

Supplementary information, Table S1 A complete list of somatic mutations identified in 63 colon cancer cells by single-cell exomic sequencing.

chr	pos	reference	normal	mutate	region	gene	transcript	chain	function	base substitution	AA substitution	dbSNP132
chr1	1946244	G	G	A	CDS	GABRD	NM_000815	+	synonymous	c.72G>A	p.A24A	novel
chr1	2525223	C	C	T	CDS	MMEL1	NM_033467	-	missense	c.1001G>A	p.R334Q	novel
chr1	7922550	C	C	T	CDS	TNFRSF9	NM_001561	-	missense	c.92G>A	p.C31Y	novel
chr1	12829995	T	T	A	CDS	LOC649330	NM_001146181	-	missense	c.735A>T	p.E245D	novel
chr1	22775608	C	C	T	CDS	EPHA8	NM_001006943	+	synonymous	c.471C>T	p.A157A	novel
chr1	33009474	A	A	G	CDS	KIAA1522	NM_020888	+	missense	c.2107A>G	p.S703G	novel
chr1	45566228	C	C	T	CDS	HPDL	NM_032756	+	missense	c.821C>T	p.A274V	novel
chr1	74845141	C	C	T	CDS	C1orf173	NM_001002912	-	synonymous	c.1221G>A	p.P407P	novel
chr1	85371114	T	T	C	intron	WDR63	NM_145172	+				novel
chr1	89298430	G	G	A	intron	GBP1	NM_002053	-				novel
chr1	100118749	G	G	T	intron	AGL	NM_000645	+				novel
chr1	109241230	G	G	A	CDS	GPSM2	NM_013296	+	missense	c.278G>A	p.R93K	novel
chr1	150046753	G	G	A	intron	RORC	NM_001001523	-				novel
chr1	152514509	G	G	A	CDS	HAX1	NM_001018837	+	missense	c.536G>A	p.R179Q	novel
chr1	154304809	C	C	T	CDS	RAB25	NM_020387	+	missense	c.364C>T	p.L122F	novel
chr1	158449920	G	G	C	utr	PEA15	NM_003768	+				novel
chr1	172047037	C	C	G	CDS	CENPL	NM_033319	-	missense	c.24G>C	p.E8D	novel
chr1	184324040	A	A	G	intron	HMCN1	NM_031935	+				novel
chr1	199284428	A	A	C	CDS	CACNA1S	NM_000069	-	missense	c.4346T>G	p.V1449G	novel
chr1	234969455	G	G	A	CDS	ACTN2	NM_001103	+	synonymous	c.1107G>A	p.S369S	novel
chr10	17796636	A	A	C	CDS	STAM	NM_003473	+	missense	c.1474A>C	p.T492P	novel
chr10	63522710	G	G	A	CDS	ARID5B	NM_032199	+	missense	c.3482G>A	p.S1161N	novel
chr10	97086714	C	C	T	CDS	SORBS1	NM_001034954	-	missense	c.3193G>A	p.A1065T	novel
chr11	1575979	A	A	G	CDS	KRTAP5-2	NM_001004325	-	synonymous	c.78T>C	p.S26S	novel
chr11	1575999	T	T	C	CDS	KRTAP5-2	NM_001004325	-	missense	c.58A>G	p.S20G	novel
chr11	1576066	G	G	A	utr	KRTAP5-2	NM_001004325	-				novel
chr11	1900825	T	T	C	intron	TNNT3	NM_006757	+				novel
chr11	4860562	C	C	T	CDS	OR51T1	NM_001004759	+	missense	c.938C>T	p.P313L	novel
chr11	40093225	C	C	T	CDS	LRRC4C	NM_020929	-	synonymous	c.1194G>A	p.A398A	novel
chr11	51268507	C	C	T	CDS	OR4A5	NM_001005272	-	synonymous	c.465G>A	p.A155A	novel
