

QIAseq RNA Fusion XP Panels

Lymphoma

Cat. nos. 334602 JHS-004Z-12 and 334605 JHS-004Z-96

For constructing molecularly barcoded libraries from RNA for gene fusion, exon skipping, gene expression, and RNA SNV/InDel analysis using digital NGS

The QIAseq RNA Fusion XP Lymphoma Panel permits the use of next-generation sequencing using 1,371 primers to detect fusions to 91 genes and RNA SNP/indels in 62 genes frequently observed in lymphoma samples as well as the relative gene expression of 309 genes with signatures relevant to lymphomas. Such frequently detected mutations and fusions are likely to be relevant or even important to lymphoma biology and may be used in translational research to classify samples with known phenotypes. Using the Catalogue of Somatic Mutations in Cancer (COSMIC), frequently mutated genes and frequently detected fusions were collected for acute lymphoblastic lymphomas, anaplastic large cell lymphomas, B cell lymphomas, Burkitt lymphomas, follicular lymphomas, Hodgkin lymphomas, mucosa-associated lymphoid tissue (MALT) lymphomas, T cell lymphomas, and other lymphomas. For the same cancer subtypes, additional fusions were also collected from the Archer Quiver Database, the Human Somatic Mutation Database (HSMD), requests and suggestions by QIAGEN KOLs and SMEs, and other peer-reviewed publications. Genes signatures important for immuno-oncology research were collected from peer-reviewed publications. Genes whose expression is altered due to genetic alterations in lymphomas are also included. Using digital DNA sequencing, fusions to, relative gene expression of, and RNA SNP/indels in three different focused panels of genes relevant to lymphoma can be assessed with this primer pool.

For further details, consult the *QIAseq RNA Fusion XP Panels Handbook*.

Shipping and storage

The QIAseq RNA Fusion XP Panel Kit is shipped with dry ice (Box 1) and must be stored at -20°C upon arrival. Box 2 (QIAseq Beads) is shipped on cold packs and should be stored at 4°C . When stored under these conditions and handled correctly, the product can be kept based on the expiration date on each component without reduction in performance.

Note: Open the package and store the products appropriately immediately upon receipt.



Panel Contents

QIAseq RNA Fusion XP Panel catalog number	334602	334605
No. of preps	12	96
Box 1 of 2		
QIAseq RNA Fusion XP Panel	48 µL	384 µL
RP Primer II	12 µL	96 µL
EZ Reverse Transcriptase	15 µL	96 µL
BC3 Buffer, 5x	24 µL	192 µL
RNase Inhibitor	12 µL	96 µL
RH RNase	12 µL	96 µL
dNTP II	18 µL	144 µL
BLU Buffer, 10x	24 µL	192 µL
POL Enzyme	12 µL	96 µL
ERA Enzyme	120 µL	960 µL
ERA Buffer, 10x	60 µL	480 µL
DNA Ligase	120 µL	960 µL
Ligation Buffer, 5x	240 µL	2 × 1250 µL
TEPCR Buffer, 5x	60 µL	500 µL
RNA Buffer II, 5x	48 µL	2 × 384 µL
TaqIT Plus enzyme	15 µL	2 × 120 µL
HotStarTaq® DNA Polymerase	30 µL	240 µL
Box 2 of 2		
QIAseq Beads	10 mL	55 mL

Gene Table: RNA Fusions

Gene Symbol	Gene Symbol	Gene Symbol	Gene Symbol
ABL1	ADGRG7	AFF3	ALK
ATIC	ATXN2L	BAIAP2L1	BCL11A
BCL2	BCL6	BCR	BIRC3
BRAF	CBFB	CCDC6	CCND1
CCND3	CD28	CD74	CDK6
CHIC2	CIITA	CLTC	CREBBP
CTLA4	DCTN1	DEK	DUSP22
EGFR	EIF4A1	EML4	ERG
ETV6	FGFR1	FGFR3	FIP1L1
IGLL5	ITK	JAK2	KIF5B
KMT2A	LMNA	LYN	MALT1
MAPK13	MET	MKL1	MLF1
MLLT10	MSN	MYC	MYO1F
NCOA4	NFKB2	NOTCH1	NPM1
NTRK1	NTRK3	NUP214	P2RY8
PAX8	PBX1	PCMI	PDCD1LG2
PDGFRA	PIM1	PPARG	PRDM16
REL	RET	ROS1	S100A7
SEC31A	SEPTIN14	SET	SLC34A2
SLC45A3	SQSTM1	STIL	SYK
TACC3	TBL1XR1	TCF3	TFG
THAP4	TMPRSS2	TOMM40	TP63
TPM3	TPM4	VAV1	

