

# Table S1

## Gene molecular mechanism and CRC radioresponse

Below table details the influence of the molecular mechanism of each identified gene to CRC radioresponse according to TRG grading.

Study	Gene	Molecular Mechanism	CRC radioresponse by TRG
[15]	<i>BRAF</i>	Point mutation (c.1799T>A; p.Val600Glu)	Variable response
		Point mutation (c.1781A>G; p.Asp594Gly)	Poor response
	<i>RAF1</i>	Point mutation (c.770C>T; p.Ser257Leu)	Minimal response
	<i>KRAS</i>	Point mutation (c.183A>T; p.Gln61His)	Variable response
		Point mutation (c.34G>A; p.Gly12Ser)	Minimal response
		Point mutation (c.34G>T; p.Gly12Cys)	Variable response
		Point mutation (c.35G>A; p.Gly12Asp)	Variable response
		Point mutation (c.35G>C; p.Gly12Ala)	Moderate response
		Point mutation (c.35G>T; p.Gly12Val)	Variable response
		Point mutation (c.38G>A; p.Gly13Glu)	Variable response
		Point mutation (c.436G>A; p.Ala146Thr)	Minimal response
		Point mutation (c.64C>A; p.Gln22Lys)	Poor response
	<i>NRAS</i>	Point mutation (c.183A>C; p.Gln61His)	Minimal response
	<i>TP53</i>	Point mutation (c.1024C>T; p.Arg342Ter)	Variable response
		Point mutation (c.144C>T; p.Asp48=)	Minimal response
		Intronic point mutation (c.375+1G>A; p.?)	Minimal response
		Intronic point mutation (c.375+5G>T; p.?)	Minimal response
		Point mutation (c.375G>A; p.Thr125=)	Moderate response
		Point mutation (c.467G>A; p.Arg156His)	Good response
		Point mutation (c.499C>T; p.Gln167Ter)	Minimal response
Point mutation (c.524G>A; p.Arg175His)		Variable response	
Point mutation (c.526T>G; p.Cys176Gly)		Minimal response	
Point mutation (c.536A>G; p.His179Arg)		Poor response	
Point mutation (c.584T>C; p.Ile195Thr)		Moderate response	

		Point mutation (c.586C>T; p.Arg196Ter)	Good response
		Deletion (c.626_627delGA; p.Arg209fsTer6)	Good response
		Point mutation (c.637C>T; p.Arg213Ter)	Poor response
		Point mutation (c.638G>T; p.Arg213Leu)	Moderate response
		Deletion (c.686_687delGT; p.Cys229fsTer10)	Moderate response
		Point mutation (c.701A>G; p.Tyr234Cys)	Moderate response
		Point mutation (c.733G>A; p.Gly245Ser)	Moderate response
		Point mutation (c.742C>T; p.Arg248Trp)	Poor response
		Point mutation (c.743G>A; p.Arg248Gln)	Variable response
		Point mutation (c.746G>T; p.Arg249Met)	Minimal response
		Intronic point mutation (c.783-1G>A; p.?)	Poor response
		Point mutation (c.809T>G; p.Phe270Cys)	Minimal response
		Point mutation (c.817C>T; p.Arg273Cys)	Variable response
		Point mutation (c.832C>T; p.Pro278Ser)	Moderate response
		Point mutation (c.833C>G; p.Pro278Arg)	Moderate response
		Point mutation (c.844C>T; p.Arg282Trp)	Minimal response
		Point mutation (c.853G>A; p.Glu285Lys)	Minimal response
		Point mutation (c.938G>A; p.Ser313Asn)	Minimal response
	<i>APC</i>	Point mutation (c.1983T>C; p.Cys661=)	Moderate response
		Point mutation (c.3916G>T; p.Glu1306Ter)	Minimal response
		Deletion (c.3921_3925delAAAAG; p.Glu1309fsTer4)	Variable response
		Point mutation (c.4128T>A; p.Tyr1376Ter)	Minimal response
		Point mutation (c.4132C>T; p.Gln1378Ter)	Good response
		Point mutation (c.4135G>T; p.Glu1379Ter)	Good response
		Point mutation (c.4216C>T; p.Gln1406Ter)	Minimal response
		Point mutation (c.4348C>T; p.Arg1450Ter)	Variable response
		Deletion (c.4385_4386delAG; p.Ser1465fsTer3)	Poor response
	<i>PIK3CA</i>	Point mutation (c.1258T>C; p.Cys420Arg)	Good response
		Point mutation (c.1035T>A; p.Asn345Lys)	Moderate response
		Point mutation (c.1624G>A; p.Glu542Lys)	Moderate response
		Point mutation (c.310C>A; p.Pro104Thr)	Minimal response
		Point mutation (c.1031T>C; p.Val344Ala)	Minimal response