chr11	55335655	T	T	C	CDS	OR5L1	NM_001004738	+	missense	c.137T>C	p.I46T	novel
chr11	59613806	C	C	T	CDS	MS4A2	NM_000139	+	missense	c.122C>T	p.S41L	novel
chr11	59617597	C	C	T	CDS	MS4A2	NM_000139	+	missense	c.527C>T	p.S176F	novel
chr11	61714343	C	C	T	CDS	SCGB1D1	NM_006552	+	missense	c.11C>T	p.S4L	novel
chr11	67189375	G	G	A	CDS	ALDH3B2	NM_001031615	-	synonymous	c.663C>T	p.R221R	novel
chr11	71184774	G	G	A	CDS	FAM86C	NM_152563	+	missense	c.223G>A	p.A75T	rs6423769
chr12	48230370	G	G	A	CDS	KCNH3	NM_012284	+	missense	c.1909G>A	p.A637T	novel
chr12	54045631	C	C	G	CDS	OR6C75	NM_001005497	+	missense	c.470C>G	p.P157R	novel

chr12	55110280	C	C	T	CDS	TIMELESS	NM_003920	-	missense	c.962G>A	p.R321H	novel
chr12	77036186	A	A	G	CDS	NAV3	NM_014903	+	synonymous	c.3018A>G	p.G1006G	novel
chr12	95165431	G	G	C	CDS	ELK3	NM_005230	+	missense	c.790G>C	p.A264P	novel
chr12	102644093	C	C	T	intron	STAB2	NM_017564	+				novel
chr12	111376816	T	T	G	CDS	PTPN11	NM_002834	+	nonsense	c.591T>G	p.Y197*	novel
chr12	128260035	C	C	A	CDS	TMEM132D	NM_133448	-	missense	c.1426G>T	p.D476Y	novel
chr13	23914762	G	G	A	CDS	PARP4	NM_006437	-	missense	c.3509C>T	p.T1170I	novel
chr13	24568907	C	C	A	CDS	PABPC3	NM_030979	+	missense	c.571C>A	p.P191T	novel
chr13	24568919	A	A	G	CDS	PABPC3	NM_030979	+	missense	c.583A>G	p.I195V	novel
chr13	24569451	A	A	G	CDS	PABPC3	NM_030979	+	missense	c.1115A>G	p.E372G	novel
chr13	24569465	T	T	C	CDS	PABPC3	NM_030979	+	missense	c.1129T>C	p.Y377H	novel
chr13	24569477	G	G	C	CDS	PABPC3	NM_030979	+	missense	c.1141G>C	p.E381Q	novel
chr13	27265831	G	G	A	CDS	GSX1	NM_145657	+	missense	c.541G>A	p.A181T	novel
chr13	87128364	G	G	A	CDS	SLITRK5	NM_015567	+	missense	c.2720G>A	p.G907E	novel
chr14	52396087	C	C	T	CDS	FERMT2	NM_001135000	-	missense	c.1844G>A	p.R615H	novel
chr15	27173807	C	C	T	CDS	APBA2	NM_005503	+	missense	c.1250C>T	p.A417V	novel
chr15	48572250	C	C	A	CDS	USP8	NM_001128610	+	synonymous	c.2295C>A	p.L765L	novel
chr15	48572282	T	T	C	CDS	USP8	NM_001128610	+	missense	c.2327T>C	p.L776P	novel
chr15	70428679	G	G	A	intron	HEXA	NM_000520	-				novel
chr15	72155350	C	C	G	CDS	GOLGA6A	NM_001038640	-	missense	c.594G>C	p.Q198H	rs58551153
chr15	99264959	C	C	T	CDS	ALDH1A3	NM_000693	+	synonymous	c.1344C>T	p.L448L	novel
chr16	2749170	C	C	T	CDS	SRRM2	NM_016333	+	missense	c.685C>T	p.H229Y	novel
chr16	4103882	C	C	G	CDS	ADCY9	NM_001116	-	missense	c.1563G>C	p.E521D	novel
