

Comprehensive Fusion Panel:

This includes 3 sub-panels: Actionable, Sarcoma, and Custom Fusion Panels, with contents detailed on these 3 pages. How to use this page: Each translocation has 2 partner genes. If you know the 5' partner, look in the alphabetically-sorted left columns, if you know the 3' partner look in the right columns. Each gene may have several intron breakpoints; most are covered in our assay. Contact the Molecular Lab for specifics.

MDL Actionable Fusion Panel—V1, August 2020

Sorted by **5' gene**

5' GENE	3' GENE
AFAP1	NTRK2
AGK	BRAF
AGTRAP	BRAF
AKAP9	BRAF
ALK	GALNT14
ALK	SCEL
ALK	STK39
ATG7	BRAF
ATIC	ALK
BRAF	AP3B1
BRAF	ATG7
BTBD1	NTRK3
CARS	ALK
CCDC6	RET
CCNY	BRAF
CD74	NRG1
CD74	NTRK1
CD74	ROS1
CLTC	ALK
CLTC	ROS1
DSTYK	BRAF
EGFR VIII VARIANT	
EML4	ALK
EML4	NTRK3
ERC1	RET
ETV6	NTRK3
ETV6	RET
EZR	ROS1
FAM131B	BRAF
FN1	ALK
GOLGA5	RET
GOPC	ROS1
GTF2IRD1	ALK
HIP1	ALK
HOOK3	RET
IRF2BP2	NTRK1
KCNQ5	ALK
KIAA1549	BRAF
KIF5B	ALK
KIF5B	RET
KTN1	RET
LMNA	ALK
LMNA	NTRK1
LRIG3	ROS1
MET	TFG
MET ex 14 SKIPPING	
MPRIP	NTRK1

MYB	QKI
NACC2	NTRK2
NCOA4	RET
NTRK3	ETV6
PAN3	NTRK2
PAX8	PPARG
PCM1	RET
PPFIBP1	ALK
PRKAR1A	ALK
PRKAR1A	RET
PTPRZ1	MET
QKI	NTRK2
RET	GOLGA5
RNF130	BRAF
SDC4	ROS1
SEC31A	ALK
SLC34A2	ROS1
SLC45A3	BRAF
SND1	BRAF
SQSTM1	NTRK1
SQSTM1	NTRK2
ST7	MET
STRN	ALK
TAX1BP1	BRAF
TFG	ALK
TFG	MET
TFG	NTRK1
TFG	ROS1
TPM1	ALK
TPM3	NTRK1
TPM3	ROS1
TPM3/4	ALK
TPM4	ALK
TPR	ALK
TPR	NTRK1
TRIM24	NTRK2
TRIM27	RET
TRIM33	RET
VCL	ALK
YWHAE	ROS1

For these genes, all translocations are detected by expression imbalance: **ALK, BRAF, FGFR1, FGFR2, FGFR3, NTRK2, NTRK3, RET, ROS1.**

Sorted by **3' gene**

5' GENE	3' GENE
ATIC	ALK
CARS	ALK
CLTC	ALK
EML4	ALK
FN1	ALK
GTF2IRD1	ALK
HIP1	ALK
KCNQ5	ALK
KIF5B	ALK
LMNA	ALK
PPFIBP1	ALK
PRKAR1A	ALK
SEC31A	ALK
STRN	ALK
TFG	ALK
TPM1	ALK
TPM3/4	ALK
TPM4	ALK
TPR	ALK
VCL	ALK
BRAF	AP3B1
BRAF	ATG7
AGK	BRAF
AGTRAP	BRAF
AKAP9	BRAF
ATG7	BRAF
CCNY	BRAF
DSTYK	BRAF
FAM131B	BRAF
KIAA1549	BRAF
RNF130	BRAF
SLC45A3	BRAF
SND1	BRAF
TAX1BP1	BRAF
NTRK3	ETV6
ALK	GALNT14
RET	GOLGA5
PTPRZ1	MET
ST7	MET
TFG	MET
CD74	NRG1
CD74	NTRK1
IRF2BP2	NTRK1
LMNA	NTRK1
MPRIP	NTRK1
SQSTM1	NTRK1
TFG	NTRK1
TPM3	NTRK1
TPR	NTRK1
AFAP1	NTRK2
NACC2	NTRK2

PAN3	NTRK2
QKI	NTRK2
SQSTM1	NTRK2
TRIM24	NTRK2
BTBD1	NTRK3
EML4	NTRK3
ETV6	NTRK3
PAX8	PPARG
MYB	QKI
CCDC6	RET
ERC1	RET
ETV6	RET
GOLGA5	RET
HOOK3	RET
KIF5B	RET
KTN1	RET
NCOA4	RET
PCM1	RET
PRKAR1A	RET
TRIM33	RET
TRIM27	RET
TRIM33	RET
CD74	ROS1
CLTC	ROS1
EZR	ROS1
GOPC	ROS1
LRIG3	ROS1
SDC4	ROS1
SLC34A2	ROS1
TFG	ROS1
TPM3	ROS1
YWHAE	ROS1
ALK	SCEL
ALK	STK39
MET	TFG