Gene Table: Gene Expression

Gene Symbol	Gene Symbol	Gene Symbol	Gene Symbol	Gene Symbol	Gene Symbol
ACTG1	ADAM17	ADAM28	ADORA2A	AKNA	AKT3
ANP32B	AOAH	APOE	APP	ARHGAP9	ATM
B2M	BANK1	BATF	BCL10	BCL2	BCL3
BCL6	BCL9	BLK	BNIP3L	BTLA	BTNL2
C10orf54	CACNA2D2	CAPZB	CARD11	CARD16	CCL1
CCL13	CCL17	CCL22	CCL4	CCL5	CCL7
CCND1	CCND2	CCND3	CCR2	CCR3	CCR6
CD109	CD160	CD19	CD1A	CD1B	CD1E
CD2	CD200	CD200R1	CD209	CD244	CD247
CD27	CD274	CD276	CD28	CD38	CD3D
CD3E	CD3G	CD40	CD40LG	CD44	CD48
CD52	CD6	CD68	CD69	CD70	CD74
CD79A	CD80	CD86	CD8A	CD8B	CDK2
CDK6	CDKN2A	CHIT1	CLEC11A	CMA1	CMKLR1
CORO1A	CORO1B	CR2	CSF2	CSF3R	CSNK1E
CTLA4	CTSG	CX3CL1	CXCL10	CXCL11	CXCL13
CXCL5	CXCL9	CXCR4	CXCR6	DOCK9	DPP4
EBI3	EHD1	EOMES	ERBB2	ERVW-1	EW5R1
F13A1	FAS	FCGR2B	FCRL4	FEZ1	FLT3
FLT3LG	FMNL1	FOXJ1	FOXP3	FOXP1	FOXP3
FPR2	FUT5	FYB	GATA3	GBA2	GBP1
GPR34	GTF3C1	GZMA	GZMB	GZMM	HAVCR2
HHLA2	HIVEP1	HIVEP2	HLA-A	HLA-B	HLA-C
HLA-DMA	HLA-DMB	HLA-DOA	HLA-DOB	HLA-DPA1	HLA-DPB1
HLA-DQA1	HLA-DQA2	HLA-DQB1	HLA-DQB2	HLA-DRA	HLA-DRB1
HLA-DRB5	HLA-E	HLA-F	HLA-G	HLA-H	HSD11B1
ICOS	ICOSLG	IDO1	IDO2	IFI16	IFI27
IFI30	IFI44L	IFITM1	IFNG	IGHA1	IGHM
IGSF6	IKZF1	IL12RB2	IL15RA	IL17A	IL17RA
IL21R	IL26	IL2RB	IL3RA	IL5RA	INHBA
IRF1	IRF2	IRF4	ITGA4	ITGAV	ITGB2
ITGB3	ITGB7	ITPKA	JAK1	KDSR	KIR3DL1
KIT	KLRK1	KLRD1	LAG3	LAIR1	LAIR2
LAMP3	LARGE	LGALS9	LILRB1	LILRB3	LSM4
LST1	LTA	LTA4H	LTK	MAF	MALTI
MAP3K14	MARCO	MICA	MICB	MME	MPPED1
MR1	MS4A1	MS4A2	MSR1	MTCP1	MUC1
MYC	NAB2	NAIP	NBEAP1	NCR1	NEFL
NFAM1	NFATC4	NFKB2	NFKB1L1	NKG7	NRAS
NRP1	NUP107	OAS3	ODF2	OPTN	PAX5
PDCD1	PDCD1LG2	PHKG2	PLA2G2D	PLA2G6	PMCH
POU2AF1	PPIF	PRDM16	PRF1	PRG2	PRRC2B
PSMB10	PSMB9	PTEN	PTGDR2	PTPRCAP	RBL2
REPS1	RHOC	RORC	RRAD	SELL	SERPINA3
SERPINB9	SH3BP5	SHMT2	SIGMAR1	SMAD2	SMAD3
SMPD3	STAT1	STAT4	STAT6	SYT17	SYTL1
TAP1	TAP2	TAPBPL	TBX21	TGFB1	THBS1
TIA1	TIGIT	TIMP1	TMC8	TMIGD2	TNFRSF13B
TNFRSF14	TNFRSF17	TNFRSF18	TNFRSF19	TNFRSF25	TNFRSF4
TNFRSF8	TNFRSF9	TNFSF14	TNFSF15	TNFSF4	TNFSF9
TPSAB1	TRAC	TRGC1	TRGC2	TXK	USP9Y
VTCN1	ZFYVE9	ZNF205			

