

### ESSENTIAL PANEL (50 genes)

#### DNA Hotspots (SNVs, Indels)

AKT1	AKT2	AKT3	ALK	AR	ARAF	BRAF	CDK4	CDKN2A
CHEK2	CTNNB1	EGFR	ERBB2	ERBB3	ERBB4	ESR1	FGFR1	FGFR2
FGFR3	FGFR4	FLT3	GNA11	GNAQ	GNAS	HRAS	IDH1	IDH2
KIT	KRAS	MAP2K1	MAP2K2	MET	MTOR	NRAS	NTRK1	NTRK2
NTRK3	PDGFRA	PIK3CA	PTEN	RAF1	RET	ROS1	SMO	TP53

#### CNVs

ALK	AR	CD274	CDK2NA	EGFR	ERBB2	ERBB3	FGFR1	FGFR2
FGFR3	KRAS	MET	PIK3CA	PTEN				

#### RNA Fusions

ALK	AR	BRAF	EGFR	ESR1	FGFR1	FGFR2	FGFR3	MET
NRG1	NTRK1	NTRK2	NTRK3	NUTM1	RET	ROS1	RSP02	RSP03

### DNA 68 PANEL (68 genes)

#### DNA (SNVs, Indels, CNVs)

AKT1	ALK	APC	AR	ARID1A	ATM	BRAF	BRCA1	BRCA2
BRIP1	CD274	CDH1	CDK4	CDK6	CDK12	CDKN2A	CHEK2	CTNNB1
EGFR	EPCAM	ERBB2	ESR1	FBXW7	FGFR1	FGFR2	FGFR3	FOXL2
GNA11	GNAQ	GNAS	HRAS	IDH1	IDH2	KEAP1	KIT	KRAS
MAP2K1	MDM2	MET	MUTYH	MLH1	MSH2	MSH6	MYC	NF1
NF2	NRAS	PALB2	PDGFRA	PDGFRB	PIK3CA	PMS2	POLE	POLD1
PTEN	RAF1	RB1	RET	ROS1	SF3B1	SMAD4	SMO	STK11
TERT*	TP53	TSC1	TSC2	VHL				

\*5' promoter region only

### EXTENDED PANEL (109 genes)

#### DNA (SNVs, Indels)

AKT1	ALK	APC	AR	ARID1A	ATM	ATR	BAP1
BARD1	BRAF	BRCA1	BRCA2	BRIP1	CDH1	CD274	CDK4
CDK6	CDK12	CDKN2A	CDKN2B	CHEK1	CHEK2	CSF1R	CTNNB1
CYSLTR2	DDR2	EGFR	EPCAM	ERBB2	ERBB3	ERCC2	ESR1
EZH2	FANCA	FANCL	FBXW7	FGFR1	FGFR2	FGFR3	FOXL2
GNA11	GNAQ	GNAS	HDAC2	HNFA1A	HRAS	H3F3A#	H3F3B#
HIST1H3B#	HIST1H3C#	IDH1	IDH2	JAK2	KEAP1	KIT	KRAS
MAP2K1	MAP2K2	MET	MLH1	MRE11	MSH2	MSH6	MYC
MYCN	MTOR	MUTYH	NBN	NF1	NF2	NFE2L2	NOTCH1
NRAS	NTRK1	NTRK2	NTRK3	PALB2	PDGFRA	PDGFRB	PIK3CA
PMS2	POLD1	POLE	PPP2R1A	PPP2R2A	PTCH1	PTEN	PTPN11
RAD50	RAD51B	RAD51C	RAD51D	RAD54L	RAF1	RB1	RET
ROS1	SETD2	SF3B1	SMAD4	SMARCB1	SMO	SRC	STK11
TERT*	TP53	TSC1	TSC2	VHL			

