLTVNGI	TMSGYQVLRSVLLFLATT DLTVNGI
		SNV	NOL6	uc010mjv.3	Q	L	380	TMSGYQVLRSVLQFLD LTVNGISLC	TMSGYQVLRSVLLFLDLT VNGISLC
		SNV	NOL8	NM_0012563 94	R	C	291	KLHSLIGLGIKNRVSCH DSDDDIMR	KLHSLIGLGIKNVCSCHDS DDDIMR
		SNV	NPIP5	NM_0011358 65	P	L	388	PLPPSADDNLKTPSER QLTPLPPSA	PLPPSADDNLKTLSERQL TPLPPSA
		SNV	NQO2	NM_000904	P	S	103	KVREADLVIFQPLYW FSVPAILKG	KVREADLVIFQFSLYWFS VPAILKG
		SNV	PABPC5	NM_080832	P	L	183	NNRQVYVGRFKFPEER AAEVTRDR	NNRQVYVGRFKFLEERA AEVTRDR
		SNV	PAM	NM_0011773 06	G	D	861	KMQEKQKLIKEPGSGV PVVLTITLL	KMQEKQKLIKEPDSGVP VLTITLL
		SNV	PARP10	NM_032789	P	L	1015	TCEHVPRASPDDPSGL PGRSPDT	TCEHVPRASPDDLSGLPG RSPDT
		SNV	PCDH18	NM_019035	D	N	886	GRGDSEAGSDYDLG RDSPIRLLG	GRGDSEAGSDYNLGRD SPIDRLLG
		SNV	PCSK7	NM_004716	P	L	14	PKGRQKVPHLDAPLGL PTCLWLELA	PKGRQKVPHLDALLGLPT CLWLELA
		SNV	PHIP	NM_017934	P	L	166	KLNGKYRLERLVPTAV YQHMKMHR	KLNGKYRLERLVLTAVYQ HMKMHR
		SNV	PHOSPHO2- KLHL23	NM_0011992 90	S	F	268	IYNALNPMHKEISQRS TATMYIIGG	IYNALNPMHKEIFQRSTA TMYIIGG
		SNV	PI4K2A	NM_018425	L	F	162	VFKPKNEEPYGHLPK WTKWLQKLC	VFKPKNEEPYGHFNPKW TKWLQKLC
		NCI-3784	TMG7	SNV	PRR14L	NM_173566	P	S	2020
SNV	PRRC2A			NM_080686	P	S	1098	ETRSEGSEYEEIPKRRR QRGSETGS	ETRSEGSEYEEISKRRRQR GSETGS

		SNV	PTPN11	NM_080601	H	Y	426	TVWQYHFRTWPDHG VPSDPGGVLD	TVWQYHFRTWPDYGP SDPGGVLD
		SNV	RALGDS	uc004ccv.1	H	Y	629	AALQPAGGRLLYHPR QPGRGQWQH	AALQPAGGRLLYPRQP GRGQWQH
		SNV	RAP1GDS1	NM_021159	E	K	571	ICALMGSECLHKEVQD LAFLDVVSK	ICALMGSECLHKKVQDLA FLDVVSK
		SNV	RNF145	NM_144726	P	S	256	ALGMSLWNQLVVPVL FMVFWLVLFA	ALGMSLWNQLVVSVLF MVFWLVLFA
		NFS deletion	RPL11	NM_0011998 02			97	GLKVREYELRKNNFSD TGNFGFGIQ	GLKVREYELRKNNSDTGN FGFGIQE
		SNV	RRBP1	uc021waw.1	Q	P	436	GAQNQKKAEQAQ QKKAEGAQ	GAQNQKKAEQAPNQ KKAEGAQ
		SNV	SCRIB	NM_182706	S	F	1561	TPVEDLGPQTSTSPGR LPLSGKKFD	TPVEDLGPQTSTFPGRLP LSGKKFD
		SNV	SCRIB	NM_015356	S	F	1561	TPVEDLGPQTSTSPGR LSPDFAEEL	TPVEDLGPQTSTFPGRLS PDFAEEL
		SNV	SEC31A	NM_016211	E	K	435	QQHHVFISQVVEKEF LSRSDQLQ	QQHHVFISQVVKKEFLS RSDQLQ
		SNV	SENP5	NM_152699	L	F	503	ASPVDEQLSVCLSGF LDEVMMKYG	ASPVDEQLSVCFSGFLD EVMKYG
		SNV	SERINC2	uc009vtw.1	L	F	143	GLVLLRRRGLLPHPHP AGAAHRLC	GLVLLRRRGLLPHFHPA GAAHRLC
		SNV	SETD2	NM_014159	C	Y	1501	KSHRDIKRMQCECTPL SKDERAQGE	KSHRDIKRMQCEYTPLSK DERAQGE
		SNV	SH3TC2	NM_024577	H	Y	243	LVSALPLPLPFHQWF LKNYPGSCG	LVSALPLPLPFYQWFLK NYPGSCG
		SNV	SLC30A5	NM_022902	L	P	594	GGGMNANMRGVFLH VLADTLGSIGV	GGGMNANMRGVFPHV LADTLGSIGV
NCI-3784	TMG8	SNV	SLIT2	NM_004787	G	E	715	QDVAIQDFTCDGND DNSCSPLSRC	QDVAIQDFTCDENDDN SCSPLSRC
		SNV	SNW1	NM_012245	F	L	499	GREGPVQFEEDPFGLD KFLEEAKQH	GREGPVQFEEDPLGLDKF LEEAKQH
		SNV	SON	NM_138927	R	C	1927	RKTVRARSRTPSRRSRS HTPSRRRR	RKTVRARSRTPSCRSRSH TPSRRRR
		SNV	SPATA20	NM_022827	P	S	285	EEYGGFAEAPKFPTPVI LSFLFSYW	EEYGGFAEAPKFSTPVILS FLFSYW
		SNV	ST6GALNAC3	NM_152996	P	L	252	DTYCKTEGYRKVPYHY YEQGRDECD	DTYCKTEGYRKVLYHYE QGRDECD
		SNV	ST6GALNAC3	uc010orh.1	P	L	151	TGKDRTEGYRKVPYHY YEQGRDECD	TGKDRTEGYRKVLYHYE QGRDECD
		SNV	STS	NM_000351	E	K	532	EPRFYEILKVMQEAAD RHTQTLPEV	EPRFYEILKVMQKAADRH TQTLPEV
		SNV	SZT2	NM_015284	S	L	1576	LTLPLEVELPTASDPQH HRSTSESS	LTLPLEVELPTALDPQHH RSTSESS
		SNV	TAF8	NM_138572	P	L	277	AEKENTSVLQQNPSLS GSRNGEENI	AEKENTSVLQQNLSLGS RNGEENI
		SNV	TAF8	uc003oru.1	P	S	318	PRRRTPLSCSRTPPCRV AGMGRRTS	PRRRTPLSCSRTSPCRVA GMGRRTS
		SNV	TBL1XR1	NM_024665	P	L	305	WDAHTGEAKQQFPF HSAPALDVDWQ	WDAHTGEAKQQFLHSA PALDVDWQ
		SNV	TMEM144	NM_018342	P	L	160	EIPNNTCSMDTTLPLITE HVINTTQD	EIPNNTCSMDTTLITEHV INTTQD
		SNV	TRIM24	NM_015905	P	L	750	VIVKQESDEESRPQNA NYPRISLTS	VIVKQESDEESRLQNA PRISLTS
		SNV	TRIM35	NM_171982	D	N	115	LHRGQLSLFCLDKELL CCSCQADP	LHRGQLSLFCLDKELLCC SCQADP
		SNV	TRIM51	NM_032681	H	Y	346	QAFTSGKYYWEVHM	QAFTSGKYYWEVYMGDS

							GDSWNWAFGVC	WNWAFGVC	
NCI-3784	TMG9	SNV	TLL5	NM_015072	Y	F	279	LTNYSVNKKSGDYVSC DDPEVEDYG	LTNYSVNKKSGDFVSCDD PEVEDYG
		SNV	WDFY3	NM_014991	S	T	3352	LDEKDGFIIVNYSEGG TRAHLQGPL	LDEKDGFIIVNYTEGQTR AHLQGPL
		SNV	WDR20	NM_0012424 17	P	S	459	NSVTTPGNSVPPPLPR SNSLPHSAV	NSVTTPGNSVPPSLPRSN SLPHSAV
		SNV	ZBTB4	NM_020899	R	Q	691	AGGASVGGGSLPRGR RPPRWQRKLE	AGGASVGGGSLPQGRPR PRWRQKLE
		SNV	ZBTB9	NM_152735	R	W	409	KRDRHIMLTFSLRPF CGICNKRFK	KRDRHIMLTFSLWPF GICNKRFK
		SNV	ZC3H13	NM_015070	P	S	1102	PGSTPSPLSLLPPPP VATATATT	PGSTPSPLSLLSPPPPVA TATATT
		SNV	ZFAT	NM_0010299 39	E	K	1214	GGEASEFIVVQEQAM QPVEEQAVEQ	GGEASEFIVVQKAMQP VEEQAVEQ
		SNV	ZNF25	NM_145011	P	S	215	ECNQCEKSFYQKPHLT EHQKTHTGE	ECNQCEKSFYQKSHLTH EQKTHTGE
		SNV	ZNF32	NM_006973	S	F	85	RQRVYECQECGKSF QKGSLLTHER	RQRVYECQECGKFFRQ GSLTHER
		SNV	ZNF346	NM_012279	H	Y	108	KHANKVKRYLAIHGM ETLKGETKKL	KHANKVKRYLAIYGMETL KGETKKL
		SNV	ZNF703	NM_025069	S	F	182	SGSSVSSTSSSSSSP GDKAGFRV	SGSSVSSTSSSFSSSPGD KAGFRV
		SNV	ZNF714	uc002npl.3	K	E	382	RSGVQDQPGQHKGKTP SLLKIQKFAG	RSGVQDQPGQHGETPSL LKIQKFAG
		SNV	ZNF761	NM_0010084 01	T	I	342	ECGKTRQKSILTRHH RLHTGEKPY	ECGKTRQKSILIRHRLH TGEKPY

Patient ID	TMG#	Mutation type	Gene	Transcript ID	WT AA	Mut AA	AA position	Wild-type 25-mer	Mutated 25-mer
NCI-3903	TMG1	SNV	ANKDD1B	NM_0012767 13	L	P	221	AAERGHVEMIEKLTFL NLHTSEKDK	AAERGHVEMIEKPTFLNL HTSEKDK
		SNV	C12orf28	uc010stn.1	P	L	71	LQVPEITFCEILPCQETY CCPIRGM	LQVPEITFCEILLCQETYCC PIRGM
		SNV	C3orf56	NM_0010075 34	E	K	171	WTPASSAPRAAVEGP SRGAPYLKTC	WTPASSAPRAAVKGP SRGAPYLKTC
		SNV	MRDS1	uc003myh.1	G	A	125	NLLEEDDELHSQGD TDHSVKGKS	NLLEEDDELHSQADSLTD HSVKGKS
		SNV	MUC3A	uc003uxl.1	S	F	18	MTLRITENTPISSF VVIPETP	MTLRITENTPISSFSTIVV IPETP
		SNV	ZNF487	ENST0000043 1662	R	Q	8	LIRHQRIHTGEKPYTCH ECGDSFSH	MASRPPQTPSRGSPDL RFR
		SNV	ZNF891	NM_0012772 91	P	S	108	RFSNRSHLLQHRVHT GERPYRCLQ	DQEIRNMKKRISQAICP DQKIQPK
		SNV	CALU	uc003vns.3	W	S	96	KDGFVTVDELKDWIKF AQKRWIYED	KDGFVTVDELKDSIKFAQ KRWIYED
		SNV	RPL5	NM_000969	E	K	70	RDIIQIAYARIEGDMI VCAAYAHE	RDIIQIAYARIKGDMI VCAAYAHE
		SNV	EIF3A	NM_003750	R	Q	794	RLAERHNRLEERKRQ RKEERRITY	RLAERHNRLEEQRKRQ RKEERRITY
		SNV	LAMA1	NM_005559	E	K	78	CRICDGNANPRERHP ISHAIDGTN	CRICDGNANPRKRHPIS HAIDGTN