Gene Table: RNA SNP/indel

Gene Symbol	Gene Symbol	Gene Symbol	Gene Symbol
ALK	AMER1	APC	ARID1A
ASXL1	ATM	B2M	BCL2
BCOR	BRAF	BTB	CD79B
CDKN2A	CNOT3	CREBBP	CTNNB1
CXCR4	DNMT3A	EZH2	FBXW7
GNAS	HLA-A	ID3	IDH2
IRS4	JAK1	JAK3	KIT
KMT2D	KRAS	MAP2K1	MED12
MSN	MYC	MYD88	NCOR1
NFKBIE	NOTCH2	NRAS	PAX5
PIK3CA	PIK3R1	PLCG1	POT1
PPM1D	PTEN	RG57	RHOA
SF3B1	SMO	SRSF2	STAT3
STAT5B	STAT6	TERT	TRRAP
WHSC1	WT1	XPO1	ZFXH3
ZMYM3	ZNF479		

Functional Groupings

GENE FUSIONS:

Acute Lymphoblastic Lymphomas: CREBBP, KMT2A, MLLT10, MYC, P2RY8, PRDM16, STIL.

Anaplastic Large Cell Lymphomas: ADGRG7, ALK, ATIC, CLTC, MSN, MYC, NPM1, TFG, TPM3, TPM4.

Angioimmunoblastic T Cell Lymphomas: CD28, CTLA4, FIP1L1, PDGFRA.

Burkitt Lymphomas: BCL6, MYC, PBX1, TCF3.

Diffuse Large B Cell Lymphomas (DLBCL): ALK, BCL11A, BCL6, CCND3, CIITA, CLTC, IGLL5, MAPK13, MYC, NPM1, PIM1, REL, SQSTM1, TBL1XR1, TOMM40, TP63.

Follicular Lymphomas: AFF3, BCL2, BCL6, CIITA, MYC, TBL1XR1, TP63.

Hodgkin Lymphomas: ALK, CIITA, JAK2, NPM1, SEC31A.

Inflammatory Myofibroblastic Tumors: ALK, DCTN1.

Lymphoblastic Lymphomas: BCR, ETV6, FGFR1, NOTCH1, PBX1.

Lymphoblastic T Cell Lymphomas: BCR, ETV6, FGFR1, FIP1L1, LYN, PDGFRA.

Mantle Cell Lymphomas: CCND3, MYC.

Mediastinal Large B Cell Lymphomas (MLBL): CIITA, PDCD1LG2.

Mediastinal Large B-Cell Lymphomas: CIITA, PDCD1LG2.

Mucosa-Associated Lymphoid Tissue (MALT) Lymphomas: BCL6, BIRC3, CCND3, MALT1, MYC.

Peripheral T Cell Lymphomas: ALK, ETV6, FGFR3, ITK, MYO1F, NPM1, S100A7, SYK, TBL1XR1, THAP4, TP63, VAV1.

Precursor T Cell Lymphoblastic Lymphomas: ABL1, JAK2, NUP214, PCM1, SET.

T Cell Lymphomas: ATXN2L, FGFR1, JAK2.

Other Lymphomas: ALK, ATXN2L, BCL6, BIRC3, CBFB, CCND1, CCND3, CDK6, CHIC2, CLTC, DEK, DUSP22, EIF4A1, JAK2, KMT2A, MALT1, MKL1, MLF1, MLLT10, NFKB2, NPM1, PRDM16.

Commercial Control Samples: ALK, BAIAP2L1, BRAF, CCDC6, CD74, EGFR, EML4, ERG, ETV6, FGFR3, KIF5B, LMNA, MET, NCOA4, NTRK1, NTRK3, PAX8, PPARG, RET, ROS1, SEPT14, SLC34A2, SLC45A3, TACC3, TFG, TMPRSS2, TPM3.

GENE EXPRESSION:

Checkpoint Molecules:

Inhibitory on Tumor Cells: CD200, CD274, CD48, CD80, CD86, ITGAV, ITGB3, LGALS9, MICA, MICB, PDCD1LG2, TNFRSF14, VSIR.

Stimulatory on Tumor Cells: CD40, CD40LG, CD48, CD70, CD86, ICOSLG, TNFRSF9, TNFSF14, TNFSF4, TNFSF9.