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MDL Sarcoma Fusion Panel—V1, August 2020

Sorted by **5' gene**

5' GENE	3' GENE
ACSL3	ETV1
ATF1	EWSR1
c11orf95	RELA
CANT1	ETV4
ETV6	NTRK3
EWSR1	ATF1
EWSR1	CREB1
EWSR1	CREM
EWSR1	DDIT3
EWSR1	ERG
EWSR1	ETV1
EWSR1	ETV4
EWSR1	FEV
EWSR1	FLI
EWSR1	NFAT2
EWSR1	NR4A3
EWSR1	PBX1
EWSR1	PBX3
EWSR1	POU5F1
EWSR1	SMARCA5
EWSR1	SP3
EWSR1	WT1
EWSR1	YY1
EWSR1	PATZ1/SNF278
EWSR1	ZNF444
FOXO1	PAX3
FUS	ATF1
FUS	CREB3L1
FUS	CREB3L2
FUS	CREM
FUS	DDIT3
FUS	ERG
FUS	FEV
FUS	KLF17
FUS	POU5F1
MEF2C	SS18
MEIS1	NCOA2
MYB	NFIB
NCOA4	RET
NDRG1	ERG
PAX3	FOXO1
PAX3	NCOA1
PAX3	NCOA2
PAX3	INO80D
PAX3	MAML3
PAX3	MLLT7/FOXO4
PAX7	FOXO1
PAX8	GLIS3
PDE9A	TMPRSS2
RBP56	NR4A3
SLC44A1	PRKCA

SLC45A3	ERG
SLC45A3	ETV1
SLC45A3	ELK4
SS18	REPS2 & SSX1
SS18	SSX1
SS18	SSX1/SSX2
SS18	SSX2
SS18	SSX4
SS18	ZBTB7A
SS18L1	SSX1
TAF12	NR4A3
TAF15	NR4A3
TMPRSS2	ERG
TMPRSS2	ETV1
TMPRSS2	ETV4
TMPRSS2	ETV5
TMPRSS2	GUCA2A
TMPRSS2	INPP4B
TMPRSS2	MORC3
TMPRSS2	PDE9A
TMPRSS2	SARS
TMPRSS2	TMEFF2
TMPRSS6	MPST
YAP1	FAM118B
YAP1	MAMLD1
YWHAE	ROS1
YWHAE	FAM22
YWHAE	FAM22B

Sorted by **3' gene**

5' GENE	3' GENE
EWSR1	ATF1
FUS	ATF1
EWSR1	CREB1
FUS	CREB3L1
FUS	CREB3L2
EWSR1	CREM
FUS	CREM
EWSR1	DDIT3
FUS	DDIT3
SLC45A3	ELK4
EWSR1	ERG
FUS	ERG
NDRG1	ERG
SLC45A3	ERG
TMPRSS2	ERG
ACSL3	ETV1
EWSR1	ETV1
SLC45A3	ETV1
TMPRSS2	ETV1
CANT1	ETV4
EWSR1	ETV4
TMPRSS2	ETV4
TMPRSS2	ETV5
ATF1	EWSR1
YAP1	FAM118B
YWHAE	FAM22
YWHAE	FAM22B
EWSR1	FEV
FUS	FEV
EWSR1	FLI
PAX3	FOXO1
PAX7	FOXO1
PAX8	GLIS3
TMPRSS2	GUCA2A
PAX3	INO80D
TMPRSS2	INPP4B
FUS	KLF17
PAX3	MAML3
YAP1	MAMLD1
PAX3	MLLT7/FOXO4
TMPRSS2	MORC3
TMPRSS6	MPST
PAX3	NCOA1
MEIS1	NCOA2
PAX3	NCOA2
EWSR1	NFAT2
MYB	NFIB
EWSR1	NR4A3
RBP56	NR4A3
TAF12	NR4A3
TAF15	NR4A3

ETV6	NTRK3
EWSR1	PATZ1/SNF278
FOXO1	PAX3
EWSR1	PBX1
EWSR1	PBX3
TMPRSS2	PDE9A
EWSR1	POU5F1
FUS	POU5F1
SLC44A1	PRKCA
c11orf95	RELA
SS18	REPS2 & SSX1
NCOA4	RET
YWHAE	ROS1
TMPRSS2	SARS
EWSR1	SMARCA5
EWSR1	SP3
MEF2C	SS18
SS18	SSX1
SS18L1	SSX1
SS18	SSX1/SSX2
SS18	SSX2
SS18	SSX4
TMPRSS2	TMEFF2
PDE9A	TMPRSS2
EWSR1	WT1
EWSR1	YY1
SS18	ZBTB7A
EWSR1	ZNF444

