

SUPPLEMENTARY MATERIAL

The criteria for clinically-actionable mutations in order of decreasing clinical validity were:

- Approved drug for the alteration with a well-defined biomarker in that disease
- Approved drug for the alteration, which was well defined in another disease (ie, vemurafenib approved for BRAF V600E mutation in melanoma, applied to non-small cell lung cancer)
- Evidence for a benefit of a drug with well-defined biomarkers from reported clinical trials in a specific disease
- A drug was being studied in a clinical trial in one disease or multiple diseases linked to a biomarker
- A drug was available with a case report of response (n = 1)
- A drug was available that had demonstrated pre-clinical activity against that alteration in a specific disease.

Supplementary Table 1. Caris MI[®] gene panel

Next-Generation Sequencing – Genomic Stability Testing (DNA)									
Microsatellite Instability (MSI)					Tumor Mutational Burden (TMB)*				
Next-Generation Sequencing – Point Mutations and Indels (DNA)									
ABI1	BRD4	CRLF2	FOXO4	HOXC11	KLF4	MUC1	PAK3	RHOH	TAL2
ABL1	BTG1	DDI2	FSTL3	HOXC13	KLK2	MUTYH	PATZ1	RNF213	TBL1XR1
ACKR3	BTK	DDIT3	GATA1	HOXD11	LASP1	MYCL (MYCL1)	PAX8	RPL10	TCEA1
AKT1	CTSor65	DNM2	GATA2	HOXD13	LMO1	NBN	PD4DIP	SEPT5	TCL1A
AMER1 (FAM123B)	CBLC	DNMT3A	GNA11	HRAS	LMO2	NDRG1	PHF6	SEPT6	TERT
AR	CD79B	EIF4A2	GPC3	KBK1	MAFB	NKX2-1	PHOX2B	SFPQ	TFEB
ARAF	CDH1	ELF4	HEY1	INHBA	MAX	NONO	PIK3CG	SLC45A3	TFPI
ATP2B3	CDK12	ELN	HIST1H3B	IRS2	MECOM	NOTCH1	PLAG1	SMARCA4	THRSP3
ATRX	CDKN2B	ERCC1	HISTH4H	JUN	MED12	NRAS	PMS1	SOCS1	TLX3
BCL11B	CDKN2C	ETV4	HLF	KAT5A (MYST3)	MKL1	NUMA1	POU5F1	SOX2	TMPRSS2
BCL2	CEBPA	FAM66C	HMGNZP46	KAT5B	MLLT11	NUTM2B	PPP2R1A	SPOP	UBR5
BCL2L2	CHCHD7	FANCF	HNF1A	KCNJ5	MNI	OLIG2	PRF1	SRC	VHL
BCOR	CNOT3	FEV	HDKA11	KDM5C	MPL	OMD	PRKDC	SSX1	WAS
BCORL1	COL1A1	FOXL2	HDKA13	KDM6A	MSN	P2RY8	RAD21	STAG2	ZBTB16
BRD3	COX5C	FOXO3	HDKA9	KDSR	MTCF1	RAFAH1B2	RECQL4	TAL1	ZRSR2
Next-Generation Sequencing – Point Mutations, Indels and Copy Number Alterations* (DNA)									
ABL2	BRCA1	CREBBL1	ETV1	GAS7	KMT2A (MLL1)	MYCN	PER1	RUNX1	TFEB
ACSL3	BRCA2	CREBBL2	ETV5	GATA3	KMT2C (MLL2)	MYD88	PICALM	RUNX1T1	TFG
ACSL6	BRIP1	CREBBP	ETV6	GID4 (CT7orf39)	KMT2D (MLL2)	MYH11	PIK3CA	SBD5	TFRC
ADGRA2	BUB1B	CRKL	EWSR1	GMP5	MKL1	MYH9	PIK3R1	SDC4	TGFB2
AFDN	CACNA1D	CRIC1	EXT1	GNA13	KRAS	NACA	PIK3R2	SDHAF2	TLX1
AFF1	CAUR	CRIC3	EXT2	GNAQ	KTN1	NCKIPSD	PIM1	SDHB	TNFAIP3
AFF3	CAMTA1	CSF1R	EZH2	GNAS	LCK	NCOA1	PML	SDHC	TNFRSF14
AFF4	CANT1	CSF3R	EZR	GOLGA5	LCP1	NCOA2	PMS2	SDHD	TNFRSF17
AKAP9	CARD11	CTCF	FANCA	GOPC	LGR5	NCOA4	POLE	SEPT9	TOP1
AKT2	CARS	CTLA4	FANCC	GPHN	LHFPL6	NF1	POT1	SET	TP53