chr16	48227271	C	C	T	CDS	ZNF423	NM_015069	-	missense	c.3293G>A	p.R1098H	novel
chr16	48322253	G	G	A	CDS	ZNF423	NM_015069	-	synonymous	c.207C>T	p.C69C	novel
chr16	56275865	C	C	T	CDS	GPR97	NM_170776	+	missense	c.1225C>T	p.R409C	novel
chr16	66583316	G	G	A	CDS	DPEP2	NM_022355	-	synonymous	c.588C>T	p.S196S	novel
chr16	66952662	T	T	G	CDS	SMPD3	NM_018667	-	missense	c.1916A>C	p.H639P	novel
chr16	68530840	G	G	T	intron	WWP2	NM_007014	+				novel
chr17	4977485	A	A	C	CDS	USP6	NM_004505	+	synonymous	c.300A>C	p.G100G	novel
chr17	4977508	C	C	T	CDS	USP6	NM_004505	+	missense	c.323C>T	p.P108L	novel
chr17	4977547	T	T	C	CDS	USP6	NM_004505	+	missense	c.362T>C	p.L121S	novel
chr17	4979242	G	G	C	intron	USP6	NM_004505	+				novel
chr17	4979257	A	A	C	CDS	USP6	NM_004505	+	synonymous	c.499A>C	p.R167R	rs60299784
chr17	7517846	G	G	A	CDS	TP53	NM_001126112	-	missense	c.817C>T	p.R273C	novel
chr17	36409599	G	G	T	CDS	KRTAP3-2	NM_031959	-	synonymous	c.33C>A	p.V11V	novel
chr17	36849010	G	G	A	CDS	KRT38	NM_006771	-	nonsense	c.703C>T	p.Q235*	novel
chr17	37713100	T	T	G	intron	STAT5A	NM_003152	+				novel
chr17	38250142	A	A	G	utr	AOC2	NM_001158	+				novel
chr17	42589415	A	A	G	CDS	CDC27	NM_001114091	-	synonymous	c.705T>C	p.I235I	rs3208661
chr17	42589724	T	T	C	CDS	CDC27	NM_001114091	-	synonymous	c.501A>G	p.T167T	novel

chr17	42590597	G	G	T	CDS	CDC27	NM_001114091	-	missense	c.449C>A	p.S150Y	novel
chr17	69869451	G	G	A	intron	BTBD17	NM_001080466	-				novel
chr17	71265129	C	C	G	CDS	ITGB4	NM_001005619	+	synonymous	c.5316C>G	p.G1772G	novel
chr17	71344515	C	C	T	CDS	UNC13D	NM_199242	-	missense	c.1135G>A	p.E379K	novel
chr17	74378605	C	C	T	CDS	TIMP2	NM_003255	-	missense	c.310G>A	p.V104I	novel
chr17	75956367	A	A	T	CDS	RNF213	NM_020914	+	missense	c.12131A>T	p.Q4044L	novel
chr18	11742600	G	G	A	intron	GNAL	NM_002071	+				novel
chr18	59796577	T	T	C	CDS	SERPINB8	NM_001031848	+	synonymous	c.55T>C	p.L19L	novel
chr19	2061833	C	C	G	CDS	AP3D1	NM_003938	-	missense	c.2862G>C	p.E954D	novel
chr19	48074185	A	A	G	CDS	PSG1	NM_006905	-	synonymous	c.150T>C	p.D50D	rs1058957
chr19	48074196	C	C	T	CDS	PSG1	NM_006905	-	missense	c.139G>A	p.E47K	rs1058956
chr19	48277280	T	T	C	intron	PSG2	NM_031246	-				novel
chr19	49583042	C	C	G	CDS	ZNF285A	NM_152354	-	missense	c.1205G>C	p.C402S	novel
chr19	49583057	T	T	C	CDS	ZNF285A	NM_152354	-	missense	c.1190A>G	p.E397G	novel
chr19	49583131	A	A	G	CDS	ZNF285A	NM_152354	-	synonymous	c.1116T>C	p.Y372Y	novel