Inhibitory on T Cells: BTLA, CD160, CD200R1, CD244, CD274, CD28, CTLA4, HAVCR2, KLRC1, LAG3, LILRB1, LILRB3, PDCD1, VSIR.

Stimulatory on T Cells: CD244, CD27, CD28, CD40, CD40LG, ICOS, TNFRSF14, TNFRSF18, TNFRSF4, TNFRSF9, TNFSF14, TNFSF9.

T Cell Receptor Genes: CD247, CD3D, CD3E, CD3G, TRAC, TRGC2.

Major Histocompatibility Complex I Genes: B2M, HLA-A, HLA-B, HLA-C, HLA-E, HLA-F, HLA-G, HLA-H, MR1.

Major Histocompatibility Complex II Genes: CD74, HLA-DMA, HLA-DMB, HLA-DOA, HLA-DOB, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQA2, HLA-DQB1, HLA-DQB2, HLA-DRA, HLA-DRB1, HLA-DRB5, IFI30.

Other Checkpoint Molecules: ADORA2A, BTNL2, CD160, CD276, CD44, CD52, CD8A, HHLA2, IDO1, IDO2, KIR3DL1, KLRD1, LAIR1, MS4A1, NRPI, TIGIT, TMIGD2, TNFRSF25, TNFRSF8, TNFSF15, VTCN1.

Checkpoint Blockade Therapy Biomarkers: BTLA, CD274, CD80, CD8A, CSF2, CXCL11, HAVCR2, HLA-DRA, HLA-DRB1, HLA-DRB5, ICOS, IFNG, LAG3, PDCD1, PDCD1LG2.

Immuno Regulatory Gene Signature: ERBB2, FAS, IL5RA, INHBA, TNFRSF8, TNFSF4, TNFSF9.

Immuno Stimulatory Gene Signature: CD160, CD19, CD200, CD27, CD44, CTLA4, HLA-A, IL12RB2, IL17A, KIT, TNFRSF17.

Immuno Suppressive Gene Signature: CD274, CD276, HAVCR2, PDCD1LG2, TGFB1.

Upregulated in Cancer Vaccination Response: CCL5, CD3D, CD86, CD8A, CXCL10, CXCL9, GBP1, ICOS, IRF1, KLRD1, PSMB9, STAT1.

Immune Cell Markers:

CD8 T Cells: CD8A, CD8B, FLT3LG, GZMM, PRF1.

Th1 Cells: CCL4, CD38, CD70, CSF2, CTLA4, DPP4, IFNG, IL12RB2, LTA, STAT4, TBX21.

Th17 Cells: IL17A, IL17RA, RORC.

Th2 Cells: CXCR6, GATA3, IL26, LAIR2, MAF, PMCH, SMAD2, STAT6.

Follicular Helper T Cells: BCL6, CXCL13, MAF, PDCD1.

Other T Helper Cell Markers: ANP32B, BATF, CD28, ICOS, NUP107.

Regulatory T Cells: FOXP3.

Gamma Delta T Cells: CD160, FEZ1, TRGC1.

Central Memory T Cells: ATM, DOCK9, FYB1, NEFL, REPS1, TXK, USP9Y.

Effector Memory T Cells: AKT3, CCR2, EWSR1, IL15RA, LTK, NFATC4.

Other T Cell Markers: CD2, CD247, CD3D, CD3E, CD3G, CD6, IL2RB, TNFRSF25, TRAC, TRGC2.

Myeloid Derived Suppressor Cells: TGFBI.

Cytotoxic Lymphocytes: CD3E, CD3G, CD8A, CD8B, EOMES, GZMA, GZMB, IFNG, KLRC1, KLRD1, NKG7, TBX21.

Natural Killer Cells: BCL2, CD160, FOXP1, FUT5, GTF3C1, GZMB, IL21R, KIR3DL1, MPPED1, NCR1, PLA2G6, RRAD, ZNF205.

Activated Dendritic Cells: CCL1, EBI3, LAMP3, OAS3.

Immature Dendritic Cells: CD1A, CD1B, CD1E, F13A1, SYT17.

Myeloid Dendritic Cells: CD1A, CD1B, CD1E.

Plasmacytoid Dendritic Cells: IL3RA.

Other Dendritic Cell Markers: CCL13, CCL17, CCL22, CD209, HSD11B1.

Macrophages: APOE, CCL7, CD68, CHIT1, CXCL5, MARCO, MSR1.

Neutrophils: CSF3R, FPR2, MME.