		SNV	GADD45GIP1	NM_052850	R	C	23	LLGVAATLAPGSRGYR ARPPRRRP	LLGVAATLAPGSCGYRAR PPRRRP
NCI-3903	TMG2	SNV	C19orf2	NM_0012526 41	R	K	386	GSGHSAQELPTIRTPA DIYRAFVDV	GSGHSAQELPTIKTPADIY RAFVDV
		SNV	RUVBL1	NM_003707	G	E	421	LLTPANLLAKINGKDSI EKEHVEEI	LLTPANLLAKINEKDSIEKE HVEEI
		SNV	RND3	NM_0012547 38	A	D	44	SQCGKTALLHVFAKDC FPENYVPTV	SQCGKTALLHVFDKDCFP ENYVPTV
		SNV	MATN2	uc003yid.3	E	K	421	NKPGCEHECVNMEES YYCRCHRGYT	NKPGCEHECVNMKESYY CRCHRGYT
		SNV	EPB41L2	NM_0011355 54	R	C	516	PKAKFLTLSKFRYSGR TQAQTRQA	PKAKFLTLSKFCYSGR QAQTRQA
		SNV	DIP2B	NM_173602	D	N	401	LGTKNEPVLKPGDRVA LVYPNNDPV	LGTKNEPVLKPGNRVALV YPNNDPV
		SNV	CMTM6	NM_017801	E	K	162	LDFITMLYEKRQESQL RKPENTTRA	LDFITMLYEKRQKSQLRK PENTTRA
		SNV	RNF10	NM_014868	D	N	747	ENSLVPPAPVDSGDES DNSDRVPVP	ENSLVPPAPVDSNGESD NSDRVPVP
		SNV	SSFA2	NM_0012875 04	R	Q	288	QPVSRRSSVSKQSCE SITDEFERF	SNKETDPPPPLTQSNTAN RLMKTLS
		SNV	MARK3	NM_0011289 21	S	R	443	AYPKRSQTSTADSDLK EDGISSRKS	AYPKRSQTSTADRLKED GISSRKS
		SNV	PSMF1	NM_006814	P	L	224	PLRSGFPRALIDPSSGL PNRLPPGA	PLRSGFPRALIDLSSGLPN RLPPGA
		SNV	C12orf49	NM_024738	R	C	70	PWKVQFNLGNSSRPS NQCRNSIQGK	PWKVQFNLGNSSCPSNQ CRNSIQGK
		NCI-3903	TMG3	SNV	STK25	NM_0012719 78	P	L	214
SNV	CSNK1E			NM_001894	Y	H	201	EQSRRDDLESGLGYVLM YFNLGSLPW	EQSRRDDLESGLGHVLMYF NLGSLPW
SNV	VKORC1L1			NM_0012843 42	E	K	45	LSVSASPEKSYSRPSPL VLPSSRIE	AYHVEREKERDPKHRALC DLGPWVK
SNV	CRELD1			NM_015513	R	Q	220	HLVCSACFGPCARCSG PEESNCLQC	HLVCSACFGPCAQCSPGE ESNCLQC
SNV	PLXND1			NM_015103	P	S	134	DLTKELNRSQGIPFLEY KHFVTRTF	DLTKELNRSQGISFLEYKH FVTRTF
SNV	KIAA1967			NM_021174	H	Y	227	KKPRHDLPPYRVHLTP YTVDSPICD	KKPRHDLPPYRVYLTPYT VDSPICD
SNV	NUP107			NM_020401	G	E	392	GWKLYHDPNVNGGTE LEPVEGNPYR	GWKLYHDPNVNGETELE PVEGNPYR
SNV	RCC1			NM_001269	G	E	407	QLENRVVLSVSSGGQ HTVLLVKDKE	QLENRVVLSVSSEGQHTV LLVKDKE
SNV	DHX38			NM_014003	S	L	305	GRGRREEGEEGIFDFT EEERQQWED	GRGRREEGEEGILFDTEE ERQQWED
SNV	UBTF			NM_0010766 83	P	S	202	TLECTVAGTPELSTKW FKDGKELTS	AKKSDIPEKPKTSQQLWY THEKKVY
SNV	LSG1			NM_018385	L	F	433	TKHFQTLVVEPGLCLC DCPGLVMPS	TKHFQTLVVEPGFCLCDC PGLVMPS
SNV	NUP98			NM_005387	P	L	381	KLTTFGSSTTSAPSGFT TSGGLFGN	KLTTFGSSTTSALSFGTTS GGLFGN
NCI-3903	TMG4			SNV	RBM6	NM_0011675 82	P	S	884
		SNV	CPSF2	NM_017437	I	V	523	MDQDLSDVPTKCISTT ESIEIKARV	MDQDLSDVPTKCVSTTE SIEIKARV
		SNV	TNS3	NM_022748	P	L	711	IEQLNRLILELDPTFEPI PTHMNAL	IEQLNRLILELDLTFEPIPT HMNAL
		SNV	BLVRB	uc002onw.2	S	F	88	GTRNDLSPTTVMSEG ARNIVAAMKA	GTRNDLSPTTVMFEGAR NIVAAMKA

		SNV	CLDN1	uc003fsh.3	T	Y	80	DSLLNLSSTLQATRAL MVGILLGV	DSLLNLSSTLQAYRALMV VGILLGV		
		SNV	LMBR1	uc010lqn.3	G	E	259	LQRRNLNVGMLCAGNP EVATGRQVPE	LQRRNLNVGMLCAENPEV ATGRQVPE		
		SNV	TJP1	uc010azl.3	P	L	364	VSTPVKHADDHTPKTV EEVTVNERNE	VSTPVKHADDHTLKTVEE VTVNERNE		
		SNV	GPD1L	uc003cew.3	E	K	126	KALGITLIKIGIDEGPEGL KLISDII	KALGITLIKIGIDKGPEGLK ISDII		
		SNV	FAM176A	uc002snk.1	E	K	125	TSAEELERAQRLEERER IIREIWMN	TSAEELERAQLKERERIIR EIWMN		
		SNV	TDRD7	uc004axj.3	V	G	59	PTLEAYLRSVPAVVRIE TSRSGEIT	PTLEAYLRSVPAGVRIETS RSGEIT		
		SNV	TBC1D15	uc010stt.2	G	R	368	NVDNMKQMIFRGGLS HALRKQAWKF	NVDNMKQMIFRGRLSH ALRKQAWKF		
		SNV	NFATC3	uc010vlb.2	A	T	1024	IKPEPEDREPINFATIGL QDITLDDV	IKPEPEDREPNTTIGLQD ITLDDV		
NCI-3903	TMG5	SNV	KRT18	uc009zmn.2	R	K	325	MRNLKASLENSLREVE ARYALQMEQ	MRNLKASLENSLKEVEAR YALQMEQ		
		SNV	CSGALNACT1	uc011kyp.2	P	S	404	PGIYGHHDVAVPPLEQ QLVIKKETG	PGIYGHHDVAVPSLEQQL VIKKETG		
		SNV	PCYT2	uc031rex.1	P	L	321	KTEIIPDRDGDSPYQEP KRRGIFRQ	KTEIIPDRDGDSDLYQEPKR RGIFRQ		
		SNV	SEC24B	uc011cfq.2	P	L	371	EYVNNQASSAPTPLSS TSDDEEEEE	EYVNNQASSAPTLSSSTS DDEEEEE		
		SNV	CARKD	uc001vrc.3	P	L	342	TPTSPHLLLSPPQVQP SPGGRVWR	TPTSPHLLLSPLQVQVQSP GGRVWR		
		SNV	PIGN	uc021ulb.1	T	K	916	FLVFLNGLAQLLTTKKL RLCGKPKS	FLVFLNGLAQLLTKKRLRL CGKPKS		
		SNV	SUMF1	uc003bpz.2	G	N	17	ALGLVCGRCPELGLVLL LLLSLLC	ALGLVCGRCPELNLVLLLL LLSLLC		
		NFS deletion	LARP7	uc003iay.4			22	KVMEEESTEKKKEVEK KKRSRVKQV	KVMEEESTEKKKVEKKKR SRVKQV		
		SNV	FAM120B	uc003qxp.3	E	K	178	YGLQHNCLGILGEDTD YLIYDTCPY	YGLQHNCLGILGKDTDYLI YDTCPY		
		SNV	TRPM7	uc010bew.2	S	F	103	AYGVINFQGGSHSYRA KYVRLSYDT	AYGVINFQGGSHFYRAKY VRLSYDT		
		SNV	USP6NL	uc001ikt.3	R	H	687	LSVSASPEKSYSRPSPL VLPSSRIE	LSVSASPEKSYSRPSPLVL PSSRIE		
		SNV	LIG3	uc010cth.1	E	K	464	ERVLHNAQEVEKEPG QRRALSVQAS	ERVLHNAQEVEKKPGQR RALSVQAS		
		NCI-3903	TMG6	SNV	CAPN7	uc003bzn.3	P	S	806	EGPFFLDFNSIPIKITQL Q	EGPFFLDFNSIISIKITQLQ
				SNV	DBR1	uc003erv.3	H	Y	182	IFLSHDWPRSIYHYGN KKQLLTKTS	IFLSHDWPRSIYYGNKK QLLTKTS
SNV	UNC119B			uc001tyz.4	EH	DP	180	SNFRMIERHYFREHLL KNFDFDFGFC	SNFRMIERHYFRDPLLKN FDFDFGFC		
SNV	UNC119B			uc001tyz.4	E	D	180	SNFRMIERHYFREHLL KNFDFDFGF	SNFRMIERHYFRDHLKN FDFDFGF		
SNV	PMS2CL			uc011jxb.1	P	L	84	TSDAISDKGVLRPQKE AVSSSQGPS	TSDAISDKGVLRQLQKEAV SSSQGPS		
SNV	RNF213			uc021uen.2	P	L	837	VFMMVVVCIELKIPLFLV GKPGSSKS	VFMMVVVCIELKILLFLVGK PGSSKS		
SNV	TCF20			uc003bck.1	P	L	467	SLSALSTQVANLPNTV QHMLLSDAL	SLSALSTQVANLLNTVQH MLLSDAL		
SNV	AGAP1			uc002vvt.3	P	S	632	GNSHCVDCEQNP WASLNLGALMC	GNSHCVDCEQNSNWA SLNLGALMC		