AKT3	CASP8	CTNNA1	FANCD2	GRIIN2A	LIFR	NF2	POU2AF1	SETBP1	TPM3
ALDH2	CBFA2T3	CTNNB1	FANCE	GSK3B	LPP	NFE2L2	PPARG	SETD2	TPM4
ALK	CBFB	CYLD	FANCG	H3F3A	LRG3	NFIB	PRCC	SFBT1	TPR
APC	CEB1	CYP2D6	FANCL	H3F3B	LSP1B	NFKB2	PRDM1	SH2B3	TRAF7
ARFRP1	CEBL	DAXX	FAS	HERPUD1	LYL1	NFKBIA	PRDM16	SH3GL1	TRM26
ARHGAP26	CDC6	DDR2	FBXO11	HGF	MAF	NIN	PRKAR1A	SLC34A2	TRM27
ARHGAP12	CONB1P1	DDX10	FBXW7	HIP1	MALT1	NOTCH2	PBRX1	SMAD2	TRM33
ARID1A	COND1	DDX5	FGF4	HMGAI	MAML2	NPM1	PSIP1	SMAD4	TRIP11
ARID2	COND2	DDX6	FGF10	HMGAI2	MAP2K1 (MEK1)	NR4A3	PTCH1	SMARCB1	TRRAP
ARNT	COND3	DEK	FGF14	HNRNPA2B1	MAP2K2 (MEK2)	NSD1	PTEN	SMARCE1	TSC1
ASPSCR1	CDNE1	DKERC1	FGF19	HOOK3	MAP2K4	NSD2	PTPN11	SMO	TSC2
ASK1L1	CD274 (PDL1)	DOT1L	FGF23	HSP90AA1	MAP3K1	NSD3	PTPRC	SNX29	TSHR
ATF1	CD74	EBF1	FGF3	HSP90AB1	MCL1	NTS2	RABEP1	SOX10	TTL
ATIC	CD79A	ECT2L	FGF4	IDH1	MDM2	NTRK1	RAC1	SPECC1	UZAF1
ATM	CD73	EGFR	FGF6	IDH2	MDM4	NTRK2	RAD50	SPEN	USP6
ATP1A1	CDH11	ELK4	FGFR1	IGF1R	MDS2	NTRK3	RAD51	SRGA3	VEGFA
ATR	CDK4	ELL	FGFR1OP	IKZF1	MEF2B	NUP214	RAD51B	SRSF2	VEGFB
AURKA	CDK6	EML4	FGFR2	IL2	MEN1	NUP93	RAF1	SRSF3	VIT1A
AURKB	CDK8	EMSY	FGFR3	IL21R	MET	NUP98	RALGDS	SS18	WDCP
AXIN1	CDKN1B	EP300	FGFR4	IL6ST	MIF	NUTM1	RANBP17	SS18L1	WIF1
AXL	CDKN2A	EPHA3	FH	IL7R	MLF1	PALB2	RAF1GDS1	STAT3	WSP3
BAP1	CDK2	EPHA5	FHIT	IRF4	MLH1	PAX3	RARA	STAT4	WRN
BARB1	CHEK1	EPHB1	FP1L1	JTK	MLL1	PAX5	RB1	STAT5B	WT1
BCL10	CHEK2	EP515	FLCN	JAK1	MLL1T10	PAX7	RBM15	STIL	WWTR1
BCL11A	CHIC2	ERBB2 (HER2/NEU)	FUJ1	JAK2	MLL1T3	PBRM1	REL	STK11	XPA
BCL2L11	CHN1	ERBB3 (HER3)	FUJ1	JAK3	MLL1T6	PBX1	RET	SUJ1	XPC
BCL3	CIC	ERBB4 (HER4)	FLT3	JAZF1	MNXC1	PCM1	RICTOR	SUZ12	XPO1
BCL6	CIT4	ERC1	FLI4	KDM5A	MRE11	PCSK7	RM2	SYK	YWHAE
BCL7A	CLP1	ERCC2	FNBP1	KDR (VEGFR2)	MSH2	POCD1 (PD1)	RNF43	TAF15	ZMYM2
BCL9	CLTC	ERCC3	FOXA1	KEAP1	MSH6	POCD1LG2 (PDL2)	ROS1	TCF12	ZNF217
BCR	CLTC1	ERCC4	FOXD1	NAA1549	MSI2	PDGFB	RPL22	TCF3	ZNF331
BIRC3	CNBP	ERCC5	FOXP1	NF3B	MTOR	PDGFRA	RPL5	TCF7L2	ZNF384
BLM	CNTRL	ERG	FUSP1	NT	MYB	PDGFRB	RPN1	TE11	ZNF521
BMPRIA	COBPI	ESR1	FUS	KLHL6	MYC	PDK1	RPTOR	TE2	ZNF703
BRAF	CREB1								
Whole Transcriptome Sequencing – Genes most commonly associated with cancer listed below.									
Fusions (RNA)								Variant Transcripts (RNA)	
ABL	BRD3	FGFR3	INSR	MYB	NUMBL	PRKCA	RSPO3	AR-V7	
AKT3	BRD4	ERG	MAML2	NOTCH1	NUTM1	PRKCB	TERT		
ALK	EGFR	ESR1	MAST1	NOTCH2	PDGFRA	RAF1	TFE3	EGFR vII	
ARHGAP26	EWSR1	ETV1	MAST2	NRG1	PDGFRB	RELA	TFEB		
AXL	FGR	ETV4	MET	NTRK1	PIK3CA	RET	THADA		
BCR	FGFR1	ETV5	MSMB	NTRK2	PN1	ROS1	TMPRSS2	MET Exon 14 Skipping	
BRAF	FGFR2	ETV6	MUSK	NTRK3	PPARG	RSPO2			

Supplementary Fig 1. MTB recommendations for clinical trial enrollment and resulting patient management.