# Hotspots only \*5' promoter region only

#### CNVs

AKT1	ALK	APC	AR	ARID1A	ATM	ATR	BAP1
BARD1	BRAF	BRCA1	BRCA2	BRIP1	CDH1	CD274	CDK4
CDK6	CDK12	CDKN2A	CDKN2B	CHEK1	CHEK2	CSF1R	CTNNB1
CYSLTR2	DDR2	EGFR	EPCAM	ERBB2	ERBB3	ERCC2	ESR1
EZH2	FANCA	FANCL	FBXW7	FGFR1	FGFR2	FGFR3	FOXL2
GNA11	GNAQ	GNAS	HDAC2	HNFA1A	HRAS	IDH1	IDH2
JAK2	KEAP1	KIT	KRAS	MAP2K1	MAP2K2	MET	MLH1
MRE11	MSH2	MSH6	MYC	MYCN	MTOR	MUTYH	NBN
NF1	NF2	NFE2L2	NOTCH1	NRAS	NTRK1	NTRK2	NTRK3
PALB2	PDGFRA	PDGFRB	PIK3CA	PMS2	POLD1	POLE	PPP2R1A
PPP2R2A	PTCH1	PTEN	PTPN11	RAD50	RAD51B	RAD51C	RAD51D
RAD54L	RAF1	RB1	RET	ROS1	SETD2	SF3B1	SMAD4
SMARCB1	SMO	SRC	STK11	TP53	TSC1	TSC2	VHL

**COMPREHENSIVE PANEL (523 genes)**

**DNA (SNVs, Indels)**

ABL1	ABL2	ACVR1	ACVR1B	AKT1	AKT2	AKT3	ALK
ALOX12B	ANKRD11	ANKRD26	APC	AR	ARAF	ARFRP1	ARID1A
ARID1B	ARID2	ARID5B	ASXL1	ASXL2	ATM	ATR	ATRX
AURKA	AURKB	AXIN1	AXIN2	AXL	B2M	BAP1	BARD1
BBC3	BCL10	BCL2	BCL2L1	BCL2L11	BCL2L2	BCL6	BCOR
BCORL1	BCR	BIRC3	BLM	BMPR1A	BRAF	BRCA1	BRCA2
BRD4	BRIP1	BTG1	BTK	C11orf30	CALR	CARD11	CASP8
CBFB	CBL	CCND1	CCND2	CCND3	CCNE1	CD274	CD276
CD74	CD79A	CD79B	CDC73	CDH1	CDK12	CDK4	CDK6
CDK8	CDKN1A	CDKN1B	CDKN2A	CDKN2B	CDKN2C	CEBPA	CENPA
CHD2	CHD4	CHEK1	CHEK2	CIC	CREBBP	CRKL	CRLF2
CSF1R	CSF3R	CSNK1A1	CTCF	CTLA4	CTNNA1	CTNNB1	CUL3
CUX1	CXCR4	CYLD	DAXX	DCUN1D1	DDR2	DDX41	DHX15
DICER1	DIS3	DNAJB1	DNMT1	DNMT3A	DNMT3B	DOTIL	E2F3
EED	EGFL7	EGFR	EIF1AX	EIF4A2	EIF4E	EML4	EP300
EPCAM	EPHA3	EPHA5	EPHA7	EPHB1	ERBB2	ERBB3	ERBB4
ERCC1	ERCC2	ERCC3	ERCC4	ERCC5	ERG	ERRFI1	ESR1
ETS1	ETV1	ETV4	ETV5	ETV6	EWSR1	EZH2	FAM123B
FAM175A	FAM46C	FANCA	FANCC	FANCD2	FANCE	FANCF	FANCG
FANCI	FANCL	FAS	FAT1	FBXW7	FGF1	FGF10	FGF14
FGF19	FGF2	FGF23	FGF3	FGF4	FGF5	FGF6	FGF7
FGF8	FGF9	FGFR1	FGFR2	FGFR3	FGFR4	FH	FLCN
FLI1	FLT1	FLT3	FLT4	FOXA1	FOXL2	FOXO1	FOXP1
FRS2	FUBP1	FYN	GABRA6	GATA1	GATA2	GATA3	GATA4
GATA6	GEN1	GID4	GLI1	GNA11	GNA13	GNAQ	GNAS
GPR124	GPS2	GREM1	GRIN2A	GRM3	GSK3B	H3F3A	H3F3B
H3F3C	HGF	HIST1H1C	HIST1H2BD	HIST1H3A	HIST1H3B	HIST1H3C	HIST1H3D
HIST1H3E	HIST1H3F	HIST1H3G	HIST1H3H	HIST1H3I	HIST1H3J	HIST2H3A	HIST2H3C
HIST2H3D	HIST3H3	HLA-A	HLA-B	HLA-C	HNF1A	HNRNP6K	HOXB13
HRAS	HSD3B1	HSP90AA1	ICOSLG	ID3	IDH1	IDH2	IFNGR1
IGF1	IGF1R	IGF2	IKBKE	IKZF1	IL10	IL7R	INHA
INHBA	INPP4A	INPP4B	INSR	IRF2	IRF4	IRS1	IRS2
JAK1	JAK2	JAK3	JUN	KAT6A	KDM5A	KDM5C	KDM6A
KDR	KEAP1	KEL	KIF5B	KIT	KLF4	KLHL6	KMT2B
KMT2C	KMT2D	KRAS	LAMP1	LATS1	LATS2	LMO1	LRP1B
LYN	LZTR1	MAGI2	MALT1	MAP2K1	MAP2K2	MAP2K4	MAP3K1
MAP3K13	MAP3K14	MAP3K4	MAPK1	MAPK3	MAX	MCL1	MDC1
MDM2	MDM4	MED12	MEF2B	MEN1	MET	MGA	MITF
MLH1	MLL	MLLT3	MPL	MRE11A	MSH2	MSH3	MSH6