		SNV	TMEM2	uc011lsa.1	N	S	122	DENCPDQNPRLRNW DPGQDSAKQVV	DENCPDQNPRLRSWDP GQDSAKQVV
		SNV	SORCS1	uc021pxw.1	E	K	301	AYSQDQKLYSSAEFGR RWQLIQEGV	AYSQDQKLYSSAKFGRR WQLIQEGV
		SNV	CHST14	uc001zlw.3	E	V	270	VTFPEFLRYLVDDEPER MNEHWMPV	VTFPEFLRYLVDVDPERM NEHWMPV
		SNV	VPS13C	uc002ahc.2	L	F	74	IDKLTCLKIPWKNLYGEA VVATLEGL	IDKLTCLKIPWKNFYGEAV VATLEGL
NCI-3903	TMG7	SNV	NDRG2	uc010tll.2	S	F	338	SRSRTASLTSAAASVDG NRSRSTLS	SRSRTASLTSAAAFVDGNR SRSRSTLS
		SNV	SLC25A22	uc009yci.3	P	S	281	LDCARKILRHGSPSAFL KGAYCRAL	LDCARKILRHGSSAFLKG AYCRAL
		SNV	SLC27A4	uc004but.3	G	S	180	CLTTSRARALVFGSEM ASAICEVHA	CLTTSRARALVFSSEMAS AICEVHA
		SNV	IFNGR1	uc011edm.1	P	S	328	LEKEVVCEEPLSPATVP GMHTEDNP	LEKEVVCEEPLSSATVPG MHTEDNP
		SNV	CPS1	uc010fus.3	G	S	731	LSRSSALASKATGYPLA FIAAKIAL	LSRSSALASKATSYPLAFIA AKIAL
		SNV	CSGALNACT2	uc001jan.4	H	Y	304	FRDVCIHQDKKIHLTV VYFGKEGLS	FRDVCIHQDKKIYLVVYF GKEGLS
		SNV	ZNF263	uc010uww.2	P	S	630	LIRHQRIHTGEKPYTCH ECGDSFSH	LIRHQRIHTGEKSYTCHEC GDSFSH
		SNV	ANKRD27	uc002ntn.1	E	K	412	CLFKHIASGNQKEVER LLSQEDHDK	CLFKHIASGNQKKVERLLS QEDHDK
		SNV	BCL9L	uc009zal.3	P	S	963	NLKSPQTPSQMVPLPS ANPPGPLKS	NLKSPQTPSQMVSLPSA NPPGPLKS
		SNV	ADCY9	uc002cvx.3	H	Y	292	ELLSRGLLHGCIHAIGV HLFVMSQV	ELLSRGLLHGCIYAIGVHL FVMSQV
		SNV	LONRF2	uc002tal.4	R	K	566	LHVFEPRYRLMIRRCM ETGTRKFGM	LHVFEPRYRLMIKRCMET GTRKFGM
		SNV	LONRF2	uc002tal.4	N	I	323	EVLFSATANVHENLTS SIQSRLKAQ	EVLFSATANVHEILTSSIQ SRLKAQ
		NCI-3903	TMG8	SNV	DNAH14	uc001how.2	L	F	3052
SNV	VPS13B			uc003yiv.4	IP	MS	3284	KDIPKFEVYCKKIPSECS IHHELYH	KDIPKFEVYCKKMSSECSI HHELYH
SNV	PIAS4			uc002lzg.3	S	F	222	PNIAVKVNHSYCSVPG YYPNSKPGV	PNIAVKVNHSYCFVPGY PSNKPGV
SNV	SLC5A4			uc003ami.3	E	K	139	TMPEYLKRFGGGERLQ VYLSILSLF	TMPEYLKRFGGKRLQVY LSILSLF
SNV	LRRC42			uc001cwk.2	G	D	132	SAAEARQKFTEPGAGL RALQKFTEA	SAAEARQKFTEPDAGLRA LQKFTEA
SNV	PHKA1			uc011mqi.2	P	L	34	ILCHQNPVTGLLPASY DQKDAWVRD	ILCHQNPVTGLLLASYDQ KDAWVRD
SNV	GPSM2			uc010ove.1	A	T	682	ALLEFKNSGKKSADH GASSHQPRVPLFPENG	ALLEFKNSGKKSTDH GASSHQPRVPLFSENGLH
SNV	N4BP1			uc002efp.3	P	S	522	LHQQPEPLL	QHQPEPLL
SNV	FASTKD3			uc011cmp.2	P	L	598	DIHKRIALCIDGPKRFC SNSKHLLG	DIHKRIALCIDGLKRFCSN SKHLLG
SNV	ARAP3			uc003llo.1	S	F	280	TSDDLISPYASFSFTAD RLTPLLSG	TSDDLISPYASFFFTADRL TPLLSG
SNV	ASH1L			uc009wqr.1	M	I	534	QPPVYCTSPDFKMGG ASDVSTAKSP	QPPVYCTSPDFKIGGASD VSTAKSP
SNV	ZXDC			uc003eix.2	P	L	494	LLPQLEAPSSLTPSSELS SPGQSEL	LLPQLEAPSSLTSSSELSSP GQSEL
NCI-3903	TMG9			SNV	CABIN1	uc021wnc.1	R	C	1783

		SNV	KIF1BP	uc001joy.3	P	S	246	TLKRQLEHNAYHPIEW AINAATLSQ	TLKRQLEHNAYHSIEWAI NAATLSQ
		SNV	CASD1	uc003unj.4	S	L	647	FSNKISNLLFISVVSFL TYSIWAS	FSNKISNLLFILVVSFLTYS IWAS
		SNV	RAPGEF6	uc010jdk.3	S	G	94	VLVKGSMVLPPCSFGK QFGGKRGCD	VLVKGSMVLPPCGFGKQ FGGKRGCD
		SNV	FMN2	uc010pyf.1	K	Q	1417	NRAQSDELEKIEKHGR SSKDKENAK	NRAQSDELEKIEQHGRSS KDKENAK
		SNV	EXOC6	uc010qnr.2	S	F	284	EEILTVQDLVDFSPVYR CLHIYSVL	EEILTVQDLVDFFPVYRCL HIYSVL
		SNV	DOCK9	uc021rlw.1	P	S	1824	GKEYIYKEPKLTPLEIS QRLLKLY	GKEYIYKEPKLTLSEISQR LLKLY
		SNV	HEG1	uc011bke.2	S	F	400	TGNPGDEEFIEPSTENE FGLTSLRW	TGNPGDEEFIEPFTENEF GLTSLRW
		SNV	HDAC4	uc010fyy.3	S	F	861	QAFYSDPSVLYMSLHR YDDGNFFPG	QAFYSDPSVLYMFLHRYD DGNFFPG
		SNV	BRAF	uc003vwc.4	V	E	600	LTVKIGDFGLATVKSR WSGSHQFEQ	LTVKIGDFGLATEKSRWS GSHQFEQ
		SNV	LINS1	uc002bwi.3	S	F	46	PAVSDQDCSTATSLE WANTCGIQGR	PAVSDQDCSTATFLEWA NTCGIQGR
		SNV	ZNF550	uc031rnf.1	A	V	9	DAAQMLVTFKDVAVT FTREEWRQLD	DAAQMLVTFKDVVVVTF REEWRQLD
NCI-3903	TMG10	SNV	KLHL36	uc002fig.3	A	V	363	GGFSFRDNGGDAASN LLRYDPRCK	GGFSFRDNGGDAVSNLL YRYDPRCK
		SNV	ALKBH4	uc003uzl.3	E	K	37	ICERQRGSDPPWELPP AKTYRFIYC	ICERQRGSDPPWKLPPAK TYRFIYC
		SNV	BCAR3	uc001dqb.4	S	F	32	PLASSMDLLSSRPLAE HRPDAYQD	PLASSMDLLSSRFPLAEH RPDAYQD
		SNV	KATNAL1	uc001ust.4	R	W	56	RDPAIKGKWQQVRQE LLEEYEQVKS	RDPAIKGKWQQVWQEL LEEYEQVKS
		SNV	CP110	uc002dgl.4	G	R	765	FVSANEAPFYLWGSST SGLTKLSVT	FVSANEAPFYLWRSSTSG LTKLSVT
		SNV	C6orf70	uc011ehb.1	R	C	502	MPENRCVLKDLDRLPT ETWPQLLRE	MPENRCVLKDLDCLPET WPQLLRE
		SNV	LMF1	uc021tae.1	E	K	356	LQMQRDIRGARPEPR FGSVVRAAN	LQMQRDIRGARPKPRFG SVVRAAN
		SNV	DEPDC6	uc003yow.4	H	Y	99	KLMQKLADRGIHHVC DEHKEFKDV	KLMQKLADRGIHYHVCDE HKEFKDV
		SNV	GMEB1	uc001brb.3	G	R	79	AVETHTHIKIEEGIDTG TIEANEDM	AVETHTHIKIEERIDTGIE ANEDM
		SNV	VPS13A	uc004aks.3	P	L	2313	SSFNITRIVTFTPFIYMIK NKSKEYHI	SSFNITRIVTFTLFYMIKKN SKYHI
		SNV	ZNF142	uc010ftv.4	H	Y	185	KKRTHLVEHLHLHFPD PSLQCPNCQ	KKRTHLVEHLHLHFPDPSL QCPNCQ
		SNV	PALLD	uc011cjsx.2	E	K	941	HFLQAPGDLTVQEGKL CRMDCKVSG	HFLQAPGDLTVQKGKLC RMDCKVSG
		NCI-3903	TMG11	SNV	SH3TC1	uc003gkw.4	P	S	762
SNV	TMEM132A			uc001nqj.3	R	G	1018	LKDPEELRNYMERIRG SS	LKDPEELRNYMEGIRGSS
SNV	TNRC6C			uc002juf.2	P	S	1298	SVKDPSQSQSRLPQW THPNMNDNLP	SVKDPSQSQSRLSQWTH PNMNDNLP
SNV	RING1			uc003odl.3	G	S	322	QQEAGEPGGGGGAS DTGGPDGCGG	QQEAGEPGGGGGASDT GGPDGCGG
SNV	OPTN			uc001ily.1	H	Y	3	MSHQPLSCLTEKEDS INQLKIEGVEHLPRRVT	MSYQPLSCLTEKEDS INQLKIEGVEHLSSRRVTNE
SNV	ERCC4			uc010bva.3	P	S	85	NEITSNSR	ITSNSR
SNV	NICN1			uc011bcr.2	R	C	63	KNYYTAFLSIRVRQYTS	KNYYTAFLSIRVCQYSAH