chr19	49583144	C	C	A	CDS	ZNF285A	NM_152354	-	missense	c.1103G>T	p.G368V	novel
chr19	49583168	C	C	G	CDS	ZNF285A	NM_152354	-	missense	c.1079G>C	p.C360S	novel
chr19	49672827	G	G	C	CDS	ZNF180	NM_013256	-	missense	c.1711C>G	p.H571D	novel
chr19	56611091	A	A	G	CDS	SIGLEC10	NM_033130	-	synonymous	c.897T>C	p.H299H	novel
chr19	56611114	T	T	C	CDS	SIGLEC10	NM_033130	-	missense	c.874A>G	p.N292D	novel
chr19	59974073	T	T	G	intron	KIR3DP1	NM_001015070	+				novel
chr19	60069800	A	A	T	CDS	KIR3DL2	NM_006737	+	missense	c.1170A>T	p.E390D	novel
chr19	60795948	T	T	C	CDS	FIZ1	NM_032836	-	missense	c.1171A>G	p.T391A	rs7247236
chr2	9416518	C	C	G	intron	ASAP2	NM_001135191	+				novel
chr2	73637965	G	G	C	CDS	ALMS1	NM_015120	+	missense	c.10186G>C	p.E3396Q	novel
chr2	94906103	G	G	T	CDS	TEKT4	NM_144705	+	synonymous	c.1170G>T	p.L390L	novel
chr2	127164381	A	A	C	intron	GYPC	NM_002101	+				novel
chr2	153299856	C	C	T	CDS	ARL6IP6	NM_152522	+	missense	c.557C>T	p.P186L	novel
chr2	167813549	G	G	C	CDS	XIRP2	NM_152381	+	missense	c.7401G>C	p.M2467I	novel
chr2	172661274	C	C	A	utr	DLX1	NM_001038493	+				novel
chr2	178965370	T	T	C	intron	OSBPL6	NM_145739	+				novel
chr2	191869084	A	A	T	CDS	MYO1B	NM_001161819	+	synonymous	c.138A>T	p.T46T	rs17854823
chr2	198657002	G	G	A	CDS	PLCL1	NM_006226	+	synonymous	c.516G>A	p.T172T	novel
chr2	201235826	T	T	G	CDS	AOX1	NM_001159	+	synonymous	c.3432T>G	p.G1144G	novel
chr2	210867234	C	C	A	CDS	MYL1	NM_079420	-	missense	c.458G>T	p.R153L	novel
chr20	8556988	G	G	A	CDS	PLCB1	NM_015192	+	synonymous	c.294G>A	p.L98L	novel
chr20	38750150	G	G	A	CDS	MAFB	NM_005461	-	missense	c.755C>T	p.A252V	novel
chr20	39266111	T	T	G	CDS	ZHX3	NM_015035	-	missense	c.860A>C	p.H287P	novel
chr20	44113842	A	A	T	CDS	SLC12A5	NM_001134771	+	missense	c.2372A>T	p.H791L	novel
chr20	54460430	C	C	T	CDS	CASS4	NM_001164114	+	missense	c.629C>T	p.A210V	novel
chr20	60856560	G	G	A	CDS	NTSR1	NM_002531	+	missense	c.793G>A	p.V265I	novel

chr20	62112023	C	C	T	CDS	PRPF6	NM_012469	+	missense	c.1213C>T	p.R405C	novel
chr21	9990919	G	G	A	intron	TPTE	NM_199261	-				novel
chr21	43365302	G	G	A	CDS	CBS	NM_000071	-	missense	c.71C>T	p.A24V	novel
chr21	45100542	T	T	C	CDS	PTTG1IP	NM_004339	-	missense	c.443A>G	p.E148G	novel
chr21	45712919	C	C	T	CDS	COL18A1	NM_130444	+	missense	c.1687C>T	p.H563Y	novel
chr22	20318714	A	A	G	CDS	CCDC116	NM_152612	+	missense	c.476A>G	p.N159S	novel