MST1	MSTIR	MTOR	MUTYH	MYB	MYC	MYCL1	MYCN
MYD88	MYOD1	NAB2	NBN	NCOA3	NCOR1	NEGR1	NF1
NF2	NFE2L2	NFKBIA	NKX2-1	NKX3-1	NOTCH1	NOTCH2	NOTCH3
NOTCH4	NPM1	NRAS	NRG1	NSD1	NTRK1	NTRK2	NTRK3
NUP93	NUTM1	PAK1	PAK3	PAK7	PALB2	PARK2	PARP1
PAX3	PAX5	PAX7	PAX8	PBRM1	PDCD1	PDCD1LG2	PDGFRA
PDGFRB	PDK1	PDPK1	PGR	PHF6	PHOX2B	PIK3C2B	PIK3C2G
PIK3C3	PIK3CA	PIK3CB	PIK3CD	PIK3CG	PIK3R1	PIK3R2	PIK3R3
PIM1	PLCG2	PLK2	PMAIP1	PMS1	PMS2	PNRC1	POLD1
POLE	PPARG	PPM1D	PPP2R1A	PPP2R2A	PPP6C	PRDM1	PREX2
PRKARIA	PRKCI	PRKDC	PRSS8	PTCH1	PTEN	PTPN11	PTPRD
PTPRS	PTPRT	QKI	RAB35	RAC1	RAD21	RAD50	RAD51
RAD51B	RAD51C	RAD51D	RAD52	RAD54L	RAF1	RANBP2	RARA
RASA1	RB1	RBM10	RECQL4	REL	RET	RFWD2	RHEB
RHOA	RICTOR	RIT1	RNF43	ROS1	RPS6KA4	RPS6KB1	RPS6KB2
RPTOR	RUNX1	RUNX1T1	RYBP	SDHA	SDHAF2	SDHB	SDHC
SDHD	SETBP1	SETD2	SF3B1	SH2B3	SH2D1A	SHQ1	SLIT2
SLX4	SMAD2	SMAD3	SMAD4	SMARCA4	SMARCB1	SMARCD1	SMC1A
SMC3	SMO	SNCAIP	SOCS1	SOX10	SOX17	SOX2	SOX9
SPEN	SPOP	SPTA1	SRC	SRSF2	STAG1	STAG2	STAT3
STAT4	STAT5A	STAT5B	STK11	STK40	SUFU	SUZ12	SYK
TAF1	TBX3	TCEB1	TCF3	TCF7L2	TERC	TERT	TET1
TET2	TFE3	TFRC	TGFBR1	TGFBR2	TMEM127	TMPRSS2	TNFAIP3
TNFRSF14	TOP1	TOP2A	TP53	TP63	TRAF2	TRAF7	TSC1
TSC2	TSHR	U2AF1	VEGFA	VHL	VTCN1	WISP3	WT1
XIAP	XPO1	XRCC2	YAP1	YES1	ZBTB2	ZBTB7A	ZFHX3
ZNF217	ZNF703	ZRSR2					