							AHTPAKWV	TPAKWV	
		SNV	SGEF	uc021xgc.1	P	S	648	INSQLEFKIKPFPLVSSSR RWLVKRG	INSQLEFKIKPFSLVSSSR WLVKRG
		SNV	KIFC2	uc003zcz.3	E	K	163	RPPSPDGSTSQEESPS HFTAVPGEP	RPPSPDGSTSQEKSPSHF TAVPGEP
		SNV	C4orf23	uc003glg.2	R	K	159	EGHPGRGIDVRRRRIW DMYGPQTQL	EGHPGRGIDVRRRRIWD MYGPQTQL
		SNV	CUL9	uc010jyk.3	H	Y	2069	VHQAQAVPVRPDHCP VCVSPLGCDD	VHQAQAVPVRPDYCPVC VSPLGCDD
		SNV	HOXA3	uc011jzl.2	P	L	322	ASYPASLPSCAPPPPP QKRYTAAGA	ASYPASLPSCAPLPPPPQK RYTAAGA
NCI-3903	TMG12	SNV	FREM2	uc001uwv.3	P	S	1185	FSERQFFPIVIIPTNDE QPEMFMRE	FSERQFFPIVIISTNDEQPE MFMRE
		SNV	FANCC	uc022bkl.1	A	T	226	ILQPEFFEAVNEAILLKK ISLPSMA	ILQPEFFEAVNETILLKKISL PMSA
		SNV	CACNA2D1	uc003uhr.1	D	N	662	APRDYCNDLKISDNNT EFLNNEF	APRDYCNDLKISNNTEF LLNNEF
		SNV	HEYL	uc010oiw.2	R	Q	67	RRDRINSSLELRLVLP TAFEKQGS	RRDRINSSLELQRLVPTA FEKQGS
		SNV	ZFP62	uc021yjo.1	L	F	744	VECGKSFYSYSSLSQHK RIHTGEKP	VECGKSFYSYSLFSQHKRI HTGEKP
		SNV	ANKMY1	uc010fzd.1	P	L	201	ELDARIFLNEIPPFVED GEPWFIIN	ELDARIFLNEIPLFVEDGE PWFIIN
		SNV	C16orf55	uc031qxq.1	S	F	103	TRASNETLVSCSSSGSD QRTIREP	TRASNETLVSCSFSGSDQ QRTIREP
		SNV	ARHGAP39	uc011llk.1	M	I	1032	VFVQPANVAVTKMDV SNLAMVMAPN	VFVQPANVAVTKIDVSNL AMVMAPN
		SNV	HIVEP1	uc003nac.3	R	Q	2608	RTESPQGLPTVQRENA KKVLNPPAP	RTESPQGLPTVQQENAK KVLNPPAP
		SNV	ZNF653	uc002mrz.2	P	F	501	NLVHRKGKTKVCPHP GCGKKFYLSN	NLVHRKGKTKVCFHPGC GKKFYLSN
		SNV	PCDHGB6	uc003lkj.2	L	F	338	GLSTQCKVIIIEILDEND NSPEIIT	GLSTQCKVIIEIFDENDNS PEIIT
		SNV	AKD1	uc003ptr.4	R	K	229	QMVAEILHHLVQRPE DYLENVENIV	QMVAEILHHLVQKPEDYL ENVENIV
NCI-3903	TMG13	SNV	TNFAIP2	uc001ymm.1	E	K	24	PLEAGAAPYREEEEAA KKKKEKKK	PLEAGAAPYREEEAAKK KKEKKK
		SNV	CEBPA	uc002nun.3	R	H	264	ALKGLGAAHPDLRASG GSGAGAKK	ALKGLGAAHPDLHASGG SGAGAKK
		SNV	ANKDD1A	uc010bha.3	M	V	205	NTALHLAAGRGHMAV LQRLVDIGLD	NTALHLAAGRGHVAVLQ RLVDIGLD
		SNV	C14orf79	uc001ypy.1	A	S	66	ISMPREGGSTCTARCP DPGEHSSTW	ISMPREGGSTCTSRCPDP GEHSSTW
		SNV	PRICKLE1	uc010skw.2	E	K	276	QMTYDGGQHWATEA CFSCAQCKASL	QMTYDGGQHWATKACF SCAQCKASL
		SNV	DNAH2	uc002giu.1	D	N	2632	SKVFQGMLRANKDFH DTKSSITRLW	SKVFQGMLRANKNFHDT KSSITRLW
		SNV	CLSTN3	uc001qss.3	T	I	313	SERALRKLCGAATGEV DLLPMPGPN	SERALRKLCGAAIGEVDLL PMPGPN
		SNV	ANKRD5	uc010gbz.3	S	L	514	AGDLASLKKAFESGIPV DMKDNYYK	AGDLASLKKAFELGIPVD MKDNYYK
		SNV	CLIC6	uc010gmt.1	K	E	514	VIFNVTTVDLKRKPADL QNLAPGTN	VIFNVTTVDLKRKPADLQ NLAPGTN
		SNV	FRY	uc001utx.3	R	C	1143	AGPFSIMFTPLDRYSD RNHQITRYQ	AGPFSIMFTPLDCYSDRN HQITRYQ
		SNV	ANK3	uc001jky.3	P	S	2141	GFETRSEKTPSAPQSA ESTGPKPLF	GFETRSEKTPSASQSAEST GPKPLF

		SNV	TBX19	uc001gfl.3	S	F	141	PNFGAHWMKAPISFS KVKLTNKLNG	PNFGAHWMKAPIFFSKV KLTNKLNG
NCI-3903	TMG14	SNV	BTC	uc003hig.2	E	K	159	KRRKRKKKEEMETLG KDITPINED	KRRKRKKKEEMKTLGKD ITPINED
		SNV	SAMD9L	uc022ahh.1	T	A	1255	LLEYLNPNYKDATTME SIVNEYAFL	LLEYLNPNYKDAATMESI VNEYAFL
		SNV	KIAA0895	uc003tfd.2	G	R	37	RWKRWFKFRKRKGEK RPRPNHKAVA	RWKRWFKFRKRKREKRP RPNHKAVA
		SNV	GPR158	uc001isk.3	D	N	713	NSAWSEHSLDPEDIRD ELKKLYAQL	NSAWSEHSLDPENIRDEL KKLYAQL
		SNV	PCDHGA1	uc011dan.2	R	C	293	FHNVDHRVAQIFRLDS YTGEISNKE	FHNVDHRVAQIFCLDSYT GEISNKE
		SNV	SLC12A5	uc010zxl.1	P	L	305	IYAGVIKSAFDPPNFPI CLLGNRTL	IYAGVIKSAFDPLNFPICLL GNRTL
		SNV	PCLO	uc003uhx.2	P	S	4870	GIFPDPSKDMQVPTIE KSHSSPGSS	GIFPDPSKDMQVSTIEKS HSSPGSS
		SNV	RDH12	uc001xjz.4	R	Q	95	IRVDTKNSQVLVRKLD LSDTKSIRA	IRVDTKNSQVLVQKLDLS DTKSIRA
		SNV	PCDH18	uc003ihg.4	S	L	777	INGTLPIRSHHRSSPSS SPTLERGQ	INGTLPIRSHHRLSPSSPT LERGQ
		SNV	CETP	uc002eki.2	D	N	297	RVFHSLAKVAFQDGRLL MLSLMGDEF	RVFHSLAKVAFQNGRLM LSLMGDEF
		SNV	LGI2	uc003grf.2	E	K	337	KPNDIELFQIDDETFVVI ADSSKAG	KPNDIELFQIDDKTFFVIA DSSKAG
		SNV	MRAP2	uc003pkg.4	E	K	26	QSASNSDYTWWEYEEYE IGPVSFEGFL	QSASNSDYTWWEYKYYEIG PVSFEGFL
		NCI-3903	TMG15	SNV	TTN	uc031rqd.1	S	N	7616
SNV	OLIG2			uc021wil.1	D	G	97	STSSAAASSTKKDKKQ MTEPELQQL	STSSAAASSTKKGKKQMT EPELQQL
SNV	SAMD14			uc002iqg.4	T	N	254	TDSGKGSASSGTTSP TCSPKHEGF	TDSGKGSASSGNTSPTC SPKHEGF
SNV	ILDR2			uc001gdx.2	G	E	239	DSCCCPQALYEAGKAA KAGYPPSVS	DSCCCPQALYEAKEAKAA GYPPSVS
SNV	EFCAB5			uc010wbj.2	G	R	325	LQEFFQNPDFKLGSHC KQLDITDST	LQEFFQNPDFKLRSHCKQ LDITDST
SNV	LRRC36			uc010vjk.2	E	K	621	LVRVLEENLILSEKIQQL EEGAAIS	LVRVLEENLILSKIQQL GAAIS
SNV	GPC5			uc010tif.2	A	T	137	LFCSTYRNMALEAAAS VQEFFTDVG	LFCSTYRNMALETAASVQ EFFTDVG
SNV	RP1			uc003xsd.1	E	K	490	KMIGQFSYSEERESGE NKSEYHMFT	KMIGQFSYSEERKSGENK SEYHMFT
SNV	DNAH10			uc001uft.4	G	E	2881	GFLELINNMLTSGIVPA LFSEEEKE	GFLELINNMLTSEIVPALF SEEEKE
SNV	APOB48R			uc002dqb.2	A	T	331	AETASGGEEAGTASG GEEAGIASGG	AETASGGEEAGTSGGEE AGIASGG
SNV	DNAH1			uc011bef.2	M	V	1484	DLVALVRGKLSRMQR AVLSALIVIE	DLVALVRGKLSRVQRAVL SALIVIE
SNV	CFI			uc011cft.2	H	Y	95	PTYCQQKSLECLHPGT KFLNNGTCT	PTYCQQKSLECLYPGTKFL NNGTCT
NCI-3903	TMG16			SNV	IL2RB	uc003aqv.1	R	H	131
		SNV	RYR3	uc010bar.3	G	R	4338	QAAEMKAANEAEKGV ESEKADMEDG	QAAEMKAANEAEKRVES EKADMEDG
		SNV	FILIP1L	uc021xbr.1	V	I	417	RETLQSKDFKLEVEKLS KRIMALEK	RETLQSKDFKLEIEKLSKRI MALEK
		SNV	NXPH3	uc002ipa.3	R	H	85	GEAWGILGQPPNRPN HSPPPSAKVK	GEAWGILGQPPNHPNHS PPPSAKVK