		Point mutation (c.1633G>A; p.Glu545Lys)	Minimal response
		Point mutation (c.2177A>G; p.Glu726Gly)	Poor response
		Deletion (c.325_327delGAA; p.Glu109del)	Poor response
		Point mutation (c.3140A>G; p.His1047Arg)	Poor response
	<i>PTEN</i>	Point mutation (c.98T>G; p.Ile33Ser)	Poor response
	<i>FBXW7</i>	Point mutation (c.1268G>T; p.Gly423Val)	Minimal response
		Point mutation (c.1745C>T; p.Ser582Leu)	Minimal response
		Point mutation (c.2065C>T; p.Arg689Trp)	Good response
		Point mutation (c.796C>T; p.Arg266Cys)	Moderate response
		Point mutation (c.832C>T; p.Arg278Ter)	Variable response
	<i>SMAD4</i>	Point mutation (c.1051G>A; p.Asp351Asn)	Minimal response
		Point mutation (c.1052A>G; p.Asp351Gly)	Poor response
		Point mutation (c.1064A>G; p.Asp355Gly)	Moderate response
		Point mutation (c.1081C>T; p.Arg361Cys)	Poor response
		Point mutation (c.1082G>A; p.Arg361His)	Variable response
		Point mutation (c.1094G>A; p.Gly365Asp)	Minimal response
		Point mutation (c.1333C>T; p.Arg445Ter)	Minimal response
		Point mutation (c.1069G>T; p.Asp537Tyr)	Poor response
	<i>ERBB2</i>	Point mutation (c.2264T>C; p.Leu755Ser)	Moderate response
	<i>ERBB3</i>	Point mutation (c.785C>A; p.Pro262His)	Good response
		Point mutation (c.1331G>A; p.Arg444Gln)	Minimal response
		Point mutation (c.310G>A; p.Val104Met)	Minimal response
	<i>ATM</i>	Point mutation (c.8545C>T; p.Arg2849Ter)	Good response
		Point mutation (c.8774G>T; p.Gly2925Val)	Moderate response
		Point mutation (c.8122G>A; p.Asp2708Asn)	Moderate response
	<i>AKT1</i>	Point mutation (c.49G>A; p.Glu17Lys)	Variable response
	<i>RET</i>	Point mutation (c.1920C>T; p.Ala640=)	Minimal response
	<i>PDGFRA</i>	Point mutation (c.2228T>C; p.Val743Ala)	Good response
	<i>SMARCB1</i>	Point mutation (c.618G>A; p.Trp260Ter)	Minimal response
		Point mutation (c.601C>T; p.Arg201Ter)	Minimal response
	<i>EZH2</i>	Point mutation (c.507A>C; p.Glu169Asp)	Good response
	<i>CDKN2A</i>	Point mutation (c.134G>A; p.Gly45Asp)	Minimal response