## CNVs

AKT2	ALK	AR	ATM	BRAF	BRCA1	BRCA2	CCND1
CCND3	CCNE1	CDK4	CDK6	CHEK1	CHEK2	EGFR	ERBB2
ERBB3	ERCC1	ERCC2	ESR1	FGF1	FGF10	FGF14	FGF19
FGF2	FGF23	FGF3	FGF4	FGF5	FGF6	FGF7	FGF8
FGF9	FGFR1	FGFR2	FGFR3	FGFR4	JAK2	KIT	KRAS
LAMP1	MDM2	MDM4	MET	MYC	MYCL1	MYCN	NRAS
NRG1	PDGFRA	PDGFRB	PIK3CA	PIK3CB	PTEN	RAF1	RET
RICTOR	RPS6KB1	TFRC					

## RNA Fusions

ABL1	AKT3	ALK	AR	AXL	BCL2	BRAF	BRCA1
BRCA2	CDK4	CSF1R	EGFR	EML4	ERBB2	ERG	ESR1
ETS1	ETV1	ETV4	ETV5	EWSR1	FGFR1	FGFR2	FGFR3
FGFR4	FLI1	FLT1	FLT3	JAK2	KDR	KIF5B	KIT
MET	MLL	MLLT3	MSH2	MYC	NOTCH1	NOTCH2	NOTCH3
NRG1	NTRK1	NTRK2	NTRK3	PAX3	PAX7	PDGFRA	PDGFRB
PIK3CA	PPARG	RAF1	RET	ROS1	RPS6KB1	TMPRSS2	

**COMPREHENSIVE RNA FUSIONS PANEL (501 genes)**

ABI1	ABL1	ABL2	ACACA	ACE	ACER1	ACKR3	ACSL6
ADD3	AFF1	AFF3	AFF4	AGR3	AH11	AHRR	ALK
ANKRD28	AR	ARHGAP20	ARHGAP26	ARNT	ASPSCR1	ASTN2	ATF1
ATIC	ATP1B4	AUTS2	BACH2	BAG4	BAIAP2L1	BAZ2A	BCAS3
BCAS4	BCL10	BCL11A	BCL11B	BCL2	BCL2L1	BCL3	BCL6
BCL9	BCOR	BCR	BDNF	BICC1	BIRC3	BIRC6	BRAF
BRD1	BRD3	BRD4	BRWD3	BTBD18	BTG1	C11orf1	C11orf95
C2CD2L	C3orf27	CAMTA1	CAPRIN1	CARS	CASC5	CASP7	CBFA2T3
CBFB	CBL	CCAR2	CCDC28A	CCDC6	CCDC88C	CCNB1IP1	CCNB3
CCND1	CCND2	CCND3	CD74	CDH11	CDK5RAP2	CDK6	CDX1
CDX2	CEBPA	CEBPB	CEBPD	CEBPE	CEP170B	CEP85L	CHD6
CHIC2	CHMP2B	CHST11	CIC	CIITA	CLP1	CLTC	CLTCL1
CMKLR1	CNBP	CNOT2	CNTRL	COG5	COL1A1	COL1A2	COL6A3
COX6C	CPSF6	CRADD	CREB1	CREB3L1	CREB3L2	CREBBP	CRLF2
CRTC1	CSF1	CSFIR	CTDSP2	CTNNB1	CUX1	DAB2IP	DACH1
DACH2	DDIT3	DDX10	DDX20	DEK	DMRT1	DNAJB1	DPM1
DUSP22	DUX4	EBF1	EEFSEC	EGFR	EGR1	EGR2	EGR3
EGR4	EIF4A2	ELF4	ELK4	ELL	ELN	EML1	EML4
EP300	EP400	EPC1	EPOR	EPS15	ERBB3	ERC1	ERCC1
ERG	ERLIN2	ESR1	ETS1	ETV1	ETV4	ETV5	ETV6
EWSR1	EZR	FAM19A2	FCGR2B	FCRL4	FEN1	FEV	FGF8
FGFR1	FGFR1OP	FGFR1OP2	FGFR2	FGFR3	FGFR4	FHIT	FIP1L1
FLI1	FLNA	FLT3	FLT3LG	FNBP1	FOSB	FOSL1	FOXO1
FOXO4	FOXP1	FRK	FRYL	FUS	GAS7	GATA1	GIT2
GLI1	GOSR1	GOT1	GPR128	GPR34	GRHPR	GRID1	GTF2I
H2AFX	HAS2	HEY1	HHEX	HIP1	HIPK1	HIST1H4I	HLF
HMGA2	HNF1A	HOXA10	HOXA11	HOXA13	HOXA9	HOXC11	HOXC13
HOXD11	HOXD13	HSP90AA1	ID4	IKZF1	IL2	IL21R	IL3
INPP5D	IQCG	IRF2BP2	IRF4	IRS4	ITK	JAK1	JAK2
JAZF1	KANK1	KAT6A	KAT6B	KDM5A	KIAA1524	KIF5B	KMT2A
KPNB1	KSR1	LASP1	LCK	LCP1	LGR5	LHFP	LHX2
LHX4	LMBRD1	LMO1	LMO2	LNP1	LPP	LPXN	LRMP
LRRC37B	LTBP1	LYL1	MACROD1	MAF	MAFB	MALT1	MAML2
MAPRE1	MBNL1	MBTD1	MDS2	MEAF6	MECOM	MGEA5	MKL1
MKL2	MLF1	MLLT1	MLLT10	MLLT11	MLLT3	MLLT4	MLLT6
MN1	MNX1	MSI2	MSN	MUC1	MUTYH	MYB	MYBL1
MYC	MYH11	MYH9	MYO18A	MYO1F	NAB2	NAPA	NBR1
NCOA1	NCOA2	NCOA3	NDE1	NF1	NFATC2	NFIB	NGF
NGFR	NIN	NIPBL	NKX2-5	NONO	NOTCH1	NPM1	NR4A3
NR6A1	NSD1	NT5C2	NTF3	NTF4	NTRK1	NTRK2	NTRK3