		SNV	FAM171A1	uc001iob.3	H	Y	398	EAPGTKELMSGVHLE MMSPGGEGDL	EAPGTKELMSGVYLEMM SPGGEGDL		
		SNV	MXRA5	uc004crg.4	S	F	1260	VSSRASGSKPSPSPENK HRNIVTPS	VSSRASGSKPSPFPENKH RNIVTPS		
		SNV	CCDC116	uc002zve.3	D	N	437	SHFSNRLYEELADFLTQ QAASLVIR	SHFSNRLYEELANFLTQQ AASLVIR		
		SNV	CA9	uc003zxo.4	E	K	302	EQLLSRLEEIAEEGSET QVPGLDIS	EQLLSRLEEIAEKGSETQV PGLDIS		
		SNV	GRM8	uc003vlt.2	P	S	573	RPNMNRGTGCQLIPIIKL EWHSPWAV	RPNMNRGTGCQLISIikle WHSPWAV		
		SNV	OLFML2B	uc010pkq.2	D	N	525	NEGAWMKDPLAKDE RIYVTNYYGN	NEGAWMKDPLAKNERIY VTNYYGN		
		SNV	FGD3	uc004ata.3	R	Q	256	LKMYGEYVKNFDRAV GLVSTWTQRS	LKMYGEYVKNFDQAVGL VSTWTQRS		
		SNV	TAS2R3	uc003vwp.1	P	S	277	AKMIGEVMTMFYPAG HSFILIGNS	AKMIGEVMTMFYSAGHS FILILGNS		
NCI-3903	TMG17	SNV	C12orf56	uc021qzu.1	D	N	96	LIDDYPEFLSSPDREISQ HIRIIS	LIDDYPEFLSSPNREISQHI RIIIS		
		SNV	GPR98	uc003kju.3	G	R	1589	FTGACIPEIAEEGSTISC VVERTRG	FTGACIPEIAEERSTISCVV ERTRG		
		SNV	KIAA1543	uc002mgv.4	R	Q	762	TGPKAASPSARRVPA TRRSPGGPGP	TGPKAASPSARQVPATR RSPGGPGP		
		SNV	KIAA1543	uc002mgw.3	A	T	1072	HNNLGVKRPTSRAPSP SGLMSPSRL	HNNLGVKRPTSRTSPSPG LMSPSRL		
		SNV	ARHGEF4	uc010fmw.1	G	R	570	RPSAQRMGHLHYPGRG SAISMVSLGS	RPSAQRMGHLHYPRRGS ISMVSLGS		
		SNV	CNGA1	uc003gxu.3	R	Q	629	GSDPKDLEEKVTRME GSVDLLQTRF	GSDPKDLEEKVTQMEGS VDLLQTRF		
		SNV	CNGA1	uc003gxu.3	I	S	297	FQRTETRTNYPNIFRIS NLVMYIVI	FQRTETRTNYPNSFRISNL VMYIVI		
		SNV	GRIN3A	uc004bbq.1	R	K	730	SALNICYALLFGRTVAI KPPKCWTG	SALNICYALLFGKTVAIKP PKCWTG		
		SNV	PREX2	uc011lez.1	M	R	218	AVCSNINEAKRQMEKL EVLEEWQSH	AVCSNINEAKRQREKLEV LEEWQSH		
		SNV	PREX2	uc003xxu.1	S	F	954	EFLLLPPLLGISQDGR QHCIPEDL	EFLLLPPLLGFQDGRQH CIPEDL		
		SNV	TRIML2	uc011cle.1	G	R	365	ALRPVFLCIPNGDTSP DSLTLQHQ	ALRPVFLCIPNRDTSPDS LTLQHQ		
		SNV	COL28A1	uc003src.1	P	S	259	PGDPGPPGTHGNPGI KGERGPKGNP	PGDPGPPGTHGNSGIK ERGPKGNP		
		NCI-3903	TMG18	SNV	SAMD12	uc010mda.1	G	R	123	LLRLTDKCLERMGIAQ ENLRQHILQ	LLRLTDKCLERMRIAQEN LRQHILQ
				SNV	VWDE	uc003ssj.2	D	N	411	VNEDFLWNNYIPDSIQ IKVKDVPTA	VNEDFLWNNYIPNSIQIK VKDVPTA
SNV	ABCA12			uc010zjn.2	E	K	1883	SQVIYNLTGQRVENYLI STANEFVQ	SQVIYNLTGQRVKNYLIST ANEFVQ		
SNV	COL4A6			uc011msn.2	P	L	548	LGPSGPKGKKGEPILST IQGMPGDR	LGPSGPKGKKGELILSTIQ GMPGDR		
SNV	IL22RA1			uc010oeg.1	P	L	512	SSVQIEGHPMSLPLQP PSRPCSPSD	SSVQIEGHPMSLLLQPPS RPCSPSD		
SNV	ALPK3			uc002ble.3	P	S	1073	GLSQEVPTMPSLPGTG LTASPKAGP	GLSQEVPTMPSLPGTGLT ASPKAGP		
SNV	GJB7			uc021zcyj.1	D	N	167	IKCDLKPCPNTVDFIS KPTKTIFF	IKCDLKPCPNTVNCFISK TEKTIFF		
SNV	ISL1			uc003jor.3	G	R	5	MGDMGDPPKKRLIS LC	MGDMRDPPKKRLISLC		
SNV	KIAA1324			uc021orb.1	P	L	643	QPYGVQACVPCGPGT KNNKIHSCLY	QPYGVQACVPCGLGTKN NKIHSCLY		
SNV	COL11A2			uc003ocz.1	P	L	1440	KGDRGLPGPQGSPPGQ	KGDRGLPGPQGSGLGQKG		

							KGEMGIPGAS	EMGIPGAS	
		SNV	C3orf15	uc011bje.2	P	S	255	RAREKRAWEASLPALS DTSQFEKRR	RAREKRAWEASLSALSDT SQFEKRR
		SNV	NEFL	uc003xee.4	S	L	63	LSVRRSYSSSSGSLMPS LENLDLSQ	LSVRRSYSSSSGSLMPSLE NLDLSQ
NCI-3903	TMG19	SNV	MMEL1	uc001ajy.2	R	K	393	QNLNIIDTYSARTIQN YLVWRLVL	QNLNIIDTYSAKTIQNYL VWRLVL
		SNV	DNAH5	uc003jfd.2	E	K	1279	QISIDFQVGPPIESYALL NRYGLLI	QISIDFQVGPPIEKSYALLN RYGLLI
		SNV	MYO15A	uc021trm.1	G	S	2147	VWHNNHAHNAERG WLLLAACLSGFA	VWHNNHAHNAERSWLL LAACLSGFA
		SNV	FPR1	uc021uyo.1	G	R	172	VIIRVTTVPGKTGTVAC TFNFSPWT	VIIRVTTVPGKTRTVACTF NFPDWT
		SNV	DLEC1	uc010hgv.1	R	Q	1125	TRQLILTNRSPTRFSL KFEYFGS	TRQLILTNRSPIQTRFSLKF EYFGS
		SNV	KIAA1409	ENST0000055 5664	M	I	1	LNDDVLSTLPYTMISTL ATFPPFLH	LNDDILSTLPYTIISTLATFP PFLH
		SNV	CD3E	uc010rya.2	G	S	29	VGWVGQDGNEMMG GITQTPYKVSIS	VGWVGQDGNEMMSGIT QTPYKVSIS
		SNV	DCC	uc010xdr.1	S	F	868	THDAVRVSWADNSVP KNQKTSEVRL	THDAVRVSWADNFVPK NQKTSEVRL
		SNV	SCN2A	uc021vry.1	S	N	1930	RYLLKQKVKKVSIIYK DKGKECDG	RYLLKQKVKKVSNIYKDK GKECDG
		SNV	MAPT	uc010dau.3	G	E	385	QLKARMVSKSKDGTG SDDKAKTST	QLKARMVSKSKDETGSD DKKAKTST
		SNV	CXCR7	uc021vys.1	N	S	62	IYIFIVIGMIANSVVV WVNIQAKT	IYIFIVIGMIASSVVVVV NIQAKT
		SNV	CDH6	uc003jhe.2	D	N	294	PPGTPIGRIKASDADV GENAEIEYS	PPGTPIGRIKASNADVGE NAEIEYS
		NCI-3903	TMG20	SNV	FAM133A	uc022bx.1	G	E	128
SNV	DNAH7			uc002utj.4	S	F	3327	PYANLCTWLPQKSWD EICRLDDLPA	PYANLCTWLPQKFWDEI CRLDDLPA
SNV	DMBX1			uc001cpx.3	P	L	338	AAAAAHQGVWGSPLL PAPPAGLAPA	AAAAAHQGVWGSLLPA PPAGLAPA
SNV	SLC4A10			uc010zcs.2	R	Q	135	EICWREGEDAEWRET ARWLKFEEDV	EICWREGEDAEWQETAR WLKFEEDV
SNV	LRRIQ1			uc021rbo.1	D	N	1269	EPDSPDIPEKWMDSV SSHSPLSKSA	EPDSPDIPEKWMNSVSS HSPLSKSA
SNV	KNDC1			uc001llz.1	P	S	1600	LSGLEHLAVRQSPA RILPAKIAEV	LSGLEHLAVRQSSAWRIL PAKIAEV
SNV	HYDIN			uc031qwy.1	D	N	4151	EGWIPPLSRFPIDIFTP KQEGDVN	EGWIPPLSRFPINIFFTPK QEGDVN
SNV	MYH6			uc001wju.3	E	K	1529	QLGEGGKNVHELEKV RKQLEVEKLE	QLGEGGKNVHELKVKR QLEVEKLE
SNV	COL29A1			uc021xdz.1	E	K	2225	LNSGRESFPVKTEDNG SDYLVYLP	LNSGRESFPVKTKDNGSD YLVYLP
SNV	CSMD3			uc011lhx.2	K	E	2209	TSLYFHSDYSQNKQGF HIVYQAYQL	TSLYFHSDYSQNEQGFHI VYQAYQL
SNV	PKHD1			uc003pah.1	P	S	3449	FVDVFSSVNIANPCSTS GSVSTFYS	FVDVFSSVNIANISCSTSGS VSTFYS
SNV	LRP1B			uc010fnl.1	S	F	1102	GTIRLCDHKTFCSCWS TGRKINKAW	GTIRLCDHKTFCFCWSTG RCINKAW
NCI-3903	TMG21			SNV	ZNF711	uc011mqy.1	P	S	517
		SNV	PRSS54	uc002eng.3	S	F	36	LYSSTSCGVQKASVYF GPDPKLEGLV	LYSSTSCGVQKAFVYGP DPKLEGLV