chr22	24437136	C	C	A	intron	ADRBK2	NM_005160	+				novel
chr22	36101314	G	G	A	CDS	ELFN2	NM_052906	-	synonymous	c.207C>T	p.A69A	novel
chr22	49247720	C	C	T	CDS	SBF1	NM_002972	-	missense	c.2176G>A	p.V726M	novel
chr3	3070549	C	C	T	CDS	CNTN4	NM_175612	+	missense	c.638C>T	p.S213L	novel
chr3	7595588	T	T	A	CDS	GRM7	NM_181874	+	synonymous	c.1995T>A	p.G665G	novel
chr3	53857711	T	T	G	intron	IL17RB	NM_018725	+				novel
chr3	75796653	C	C	T	intron	FRG2C	NM_001124759	+				novel
chr3	99466292	T	T	C	CDS	OR5H6	NM_001005479	+	synonymous	c.474T>C	p.I158I	novel
chr3	184416532	T	T	C	CDS	MCF2L2	NM_015078	-	synonymous	c.2415A>G	p.L805L	rs61674109
chr4	4290490	C	C	T	CDS	TMEM128	NM_032927	-	missense	c.400G>A	p.V134I	rs2433883
chr4	70195110	A	A	G	CDS	UGT2B28	NM_053039	+	synonymous	c.1584A>G	p.R528R	novel
chr4	129024099	A	A	G	CDS	PLK4	NM_014264	+	missense	c.278A>G	p.H93R	novel
chr5	281288	C	C	T	intron	SDHA	NM_004168	+				novel
chr5	37400179	G	G	A	CDS	NUP155	NM_004298	-	synonymous	c.45C>T	p.S15S	novel
chr5	38406255	G	G	A	CDS	EGFLAM	NM_152403	+	missense	c.646G>A	p.V216M	novel
chr5	40800912	T	T	C	CDS	PRKAA1	NM_206907	-	missense	c.1052A>G	p.H351R	novel
chr5	59978940	T	T	C	intron	DEPDC1B	NM_001145208	-				novel
chr5	82852445	C	C	A	CDS	VCAN	NM_004385	+	missense	c.2564C>A	p.T855N	novel
chr5	112203052	G	G	T	CDS	APC	NM_000038	+	nonsense	c.3862G>T	p.G1288*	novel
chr5	115266534	T	T	C	CDS	AP3S1	NM_001284	+	synonymous	c.399T>C	p.N133N	novel
chr5	121516360	A	A	C	CDS	ZNF474	NM_207317	+	missense	c.776A>C	p.H259P	novel
chr5	131330057	A	A	G	CDS	ACSL6	NM_001009185	-	missense	c.1664T>C	p.L555P	novel
chr5	140288517	G	G	A	CDS	PCDHAC1	NM_031882	+	missense	c.1856G>A	p.R619H	novel
chr5	140985981	C	C	T	CDS	HDAC3	NM_003883	-	missense	c.884G>A	p.G295D	novel
chr5	149557006	C	C	T	CDS	SLC6A7	NM_014228	+	synonymous	c.558C>T	p.T186T	novel
chr5	156570899	A	A	G	CDS	ITK	NM_005546	+	synonymous	c.267A>G	p.L89L	novel
chr5	158072606	C	C	A	CDS	EBF1	NM_024007	-	missense	c.1319G>T	p.S440I	novel
chr6	10510827	G	G	A	CDS	TFAP2A	NM_001032280	-	missense	c.749C>T	p.A250V	novel
chr6	26530332	C	C	T	intergenic							novel
chr6	32717072	C	C	T	CDS	HLA-DQA1	NM_002122	+	synonymous	c.90C>T	p.H30H	rs12722043
chr6	34833636	G	T	A	intron	SNRPC	NM_003093	+	rs34781681			novel
chr6	35895248	G	G	A	intron	LHFPL5	NM_182548	+				novel
chr6	62815719	A	A	G	intron	KHDRBS2	NM_152688	-				novel