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MDL Custom Fusion Panel—V1, August 2020

Sorted by **5' gene**

5' GENE	3' GENE
ACTB	GLI1
AHRR	NCOA2
ARID1A	PRKD1
ASPSCR1	TFE3
ATP2B4	ERBB4
BCOR	CCNB3
BCOR	MAML3
BRD3	NUTM1
BRD4	c15orf55
c11orf95	MKL2
CDH11	USP6
CDKN2D	WDFY2
CHCHD7	PLAG1
CIC	DUX4
CIC	FOXO4
CLTC	TFE3
COL1A1	PDGFB
COL1A1	PLAG1
COL1A1	USP6
COL6A3	CSF1
CREB3L2	PPARG
CRTC1	MAML2
CRTC3	MAML2
CTNNB1	PLAG1
DDX3X	PRKD1
DNAJB1	PRKACA
EIF3E	RSPO2
EP400	PHF1
EPC1	PHF1
ESR1	c6orf97
ESRP1	RAF1
FGFR1	TACC1
FGFR2	BICC1
FGFR3	BAIAP2L1
FGFR3	TACC3
HAS2	PLAG1
HEY1	NCOA2
HMGA2	CCNB1IP1
HMGA2	COG5
HMGA2	COX6C
HMGA2	LPP
HMGA2	RAD51B
HMGN2P46	ETV1
HNRNPA2B1	ETV1
HTN3	MSANTD3
IRF2BP2	CDX1
JAZF1	PHF1
JAZF1	SUZ12
LIFR	PLAG1
MALATI	GLI1
MAML2	CRTC1

MBTD1	cXorf67
MEAF6	PHF1
MYH9	USP6
NAB2	PDGFRB
NAB2	STAT6
NCOA2	AHRR
NONO	TFE3
NUPIO7	LRG5
OMD	USP6
PAPD7	RAF1
PRCC	TFE3
PTPRK	RSPO3
RAD51B	HMGA2
RAF1	PHC3
RANBP2	ALK
RREB1	MKL2
SDC4	NRG1
SFPQ	TFE3
SIK2	JAK2
SLC44A1	PRKCA
SRF-	RELA
SRGAP3	RAF1
TCF3	PBX1
TFE3	ASPSCR1
TFE3	PRCC
TFG	NR4A3
TRAP150	USP6
WWTR1	CAMTA1
YAP1	TFE3
ZC3H7B	BCOR
ZNF9	USP6

Sorted by **3' gene**

5' GENE	3' GENE
NCOA2	AHRR
RANBP2	ALK
TFE3	ASPSCR1
FGFR3	BAIAP2L1
ZC3H7B	BCOR
FGFR2	BICC1
BRD4	c15orf55
ESR1	c6orf97
WWTR1	CAMTA1
HMGA2	CCNB1IP1
BCOR	CCNB3
IRF2BP2	CDX1
HMGA2	COG5
HMGA2	COX6C
MAML2	CRTC1
COL6A3	CSF1
MBTD1	cXorf67
CIC	DUX4
ATP2B4	ERBB4
HMGN2P46	ETV1
HNRNPA2B1	ETV1
CIC	FOXO4
ACTB	GLI1
MALATI	GLI1
RAD51B	HMGA2
SIK2	JAK2
HMGA2	LPP
NUPIO7	LRG5
CRTC1	MAML2
CRTC3	MAML2
BCOR	MAML3
c11orf95	MKL2
RREB1	MKL2
HTN3	MSANTD3
AHRR	NCOA2
HEY1	NCOA2
TFG	NR4A3
SDC4	NRG1
BRD3	NUTM1
TCF3	PBX1
COL1A1	PDGFB
NAB2	PDGFRB
RAF1	PHC3
EP400	PHF1
EPC1	PHF1
JAZF1	PHF1
MEAF6	PHF1
CHCHD7	PLAG1
COL1A1	PLAG1
CTNNB1	PLAG1
HAS2	PLAG1

LIFR	PLAG1
CREB3L2	PPARG
TFE3	PRCC
DNAJB1	PRKACA
SLC44A1	PRKACA
ARID1A	PRKD1
DDX3X	PRKD1
HMGA2	RAD51B
ESRP1	RAF1
PAPD7	RAF1
SRGAP3	RAF1
SRF-	RELA
EIF3E	RSPO2
PTPRK	RSPO3
NAB2	STAT6
JAZF1	SUZ12
FGFR1	TACC1
FGFR3	TACC3
ASPSCR1	TFE3
CLTC	TFE3
NONO	TFE3
PRCC	TFE3
SFPQ	TFE3
YAP1	TFE3
CDH11	USP6
COL1A1	USP6
MYH9	USP6
OMD	USP6
TRAP150	USP6
ZNF9	USP6
CDKN2D	WDFY2