		SNV	ABCC12	uc002efc.1	S	L	631	SDRQLYLLDDPLSAVD AHVGKHFVE	SDRQLYLLDDPLLAVDAH VGKHFVE		
		SNV	ALB	uc011cbf.2	E	K	165	DNEETFLKKYLYEIARR HPYFYAPE	DNEETFLKKYLYKIARRHP YFYAPE		
		SNV	ASGR2	uc010clw.2	S	N	101	LQAE LRSLKEAFSNFSS STLTEVQA	LQAE LRSLKEAFNNFSSST LTEVQA		
		SNV	BANK1	uc010ill.3	P	S	206	TIPLAVVLPTEIPCENP GEIFIILR	TIPLAVVLPTEISCENPGEI FIILR		
		SNV	BDKRB1	uc021sbj.1	R	Q	176	VGLLSIPTFLLRSIQAV PDLNITA	VGLLSIPTFLLQSIQAVP DLNITA		
		SNV	BTBD11	uc001tml.1	A	V	775	SLEEILAEGTDLAETAP PPLCASRN	SLEEILAEGTDLVETAPP LCASRN		
		SNV	C1orf100	uc031psw.1	R	C	13	MTAIRLREFIERRPVIP PSIFIAHQ	MTAIRLREFIERCPVIPPSI FIAHQ		
		SNV	C6	uc003jml.2	E	K	651	EADSGCPQVPPEENG FIRNEKQLYL	EADSGCPQVPKNGFIR NEKQLYL		
		SNV	C9orf79	uc004app.4	G	E	896	RVESVPKVPIFLGKRPQ NGPGDNRT	RVESVPKVPIFLEKRPQN GPGDNRT		
		SNV	CACNA1E	uc009wxt.3	P	L	2118	TSTPRRSRRQLPPVPP KPRPLLSYS	TSTPRRSRRQLPLVPPKPR PLLSYS		
NCI-3903	TMG22	SNV	CACNA1I	uc003ayf.3	D	N	250	RCFLEENFTIQGDVALP PYYQPEED	RCFLEENFTIQGNVALPP YYQPEED		
		SNV	CAPN9	uc001hua.1	H	Y	132	DQSFPGPYAGIFHFQF WQHSEWLDV	DQSFPGPYAGIFYFQFW QHSEWLDV		
		SNV	CATSPERB	uc010aub.1	S	F	1114	SISLSELIHRKSKSEE NHDEDTWVECEDPFD	SISLSELIHRSKFEE NHDEDTWVECEDSFDLR		
		SNV	CD5L	uc001frk.4	P	S	241	LRLVGGDNLC	LVGGDNLC		
		SNV	CDH12	uc011cno.1	A	V	740	PTAPPYDSLATYAYEGS GSAESLS	PTAPPYDSLATYVYEGSG SVAESLS		
		SNV	CHRM2	uc022ame.1	I	K	301	VSAVASNMRRDDEITQ DENTVSTSLG	VSAVASNMRRDDEKTQDE NTVSTSLG		
		SNV	CNTN5	uc021qpc.1	G	E	1068	ASSQIRVPSYSGGKITS AQSTLHSL	ASSQIRVPSYSGEKITSAQ STLHSL		
		SNV	CRP	uc001ftx.1	P	S	30	GQTDMSRKAFVFPKE SDTSYVSLKA	GQTDMSRKAFVFSKESD TSYVSLKA		
		SNV	CSN3	uc003hfe.4	T	I	133	PPKKIQDKIIPTINTIAT VEPTPA	PPKKIQDKIIPIINTIATVE PTPA		
		SNV	CTNNA2	uc010ysj.2	S	L	939	TRVRRGSQKKHISPVQ ALSEFKAMD	TRVRRGSQKKHILPVQAL SEFKAMD		
		SNV	CYP4F2	uc010xou.1	D	N	252	LLHIDFLYLLTPDGQRF RRACRLVH	LLHIDFLYLLTPNGQRFRR ACRLVH		
		SNV	CYP4F22	uc002nbh.4	G	R	290	VIQERRRALRQQGAEA WLKAKQGKT	VIQERRRALRQQRAEAW LKAKQGKT		
		NCI-3903	TMG23	SNV	GPRIN2	uc021pNCI-1	R	Q	110	VSTMGGSDLCRLRAPS AAAMQRSHS	VSTMGGSDLCRLQAPSA AAMQRSHS
				SNV	DAOA	uc001vqb.3	F	C	28	SRYTLGKIYFIGFQRSIL LSKSENS	SRYTLGKIYFIGCQRSILLS KSENS
SNV	DNAH8			uc021yzh.1	D	N	1019	FQKYKTLWTEDRDVK VKEFLANNPS	FQKYKTLWTEDRNVKVK EFLANNPS		
SNV	DNAH8			uc021yzh.1	E	K	4381	KGWALDVTIHNVEVLR QTKEEITSP	KGWALDVTIHNKVLRLQ TKEEITSP		
SNV	FAM170A			uc003ksm.2	H	Y	323	RRSWSQCPGCVFHSP KDRNS	RRSWSQCPGCVFYS PKD RNS		
SNV	FGA			uc003iod.1	G	E	824	CQAANLNGIYYPGGSY DPRNNSPYE	CQAANLNGIYYPEGSYDP RNNSPYE		
SNV	FKSG83				P	S	164	RLTCAILNMIISCLPHS FLLHQRN	RLTCAILNMIISCLPHSFL LHQRN		
SNV	GADL1			uc003cep.2	G	R	488	KGSLMLGYQPHRGKV NFFRQVVISP	KGSLMLGYQPHRRKVN FRQVVISP		

		SNV	GLYATL2	uc009ymq.3	D	N	198	ERSLKYIERCLQDFLGF GVLGPEGQ	ERSLKYIERCLQNFLGFGV LGPEGQ
		SNV	GPRIN2	uc021pNCI-1	R	Q	110	VSTMGGSDLCRLRAPSA AAAMQRSHS	VSTMGGSDLCRLQAPSA AAMQRSHS
		SNV	GRHL2	uc010mbu.3	H	Y	407	TYSYNNRSNKPIHRAY CQIKVFCDK	TYSYNNRSNKPIYRAYCQI KVFCDK
		FS deletion	GZMA	uc003jpm.3			248	DPRGPGVYILLSKKHLN WIIMTIKG	DPRGPGVYILLSKNTSTG
NCI-3903	TMG24	SNV	KANK4	uc001dah.4	A	T	228	GYPELASAIKQPASKLS SIQSQLS	GYPELASAIKQPTSKLSSI QSQLS
		SNV	KANK4	uc001dah.4	V	D	228	SSPRASTRIPELVQEGA EPPEGVVK	SSPRASTRIPELDQEGAEP PEGVVK
		SNV	KIAA0748	uc001sgn.4	P	F	389	APSQTLDSNPKVPCCT HSLPIEDPQ	APSQTLDSNPKVFCCTHS LPIEDPQ
		SNV	KIAA2022	uc004eby.3	E	K	1343	QRFMMASIEPLWEP MEHHGDPNIFY	QRFMMASIEPLWKPME HHGDPNIFY
		SNV	KL	uc001uus.3	E	K	897	QLRVYYMQNYINEALK AHILDGINL	QLRVYYMQNYINKALKA HILDGINL
		SNV	KRT38	uc002hwq.1	R	K	21	SCPLGCTMAPGARNV SVSPIDIGCQ	SCPLGCTMAPGAKNVSV SPIDIGCQ
		SNV	KRT77	uc009zmi.3	A	V	353	QYELIAQRSKDEAEALY QTKYQELQ	QYELIAQRSKDEVEALYQ TKYQELQ
		SNV	KRTAP20-2	uc011adg.2	G	R	57	GYGYGCCRPSCYGRY WSCGFY	GYGYGCCRPSCYRRYWS CGFY
		SNV	LALBA	uc001rrt.3	R	K	89	KLWCKSSQPQSRNIC DISCDKFLD	KLWCKSSQPQSKNICDI SCDKFLD
		SNV	MAB21L2		N	T	209	PNRVAEVKAEGFNLLS KECYSLTGK	PNRVAEVKAEGFTLLSKE CYSLTGK
		SNV	MAB21L2	uc003ilw.3	E	K	58	EVQEPRFISSLSEIDARY EGLEVIS	EVQEPRFISSLSKIDARYE GLEVIS
		SNV	MGC26647	uc022ahc.1	R	K	235	FMDPATFINMYNRPIH ITLDSEVVW	FMDPATFINMYNKPIHIT LDSEVVW
		NCI-3903	TMG25	SNV	MNDA	uc001fsz.1	E	K	282
SNV	MOV10L1			uc011arq.1	G	R	403	LSRKQMTPEPEPGLVLP PGGKTFIVV	LSRKQMTPEPEPGRLVPPG GKTFIVV
SNV	MUC15			uc001mqx.3	R	Q	284	RRLYDDRNEPVLRLDN APEPYDVSF	RRLYDDRNEPVLQLDNA PEPYDVSF
SNV	MUC16			uc002mkp.3	S	F	8189	ETSTETITRLPTSSIMTE SAEMMIK	ETSTETITRLPTFSIMTESA EMMIK
SNV	MUC16			uc002mkp.3	P	S	1490	SPSSPMSTFAIFPPMST PSHELKSKS	SPSSPMSTFAIFSPMSTPS HELKSKS
SNV	MUC21			uc021yuf.1	G	E	532	HGLNHGLGPGPGGN HGAPHRPRWSP	HGLNHGLGPGPGENHG APHRPRWSP
SNV	MYH8			uc002gmm.2	L	V	1304	RQLDEKDALVSQLSRS KQASTQQIE	RQLDEKDALVSQVSRKQ ASTQQIE
SNV	NEUROD6			uc022abi.1	G	R	269	EGPLSPPPINYNGIFSL KQEETLDY	EGPLSPPPINYNRIFSLKQ EETLDY
SNV	NLRP13			uc010ygg.2	E	K	147	QGCQDPNQEELDELE EETGNVQAQG	QGCQDPNQEELDKLEE TGNVQAQG
SNV	NWD1			uc002nev.4	G	E	474	VHLILSACSGALGVLDL LQRVLLDP	VHLILSACSGALEVLDLQ RVLLDP
SNV	OR10J3			uc010piu.2	P	F	80	SISETCYTVAIIPHMLS GLLNPHQP	SISETCYTVAIIFHMLSGLL NPHQP
SNV	OR51G2			uc001lzt.1	L	F	115	FAQLFFIHCFSFLESSVL LSMAFDR	FAQLFFIHCFSFLESSVLLS MAFDR
NCI-3903	TMG26			SNV	OR56B1	uc009yev.1	A	T	173

SNV	OR5D16	uc010rio.2	A	V	127	ILFAVMAYDHFVAICN PLLYTVAIS	ILFAVMAYDHFVVICNPL LYTVAIS
SNV	OR9K2	uc010spe.2	S	F	173	MSTRCTQLVAGSYFC GCISSVIQT	MSTRCTQLVAGFYFCGC ISSVIQT
SNV	PCDHA6	uc011dab.2	G	R	193	DVKINSDDNKQIGLLK KSLDREEA	DVKINSDDNKQIRLLKKS LDREEA
SNV	PCDHAC1	uc003lih.2	V	A	435	PPLSTRRTITVSVADVN DNTPNFPQ	PPLSTRRTITVSAADVND NTPNFPQ
SNV	PDE1A	uc010zfq.2	S	F	403	QGDKEAELGLPFSPLC DRKSTMVAQ	QGDKEAELGLPFFPLCDR KSTMVAQ
SNV	PDYN	uc021vzu.1	D	N	243	RRQFKVTRSQEDPN AYSGLFDA	RRQFKVTRSQENPNAY SGLFDA
SNV	PEG3	uc010etr.2	S	F	1313	VTVHKNEPEYEGSSYT HTSFLTEPL	VTVHKNEPEYEGFSYHT SFLTEPL
SNV	PIK3C2G	uc010sic.2	E	K	703	LPLVLGSAPGWDERTV SEMHTILRR	LPLVLGSAPGWDKRTVSE MHTILRR
SNV	PLCZ1	ENST0000054 1695	P	S	402	IKKNGQGNMVIIPA QIVLVLKAKVQCELNIT	IKKNGQGNMVIISA QIVLVLKAKVQCKLNITA
SNV	PTH2R	uc010zjb.2	E	K	49	AQLQEGEG	QLQEGEG
FS deletion	TMEM132D	uc009zyl.1			577	GRGCTLQYQHAMVR VLTQFVAEAG	GRGCTLQYQHAMVGS