Eosinophils: CCR3, IL5RA, PTGDR2, SMPD3, THBS1.

Mast Cells: CMA1, CTSG, KIT, MS4A2, PRG2, TPSAB1.

B Cells: BANK1, BLK, CD19, CD79A, CR2, HLA-DOB, HLA-DQA1, MS4A1, PAX5, TNFRSF17.

Antigen Presenting Cells: CMKLR1.

Regulatory T Cell Gene Signature: CD274, JAK1, PDCD1LG2, TIGIT, TNFRSF18, TNFRSF4, TNFRSF8, TNFRSF9.

T Cell Trafficking & Infiltration into Tumors:

Stimulates T Cell Trafficking & Infiltration into Tumors: CCL5, CX3CL1, CXCL10, CXCL9, ITGB2, SELL.

Other T Cell Trafficking & Infiltration into Tumors Genes: CCL17, CCL4, CCR3, CCR6, CD274, CD44, CSF2, CXCL11, CXCL13, FOXP3, IFNG, ITGA4, ITGB7, LTA, PDCD1, PDCD1LG2, PTEN, TNFRSF25, TNFSF14.

T Cell Exhaustion:

Upregulated in T Cell Exhaustion: CCL5, CD200, CD27, CD69, CTLA4, CXCL10, CXCL13, GBP1, HLA-DMA, HLA-DQA1, ICOS, IFI16, IFNG, ITGAV, TAP1, TIGIT, TNFRSF9.

Downregulated in T Cell Exhaustion: TNFRSF25.

T Cell Exhaustion Transcriptional Nodes: BATF, TBX21.

Responsiveness or Response Biomarkers:

Enhanced Expression in Responsive Versus Nonresponsive Cancers: APP, CAPZB, CCL4, CCL5, CD8A, CSNK1E, CTLA4, CXCL10, CXCL11, CXCL9, EBI3, EHD1, GBA2, GZMB, HLA-DQA1, IDO1, IFNG, INHBA, IRF2, NKG7, ODF2, PHKG2, PPIF, PRF1, SERPINA3, SHMT2, SIGMAR1, SMAD3, TIA1.

Suppressed Expression in Responsive Versus Nonresponsive Cancers: ACTG1, BNIP3L, CX3CL1, FOXN3, IFI27, JAK1, LTA4H, NAIP, OPTN, PRRC2B, PTEN, RBL2, TXK.

Differentially Expressed in Responsive Versus Nonresponsive Cancers: ADAM28, AKNA, AOA, ARHGAP9, CACNA2D2, CARD11, CARD16, CD109, CLEC11A, CORO1A, CORO1B, CXCR4, FLT3, FMNL1, HIVEP1, HIVEP2, IFI44L, IFITM1, IGHA1, IGHM, IGSF6, IKZF1, ITPKA, LSM4, LST1, MAP3K14, NFAM1, NFKBIL1, PLA2G2D, POU2AF1, PTPRCAP, SERPINB9, SH3BP5, SYTL1, TMC8, TNFRSF13B, TNFRSF19, ZFYVE9.

Expression Correlates with Positive Objective Response Rates: CD274, CD276, CTLA4, HAVCR2, IDO1, LAG3, PDCD1LG2, VTCN1.

Upregulated during Treatment: CD8A, CTLA4, CXCL10, EOMES, GZMA, GZMB, ICOS, IFNG, PRF1.

Regulated during Treatment: IRF1.

Pre-Treatment Response Prediction:

Predicts Enhanced Response: ADAM17, MYC, RHOC, TIMP1.

Other Pre-Treatment Response Predictors: CDK2, CDKN2A, LARGE1, NAB2, NRAS.

Cancer Cell Killing:

Inhibits Cancer Cell Killing: BTLA, CD274, CD80, HAVCR2, IDO1, IDO2, LAG3, MICA, MICB, PDCD1, TGFBI, VSIR, VTCN1.

Stimulates Cancer Cell Killing: IFNG.

Antigen Processing & Presentation:

Proteasome: PSMB10, PSMB9.

Proteases: IFI30.

Endoplasmic Reticulum & Lysosomal Transport: TAP1, TAP2, TAPBPL.

Major Histocompatibility Complex I Genes: B2M, HLA-A, HLA-B, HLA-C, HLA-E, HLA-F, HLA-G, HLA-H, MR1.

Major Histocompatibility Complex II Genes: CD74, HLA-DMA, HLA-DQA1, HLA-DRA, HLA-DRB1, HLA-DRB5, IFI30.