chr6	73960977	G	G	A	CDS	KCNQ5	NM_001160134	+	missense	c.1588G>A	p.A530T	novel
chr6	136641268	G	G	C	CDS	BCLAF1	NM_001077440	-	synonymous	c.438C>G	p.S146S	novel

chr6	146762230	G	G	A	CDS	GRM1	NM_001114329	+	missense	c.2362G>A	p.A788T	novel
chr6	151399951	G	G	A	intron	MTHFD1L	NM_015440	+				novel
chr6	152772411	C	C	G	CDS	SYNE1	NM_033071	-	missense	c.6378G>C	p.E2126D	novel
chr7	5296881	G	G	T	intron	SLC29A4	NM_153247	+	rs73051947			novel
chr7	5888628	T	T	A	intron	OCM	NM_001097622	+				novel
chr7	63805765	A	A	G	CDS	ZNF107	NM_016220	+	missense	c.1648A>G	p.K550E	novel
chr7	70438532	C	C	T	CDS	WBSCR17	NM_022479	+	missense	c.299C>T	p.P100L	novel
chr7	76078825	G	G	A	CDS	POMZP3	NM_012230	-	synonymous	c.457C>T	p.L153L	rs72508677
chr7	99924803	C	C	T	CDS	C7orf51	NM_173564	+	missense	c.1523C>T	p.P508L	novel
chr7	100625939	G	G	A	utr	MOGAT3	NM_178176	-				novel
chr7	103155828	A	A	T	CDS	RELN	NM_173054	-	missense	c.719T>A	p.V240D	novel
chr7	114055884	G	G	T	CDS	FOXP2	NM_148898	+	missense	c.387G>T	p.M129I	novel
chr7	129749771	C	C	T	utr	CPA4	NM_001163446	+				novel
chr7	149664919	C	C	G	CDS	LRRRC61	NM_001142928	+	synonymous	c.36C>G	p.G12G	novel
chr7	151575993	G	G	A	CDS	MLL3	NM_170606	-	missense	c.2459C>T	p.T820I	rs932840
chr7	151601792	C	C	A	CDS	MLL3	NM_170606	-	missense	c.943G>T	p.G315C	novel
chr7	151601810	G	G	A	CDS	MLL3	NM_170606	-	missense	c.925C>T	p.P309S	novel
chr8	41909356	C	C	A	CDS	MYST3	NM_001099413	-	missense	c.5539G>T	p.G1847W	novel
chr8	52895518	C	C	T	CDS	PCMTD1	NM_052937	-	synonymous	c.1020G>A	p.K340K	novel
chr8	101786396	C	C	T	CDS	PABPC1	NM_002568	-	missense	c.1752G>A	p.M584I	novel
chr8	101794213	A	A	G	intron	PABPC1	NM_002568	-				novel
chr9	33374977	T	T	G	utr	AQP7	NM_001170	-	rs11555075			novel
chr9	33786660	T	T	C	CDS	PRSS3	NM_007343	+	synonymous	c.231T>C	p.D77D	novel
chr9	34647114	C	C	T	CDS	IL11RA	NM_001142784	+	synonymous	c.414C>T	p.S138S	novel
chr9	107464632	C	C	A	CDS	TAL2	NM_005421	+	synonymous	c.34C>A	p.R12R	novel
chr9	122707234	T	T	C	CDS	TRAF1	NM_005658	-	missense	c.1136A>G	p.N379S	novel
chr9	124681927	A	A	G	CDS	RC3H2	NM_001100588	-	synonymous	c.1140T>C	p.A380A	novel
chrX	3252292	C	C	G	CDS	MXRA5	NM_015419	-	missense	c.1434G>C	p.M478I	novel
chrX	100694666	G	G	A	CDS	ARMCX1	NM_016608	+	missense	c.97G>A	p.E33K	novel
chrX	102750956	A	A	G	CDS	TCEAL3	NM_032926	+	missense	c.308A>G	p.E103G	novel
chrX	135313145	G	G	A	CDS	GPR112	NM_153834	+	synonymous	c.8652G>A	p.P2884P	novel