Patient ID	TMG#	Mutation Type	Gene	Transcript ID	WT AA	Mut AA	AA position	Wild-type 25-mer	Mutated 25-mer
NCI-3926	TMG1	SNV	FAM86C1	uc009ysr.3	A	S	7	MAPEENAGSELLQSF KRR	MAPEENAGSELLQSF R
		SNV	ENSG00000228 532	ENST000004 49327	I	N	18	PKEGVKTEENNDHINLK VAGQDGSVV	PKEGVKTEENNDHINLK AGQDGSVV
		SNV	ENSG00000153 230	ENST000002 83225	S	F	237	RISQRQRQSKAFSNCV PHLIVVTVF	RISQRQRQSKAFFNCVPH LIVVTVF
		SNV	FAM5C	uc010pot.1	S	N	159	DYLQERFVQAALSYIA CNSEGEFIC	DYLQERFVQAALNYIACN SEGEFIC
		SNV	LOC440295	uc002bhl.2	R	C	204	QEERLREQEERLREQE ERLHEQEER	QEERLREQEERLCEQEER LHEQEER
		SNV	MRC1	uc001ipk.4	S	F	1046	GKGYPGGRRSSLSYED ADCVVIIGG	GKGYPGGRRSSLFYEDAD CVVIIGG
		SNV	OR11H2	uc021rno.1	L	F	177	VCGFLWFLIPIVLISQK PFCGNII	VCGFLWFLIPIVVISQKPF CGPNII
		SNV	OR11H2	uc021rno.1	L	F	177	VCGFLWFLIPIVLISQM PFCGNII	VCGFLWFLIPIVVISQMPF CGPNII
		SNV	TCRBV9S1A1T	uc003vxf.3	A	V	91	VPNRFSPKSPDKAHLN LHINSLELG	VPNRFSPKSPDKVHLNLH INSLELG
		SNV	ENSG00000211 941	ENST000003 90601	S	N	54	AASGFTFSDYYMSWIR QAPGKGLEW	AASGFTFSDYYMNWIRQ APGKGLEW
		SNV	ENSG00000211 941	ENST000003 90601	I	V	56	SGFTFSDYYMSWIRQA PGKGLEWVS	SGFTFSDYYMSWVRQAP GKGLEWVS
		SNV	DUX2	uc031sid.1	A	P	240	GVSQPAPARGDFAYA APAPDGALS	GVSQPAPARGDFPYAAP APPDGALS
		NCI-3926	TMG2	SNV	TRIM49B	uc021qix.1	L	F	49

		SNV	USP17L17	uc031sdl.1	G	E	86	RPAAVGAGLQNMGN TCYVNASLQCL	RPAAVGAGLQNMENTC YVNASLQCL		
		SNV	AK9	uc003ptr.4	S	L	367	YSVSFLGKIYCLSSEAL KPFLLNP	YSVSFLGKIYCLLSEALKP FLLNP		
		SNV	RPL19	uc002hrq.1	A	G	169	DQAEARRSKTKEARKR REERLQAKK	DQAEARRSKTKEGRKRRE ERLQAKK		
		SNV	NES	uc001fpq.3	G	D	205	YQERVAHMETS LGQA RERLGRAVQG	YQERVAHMETS LDQARE RLGRAVQG		
		SNV	COL11A1	uc009weh.3	G	E	1274	GAKGEAGAEGPPGKT GPVGPQGPAG	GAKGEAGAEGPPEKTGP VGPQGPAG		
		SNV	PI15	uc003yam.3	N	K	75	SQNDMIAILDYHNQV RGKVFPPAAN	SQNDMIAILDYHKQVRG KVFPAAAN		
		SNV	ATF5	uc010enq.2	S	P	126	DFFLDAPPLPPSPPL PPPLPPA	DFFLDAPPLPPPPPLPP PLPPA		
		SNV	L1CAM	uc031tks.1	P	S	372	PQPEVTWRINGIPVEE LAKDQKYRI	PQPEVTWRINGISVEELA KDQKYRI		
		SNV	MSH2	uc002rvz.4	G	E	902	LILLTWKRKL RGGKRSA CSRPERQN	LILLTWKRKL RGEKRSACS RPERQN		
		SNV	MET	uc011kna.1	P	S	518	TGKKVSCSHREFP	TGKKVSCSHREFS		
		SNV	CRELD2	uc031ryb.1	R	P	85	WIDSQDRPLRFLRPSA VRTGLSDSY	WIDSQDRPLRFLPPSAVR TGLSDSY		
NCI-3926	TMG3	SNV	PAM	uc011cuz.2	V	A	56	PPTRLPKGVGFRVGGE TGSKYFVLQ	PPTRLPKGVGFRAGGETG SKYFVLQ		
		SNV	DROSHA	uc003jhi.2	P	L	922	NIMSRLGQDDPTPSRI NHNERLEFL	NIMSRLGQDDPTLSRINH NERLEFL		
		SNV	YTHDF2	uc021okf.1	G	E	360	PTRWVAPRNRGSGFG HNGVDGNGVG	PTRWVAPRNRGSEFGHN GVDGNGVG		
		SNV	PARP4	uc001upl.3	Q	R	1059	CSPSCHSVSVK WQQL NPDVPEALQA	CSPSCHSVSVKWRQLNP DVPEALQA		
		SNV	GALNT5	uc002tzc.3	H	Y	421	HIKALLPEDSGTHQVL RIDVTLSPR	HIKALLPEDSGTYQVLRID VTLSPR		
		SNV	AKAP6	uc010aml.3	P	L	695	VKKKHTRLGRVSPSSSS DIASSLGE	VKKKHTRLGRVSLSSSSDI ASSLGE		
		SNV	E2F4	uc002erz.3	S	T	323	SSSSSSSSNSNSSSSS GPNPSTSF	SSSSSSSSNSNTSSSSGP NPSTSF		
		SNV	ZNF532	uc010xeg.2	T	S	891	FKSAPSTHSHAYTQHP GIKIGEPKI	FKSAPSTHSHAYSQHPI KIGEPKI		
		SNV	COL19A1	uc010kam.2	P	S	25	WFLWQVLNQNPQI SIVVDGGKKV	WFLWQVLNQNIQISI VVDGGKKV		
		SNV	C1QTNF1	uc002jwt.3	P	S	92	LPNSVPSLCVSFPPGP GRKMGSRGQ	LPNSVPSLCVSFSPGPR KMGSRGQ		
		SNV	LOC150776	uc002tsz.3	E	K	14	DTSGSYTANDLDEMG QDSVRKTDEY	DTSGSYTANDLDMGQD SVRKTDEY		
		FS- insertion	PARP6	uc031qsq.1			236	PSVVDPTDPKTLAFNP KKKNYERLQ	PSVVDPTDPKTL SGL		
		NCI-3926	TMG4	SNV	UBR7	uc010auq.3	K	N	101	VPEQKDDVREV KVE QNSEPCAGSS	VPEQKDDVREV NVEQ NSEPCAGSS
				SNV	GXYLT1	uc001rmt.4	A	T	91	IQPVEKMHLAVVACG ERLEETMTML	IQPVEKMHLAVVTCGERL EETMTML
SNV	SYVN1			uc009yqc.3	P	R	308	EPADQGPPPAPHPPPL LPQPPNFPQ	EPADQGPPPAPHRPPLP QPNNFPQ		
SNV	SETX			uc010mzt.3	Y	H	2095	SGFAKTSVAASLYHTPS DSKEITLT	SGFAKTSVAASLHHTPSD SKEITLT		
SNV	NCAPH			uc002svz.1	R	Q	20	LPATMNNSSSETRGH PHSASSPSER	LPATMNNSSSETQGHPH SASSPSER		
SNV	NCAPH			uc010fhv.1	R	Q	9	MGPPGPETRGHPHSA SSPSER	MGPPGPETQGHPHSASS PSER		

		ENSG00000121	ENST000004							MNNSSETRGHPHSA	MNNSSETQGHPHSASS	
		SNV	152	55200	R	Q	9			SSPSE	PSE	
		SNV	PCIF1	uc002xqs.3	R	C	265			SNCEPVVSPSMFREIM	SNCEPVVSPSMFCEIMN	
										NDIPIRLSR	DIPIRLSR	
		SNV	CHEK2	uc010gvh.1	K	E	282			DCLIKITDFGHSKILGET	DCLIKITDFGHSEILGETSL	
										SLMRTL	MRTL	
		SNV	CHEK2	uc003adv.1	K	E	344			LLAVQITDFGHSKILGE	LLAVQITDFGHSEILGETS	
										TSLMRTL	LMRTL	
		SNV	TWIST1	uc022aah.1	A	S	195			LSYAFSVWRMEGAWS	LSYAFSVWRMEGSWSM	
										MSASH	SASH	
		SNV	ENSG00000122	ENST000003						RLSYAFSVWRMEGA	RLSYAFSVWRMEVAWS	
			691	54571	G	V	127			WSMSASH	MSASH	
NCI-3926	TMG5	SNV	MLLT4	uc021zim.1	T	S	8			MDGVVTVTPRSM	MDGVVTVSPRSM	
										MDAET	MDAET	
											VEG	VEG
		SNV	MLLT4	uc021zik.1	T	S	421			CDLTNMDGVVTVTPR	CDLTNMDGVVTVSPR	
											MDAET	MDAET
											VEG	VEG
		SNV	FASTKD2	uc002vbx.3	S	L	504			TISSENLLDAVYSFCLM	TISSENLLDAVYLFCLMNY	
											FPLAPF	FPLAPF
		SNV	UBE3B	uc009zvj.2	P	S	420			ESQEPAAHAQPASPQN	ESQEPAAHAQPASSQNVL	
											VLPVKSLKR	PVKSLKR
		SNV	SEC14L1	uc021udx.1	L	F	461			SPFIDDNTRRKFLIYAG	SPFIDDNTRRKFFIYAGND	
											NDYQGG	YQGG
		SNV	NCOR1	uc010cpb.2	Y	S	20			PNQGAFSTEQSRYP	PNQGAFSTEQSRSP	
											PHSV	PHSV
									QYTFPNT	QYTFPNT		
SNV	CRYZ	uc001dgm.3	I	V	51			ILGTAGTEEGQKIVLQ	ILGTAGTEEGQKVVLLQNG			
									NGAHEVFNH	AHEVFNH		
SNV	AKAP9	uc003uli.3	R	C	1570			ERQIQEKTDIIDRLEQE	ERQIQEKTDIIDCLEQELL			
									LLCASNRL	CASNRL		
SNV	STK39	uc002uea.3	R	Q	406			EEGKAAFSQEKSRVK	EEGKAAFSQEKSRVKEE			
									EENPEIAVS	NPEIAVS		
SNV	MLLT6	uc002hqi.4	K	E	557			SPLLGAGIYTSNKDPIS	SPLLGAGIYTSNEDPISHS			
									HSGGMLRA	GGMLRA		
SNV	SETDB1	uc009wmf.2	L	P	727			GKGVFINTGPEFLVGC	GKGVFINTGPEFPVGCDC			
									DCKDGRD	KDGRD		
SNV	SETDB1	uc009wmg.2	L	P	726			GKGVFINTGPEFLVGC	GKGVFINTGPEFPVGCDC			
									DCKDGRDK	KDGRDK		
NCI-3926	TMG6	SNV	SORL1	uc001pxx.3	D	N	299			RENQEVILEEVRDFQL	RENQEVILEEVRNFQLRD	
										RDKYMFATK	KYMFATK	
		SNV	CPEB2	uc003gnn.2	P	S	783			DWPHKAESKSYFPPKG	DWPHKAESKSYFSPKGY	
										YAFLLFQEE	AFLLFQEE	
		SNV	LAMA5	uc021wfw.1	R	W	2601			ALQGARTQLRDVRAK	ALQGARTQLRDVWAKK	
											KDQLEAHIQA	DQLEAHIQA
		SNV	PABPC1L	uc010ggv.1	S	F	399			STMRTLNSPLLGSFQQ	STMRTLNSPLLGFQQPS	
											PSSYFLPAM	SYFLPAM
		SNV	ANKHD1-EIF4EBP3	uc011czh.1	M	I	851			SEPAPLTLTSPRMVAA	SEPAPLTLTSPRIVAADN	
											DNQDTSNLP	QDTSNLP
		SNV	KIAA0556	uc010vco.2	P	L	44			LAMVSHLVGGILPTCE	LAMVSHLVGGILLTCEPT	
									PTVPYHTIL	VPYHTIL		
SNV	GOSR1	uc002hff.3	R	K	15			ETMAIEIEQLLARLTGV	ETMAIEIEQLLAKLTGVN			
									NDKMAEYT	DKMAEYT		
SNV	CNTNAP4	uc010chb.1	R	W	615			CEQEFTYYCKKSRLVN	CEQEFTYYCKKSWLVNK			
									KQDGTPLSW	QDGTPLSW		
SNV	CNTNAP4	uc010chb.1	P	S	435			CPDKSFGSKCKSPLGG	CPDKSFGSKCKSSLGGFQ			
									FQGCMLIS	GCMMLIS		
SNV	NAF1	uc010iqw.1	I	V	162			PPVLSGDGDDLQIEKE	PPVLSGDGDDLQVEKEN			
									NKNFPLKTK	KNFPLKTK		