NUMA1	NUP107	NUP214	NUP98	NUTM1	NUTM2A	NUTM2B	OFD1
OLIG2	OLR1	OMD	P2RY8	PAPPA	PATZ1	PAX3	PAX5
PAX7	PAX8	PBX1	PCM1	PDE4DIP	PDGFB	PDGFRA	PDGFRB
PER1	PHF1	PHF23	PICALM	PIM1	PLAG1	PML	POM121
POU2AF1	POU5F1	PPAP2B	PPARG	PPARGC1A	PPFIBP1	PPP2R1B	PRCC
PRDM16	PRKACA	PRKAR1A	PRKG2	PRRX2	PSIP1	PSMD2	PTPRR
RABEP1	RAD51B	RAF1	RANBP2	RAP1GDS1	RARA	RBM15	RBM6
RCOR1	RCSD1	RET	RHOH	RNF213	ROS1	RPL22	RPN1
RREB1	RRM1	RTKL1	RUNX1	RUNX1T1	SARNP	SEC31A	SEPT2
SEPT5	SEPT6	SEPT9	SERPINE1	SERPINF1	SET	SETBP1	SFPQ
SH3D19	SH3GL1	SIK3	SLC34A2	SLC45A3	SLCO1B3	SMAP1	SMARCA5
SMARCB1	SORBS2	SORT1	SP3	SPECC1	SPTBN1	SQSTM1	SRF
SRSF3	SS18	SS18L1	SSBP2	SSX1	SSX2	SSX4	ST6GAL1
STAT5B	STAT6	STRN	SUGP2	SUZ12	SYK	TACC1	TACC2
TACC3	TAF15	TAL1	TAL2	TAOK1	TBX15	TCF12	TCF3
TCL1A	TCTA	TEAD1	TEAD2	TEAD3	TEAD4	TEC	TENM1
TET1	TFE3	TFG	TFPT	TFRC	TGFBR3	THADA	THRAP3
TIRAP	TLX1	TLX3	TMPRSS2	TNFRSF17	TOP1	TOP2B	TP53BP1
TPM3	TPM4	TRHDE	TRIM24	TRIP11	TRPS1	USP16	USP42
USP6	VGLL3	WASF2	WDR18	WDR70	WHSC1	WHSC1L1	WSB1
WT1	WWTR1	XIAP	YAP1	YTHDF2	YWHAE	ZBTB16	ZC3H7A
ZC3H7B	ZFP64	ZFPM2	ZFYVE19	ZMIZ1	ZMYM2	ZMYND11	ZNF207
ZNF384	ZNF444	ZNF521	ZNF585B	ZNF687			