	<i>CTNNB1</i>	Point mutation (c.93G>A; p.Leu31=)	Minimal response
	<i>EGFR</i>	Point mutation (c2618G>A; p.Gly873Glu)	Minimal response
	<i>FLT3</i>	Point mutation (c.1964G>A; p.Arg655Lys)	Minimal response
	<i>JAK1</i>	Point mutation (c.2170C>T; p.Arg724Cys)	Minimal response
		Point mutation (c.1930C>T; p.Gln644Ter)	Minimal response
	<i>MPL</i>	Point mutation (c.15229T>C; p.Leu510Pro)	Minimal response
	<i>PTCH1</i>	Point mutation (c.3241G>A; p.Val1081Met)	Minimal response
[16]	<i>GOLPH3</i>	High expression	Poor response
	<i>mTOR</i>	Correlate expression with <i>GOLPH3</i>	Poor response
[17]	<i>MIR17HG</i>	High levels of <i>miR-19a</i> , <i>miR-19b-1</i> and <i>miR-92a-1</i>	Poor response
		Copy number alterations	Variable response
	<i>CMYC</i>	Copy number alterations	No significant effect
	<i>ABCC4</i>	Copy number alterations	No significant effect
[18]	<i>YKL-40</i>	High protein expression	Poor response
	<i>c-Met</i>	High protein expression	Poor response
[19]	<i>KLHL34</i>	CpG site hypermethylation at <i>cg14232291</i>	Variable response
[20]	<i>NFKB1</i>	Homozygous deletion of polymorphism <i>rs288362491</i>	Variable response
		Hemizygous deletion of polymorphism <i>rs288362491</i>	Variable response
		Homozygous insertion of polymorphism <i>rs288362491</i>	Variable response
	<i>IL1B</i>	Homozygous A/A of polymorphism <i>rs1143627</i>	Variable response
		Hemizygous G/A of polymorphism <i>rs1143627</i>	Variable response
		Homozygous G/G of polymorphism <i>rs1143627</i>	Variable response
		Homozygous A/A of polymorphism <i>rs16944</i>	Variable response
		Hemizygous G/A of polymorphism <i>rs16944</i>	Variable response
		Homozygous G/G of polymorphism <i>rs16944</i>	Variable response
	<i>PTGS1</i>	Homozygous A/A of polymorphism <i>rs1213266</i>	Good response
		Hemizygous G/A of polymorphism <i>rs1213266</i>	Variable response
		Homozygous G/G of polymorphism <i>rs1213266</i>	Variable response
		Homozygous A/A of polymorphism <i>rs5789</i>	Variable response
		Hemizygous C/A of polymorphism <i>rs5789</i>	Variable response
		Homozygous C/C of polymorphism <i>rs5789</i>	Variable response
<i>PTGS2</i>	Homozygous A/A of polymorphism <i>rs5725</i>	Variable response	

		Hemizygous G/A of polymorphism <i>rs5725</i>	Variable response
		Homozygous G/G of polymorphism <i>rs5725</i>	Variable response
[21]	<i>APOA2</i>	Up-regulation	Poor response
	<i>AHSG</i>	Up-regulation	Poor response
	<i>DBH</i>	Up-regulation	Poor response
	<i>APOA1</i>	Up-regulation	Poor response
	<i>APOB</i>	Up-regulation	Poor response
	<i>APOC3</i>	Up-regulation	Poor response
	<i>LMX1A</i>	Up-regulation	Poor response
	<i>SOAT2</i>	Up-regulation	Poor response
	<i>SLC7A9</i>	Up-regulation	Poor response
	<i>TF</i>	Up-regulation	Poor response
	<i>LOC729399</i>	Down-regulation	Poor response
	<i>SERINC5</i>	Down-regulation	Poor response
	<i>SCNN1B</i>	Down-regulation	Poor response
	<i>ZC3H6</i>	Down-regulation	Poor response
	<i>SLC4A4</i>	Down-regulation	Poor response
	<i>DTWD2</i>	Down-regulation	Poor response
	<i>MS4A12</i>	Down-regulation	Poor response
	<i>BEX5</i>	Down-regulation	Poor response
	<i>MMRN1</i>	Down-regulation	Poor response
	<i>CLCA4</i>	Down-regulation	Poor response