							VWSGMCPEHRRVVQ				
		SNV	SDHAP2	uc011btb.1	V	M	196	A	VWSGMCPEHRRVMQA		
		SNV	SDHAP2	uc003fuu.4	H	Q	104	AKNTIVATGLRAHLEL HVCPHQH	AKNTIVATGLRAQLLELH VCPHQHQ		
NCI-3926	TMG7	SNV	BRAF	uc003vwc.4	V	E	600	LTVKIGDFGLATVKSR WSGSHQFEQ	LTVKIGDFGLATEKSRWS GSHQFEQ		
		SNV	ZNF343	uc010gao.1	H	Y	36	ENVETMKKLTQNHKA KGLPSNDTDC	ENVETMKKLTQNYKAKG LPSNDTDC		
		SNV	ENSG00000004 139	ENST000004 57710	A	D	336	LQGKTKVFSDIGAIQSL KRLVSYST	LQGKTKVFSDIGDIQSLKR LVSYST		
		SNV	SASS6	uc009wdz.3	K	E	194	QEQKVLEENGEKNQ VQLGKLEATI	QEQKVLEENGEENQVQ LGKLEATI		
		SNV	NCOA1	uc010eye.3	I	T	481	LNLNNSPMEGTGISLA QFMSPRRQV	LNLNNSPMEGTGTSLAQ FMSPRRQV		
		SNV	OGFOD2	uc009zxs.1	S	N	52	LLYPDCGGGRLDSHRA FVVKYAPGQ	LLYPDCGGGRLDNHRAF VVKYAPGQ		
		SNV	NBPF1	uc010oce.1	D	E	408	QHLQALLTPDEPKSQ GQDLQEQLA	QHLQALLTPDEPEKSQG QDLQEQLA		
		SNV	DOPEY2	uc011aeb.2	P	S	856	NPFFGKLMQMTVPPIA PGILKVIAE	NPFFGKLMQMTVSPPIAG ILKVIAE		
		SNV	SNAPC4	uc004chh.3	P	S	750	RLLNRRLLAVTPWVG DVVPCTQA	RLLNRRLLAVTSWVGDV VVPCTQA		
		SNV	CNTRL	uc004bkb.1	V	L	226	LKPLQDLISLILVENPVV TLPHYLQ	LKPLQDLISLILLENPVVTL PHYLQ		
		FS- deletion	KIAA1841	uc002sav.4			375	RCREDKIHTCIFVYIYI	RCREDKIHTCIFVYIYI		
		SNV	TRPC1	uc003evc.3	L	R	508	LVAEGLFANVLSYLR LFFMYTTS	LVAEGLFANVRSYLR FMYTTS		
		NCI-3926	TMG8	SNV	ARHGEF17	uc001otu.3	S	L	1570	GLQPRCHREPPSLRS PPETAPEPA	GLQPRCHREPPPLLRSP ETAPEPA
				SNV	SALL2	uc010tma.1	S	F	701	EMDSNEKTTQQSSLPP PPPSLDQ	EMDSNEKTTQQSFLPPP PPPSLDQ
SNV	ARMCX5- GPRASP2			uc022cbh.1	S	F	409	ASLEGGASAICESEPGT EEGAIGGS	ASLEGGASAICEFPGTEE GAIGGS		
SNV	PTPRH			uc010esv.3	N	S	120	SSVGTVTATAPNPVR NLTVEAQTN	SSVGTVTATAPSPVRNL TVEAQTN		
SNV	PTPRH			uc002qjs.2	N	S	305	SSVEIVTSATAPNPVR NLTVEAQTN	SSVEIVTSATAPSPVRNL VEAQTN		
SNV	TCEAL2			uc022car.1	E	K	209	NLQDPFYPRGPRFRGG GCRAPRRDT	NLQDPFYPRGPRFRGG CRAPRRDT		
SNV	SHROOM3			uc011cbx.2	G	S	1650	QSLSHDPVSGTQGLEK KVSPDPQKS	QSLSHDPVSGTQSLKVV SPDPQKS		
SNV	NLGN3			uc011mps.2	R	Q	696	LAFALYRKRDKRRQE PLRQSPQR	LAFALYRKRDKQRQEPL RQSPQR		
SNV	AHDC1			uc021ojw.1	E	K	1210	LSSLEKLMMDWNEAS SAPGYNWNQS	LSSLEKLMMDWKNKASSA PGYNWNQS		
SNV	TMEM44			uc011bsv.2	H	N	24	WDWDYLDRCFARHR VCISFLWICA	WDWDYLDRCFARNRVC SFLWICA		
SNV	SNX29			uc002dby.5	S	F	104	EVLNKHELQRFYSLRHI ASDVGRGR	EVLNKHELQRFYFLRHIA DVGRGR		
SNV	LAPTM5			uc001bsc.2	D	N	2	MDPRLSTVRQTCCC	MNPRLSTVRQTCCC		
NCI-3926	TMG9			SNV	MAN1A1	uc003pym.2	A	V	486	LTCFAGGMFALGADA APEGMAQHYL	LTCFAGGMFALGVDAAP EGMAQHYL
				SNV	MAPK8IP1	uc001nbr.3	S	F	341	ISEEEGFDCLSPERA EPPGGGWR	ISEEEGFDCLSFPERAEP PGGGWR
		SNV	PZP	uc009zgm.1	T	I	101	VAEVGVTVPDTITIEWK	VAEVGVTVPDTIIEWKAG		

							AGAFLCSED	AFCLSED			
		SNV	SLC4A8	uc010snk.2	R	C	454	TFGGLLGEATEGRISAI ESLFGASM	TFGGLLGEATEGCISAIESL FGASM		
		SNV	PHLDB2	uc003dye.4	P	S	499	AIFLFSPAILLPISLLIGL FGYLE	AIFLFSPAILLISILLIGLFG YLE		
		SNV	RYR2	uc001hyl.1	D	N	753	VSSPNQHLLRTDDVIS CCLDLSAPS	VSSPNQHLLRTDNVISCC LDLSAPS		
		SNV	DPY19L2	uc010sso.1	I	V	94	AVFAGAMPTMASIKLS TLHPVNHHP	AVFAGAMPTMASVKLST LHPVNHHP		
		SNV	FAM115C	uc011ktn.1	R	Q	479	KMLRGSGLPVAVSREN VASDSYEEA	KMLRGSGLPVAVSQENPV ASDSYEEA		
		SNV	NBPF10	uc031poc.1	G	E	2580	CPRLSRELLDEKGPEVL QDSLDRCY	CPRLSRELLDEKEPEVLQD SLDRCY		
		SNV	ENSG00000163 386	ENST000003 69339	G	E	357	GPRLSRELLDEKGPEVL QDSLDRCY	GPRLSRELLDEKEPEVLQ DSLDRCY		
		FS- deletion	TGFB2	uc001hll.3			216	CCCCCCCCFRQTL LCHRLEYS	CCCCCCCCFRQTL QARVQWHDHSSLQP		
		SNV	PCLO	uc003uhx.2	A	T	2955	VVYKLPFGRSCTAQQP ATLPEDRF	VVYKLPFGRSCTTQQPAT TLPEDRF		
NCI-3926	TMG10	SNV	RGAG1	uc011msr.1	D	A	109	SGALLPMPASDSGA LSPLLMPAL	SGALLPMPASASGALS PLLMPAL		
		FS- deletion	CASP5	uc010ruz.1			23	FIFLIEDSGKKRRKNFE AMFKGIL	FIFLIEDSGKKGVRIKLC SKVSRVDWITS		
		FS- deletion	CASP5	NM_004347			10	MAEDSGKKRRKNFE AMFKGIL	MAEDSGKKGVRIKLC KVSFRVDWITS		
		SNV	CDKL5	uc022btn.1	R	C	234	PSEQMKLFYSNPRFHG LRFPAVNHP	PSEQMKLFYSNPFHGLR FPAVNHP		
		SNV	LRP2	uc002ues.3	I	M	777	IFKQKIDGTGREILAAN RVENVESL	IFKQKIDGTGREMLAANR RVENVESL		
		SNV	LRP2	uc010zdf.1	I	M	640	LTDDERHCIGREILAAN RVENVESL	LTDDERHCIGREMLAAN RVENVESL		
		SNV	TRIL	uc003szt.3	P	L	503	QQPSPSVAAGAPAP QSLDLHKKPQ	QQPSPSVAAGLAPQS LDLHKKPQ		
		SNV	MUC5B	uc001lta.3	I	T	2095	PTTRGSTVTPSSIPGTT HTATVLTT	PTTRGSTVTPSSTPGTTH TATVLTT		
		SNV	PSG4	uc002owb.4	E	K	264	RSGENLYLSCFAESNPR AQYSWTIN	RSGENLYLSCFAKSNPRA QYSWTIN		
		SNV	SPARCL1	uc011cdd.2	D	N	333	ADQQGKPHCVCQDP VTCPTKPLDQ	ADQQGKPHCVCQNPVT CPPTKPLDQ		
		SNV	SLC38A3	NM_006841	G	S	81	GMSVFNLNNAIMGSG ILGLAYAMAN	GMSVFNLNNAIMSSGILG LAYAMAN		
		SNV	GOLGA6B	uc010uks.1	E	D	421	LWDQEERLWKKERL QKQEERLALS	LWDQEERLWKKEDRLQK QEERLALS		
		NCI-3926	TMG11	SNV	KRT7	uc001saa.1	Y	N	283	MAKCSRAEAEAWYQT KFETLQAQAG	MAKCSRAEAEAWNQTK FETLQAQAG
				SNV	PCDHB17	uc003lis.3	R	C	461	PAFTQTSYTLFVRENN SPALHIGSV	PAFTQTSYTLFVCENN ALHIGSV
SNV	PLEKHA6			uc009xbc.1	S	F	67	PVYYDELDAASSLRR SLQPRSHS	PVYYDELDAASSFLRR SLQPRSHS		
SNV	SLIT2			uc003gps.1	G	S	1022	NNYTCLCPPEYTGELC EEKLDFCAQ	NNYTCLCPPEYSELCEEK LDFCAQ		
SNV	ENSG00000145 147			ENST000002 73739	A	T	1034	NNYTCLCPPEYTAANL NEVEKGELC	NNYTCLCPPEYTANLNE VEKGELC		
SNV	CSMD1			uc022aqr.1	R	K	1407	GMPQNGTRYGDSREA GDTVTFQCDP	GMPQNGTRYGDSKEAG DTVTFQCDP		

AA = Amino acid. SNV = non-synonymous single nucleotide variant. FS = frameshift. Green highlight = identified immunogenic; NFS = Non-frameshift