Immune Cell Receptors & Co-Receptors: CD8A, CD8B, KIR3DL1, KLRC1, KLRD1.

Stimulates Antigen Presentation: CD40, CD40LG.

Interferon Gamma Response:

Cytokines & Chemokines: CCL5, IL15RA, STAT1.

Major Histocompatibility Complex I Genes: B2M, HLA-A, HLA-B, HLA-C, HLA-E, HLA-F, HLA-G, HLA-H.

Major Histocompatibility Complex II Genes: HLA-DMA, HLA-DQA1, HLA-DRA, HLA-DRB1, HLA-DRB5, IFI30.

RNA Degradation: OAS3.

Transcription Factors: IRF1, IRF2.

Other Interferon Gamma Response Genes: CD44, GBP1.

Cytosolic DNA-Sensing Pathway:

Cytokines & Interferons: CCL4, CCL5, CXCL10.

Expression Altered due to Genetic Alterations: BCL10, BCL2, BCL3, BCL6, BCL9, CCND1, CCND2, CCND3, CD44, CDK6, ERVW-1, FCGR2B, FCRL4, FOXP1, GPR34, IRF4, KDSR, MALT1, MTCPI, MUC1, MYC, NBEAP1, NFKB2, PAX5, PRDM16.

RNA SNP/INDELS:

AIDS-Related Lymphomas: EZH2.

Anaplastic Large Cell Lymphomas: ALK, CDKN2A, DNMT3A, NRAS, STAT3.

Angioimmunoblastic T Cell Lymphomas: ALK, APC, ARID1A, ASXL1, ATM, BRAF, CDKN2A, CREBBP, CTNNB1, DNMT3A, EZH2, FBXW7, IDH2, JAK1, JAK3, KIT, KMT2D, KRAS, MED12, PLCG1, RHOA, STAT3, WT1, XPO1, ZFXH3.

B Cell Lymphomas: ARID1A, ATM, B2M, BCL2, BCOR, BRAF, CD79B, CDKN2A, CREBBP, CTNNB1, CXCR4, DNMT3A, EZH2, JAK3, KIT, KMT2D, MAP2K1, MYD88, PIK3CA, PPM1D, PTEN, RHOA, STAT3.

Burkitt Lymphomas: APC, ARID1A, ATM, CD79B, CDKN2A, CREBBP, FBXW7, HLA-A, ID3, KRAS, MYC, MYD88, NRAS, PAX5, PIK3CA, PIK3R1, PTEN, RHOA, SRSF2.

Small Lymphocytic Lymphomas: ALK, APC, ARID1A, ASXL1, ATM, BCL2, BCOR, BRAF, BTK, CD79B, CDKN2A, CNOT3, CREBBP, CXCR4, DNMT3A, FBXW7, GNAS, IRS4, JAK1, JAK3, KIT, KMT2D, KRAS, MAP2K1, MED12, MSN, MYC, MYD88, NCOR1, NFKBIE, NOTCH2, NRAS, PAX5, PIK3CA, PIK3R1, PLCG1, POT1, PPM1D, PTEN, RGS7, SF3B1, STAT5B, STAT6, TERT, TRRAP, XPO1, ZFH3, ZMYM3, ZNF479.

Cutaneous T Cell Lymphomas: KRAS, PTEN.

Diffuse Large B Cell Lymphomas (DLBCL): ALK, AMER1, APC, ARID1A, ASXL1, ATM, B2M, BCL2, BCOR, BRAF, BTK, CD79B, CDKN2A, CNOT3, CREBBP, CTNNB1, CXCR4, DNMT3A, EZH2, FBXW7, HLA-A, ID3, IDH2, IRS4, JAK1, JAK3, KIT, KMT2D, KRAS, MAP2K1, MED12, MSN, MYC, MYD88, NCOR1, NFKBIE, NOTCH2, NRAS, NSD2, PAX5, PIK3CA, PIK3R1, PLCG1, POT1, PPM1D, PTEN, RGS7, RHOA, SF3B1, SMO, SRSF2, STAT3, STAT5B, STAT6, TERT, TRRAP, WT1, XPO1, ZFH3, ZNF479.

Diffuse Red Pulp Small B Cell Lymphomas: MYD88, NOTCH2.

Enteropathy-Type T Cell Lymphomas: STAT5B.

Follicular Lymphomas: AMER1, ARID1A, ATM, B2M, BCL2, BCOR, BRAF, BTK, CD79B, CDKN2A, CREBBP, CXCR4, DNMT3A, EZH2, FBXW7, ID3, IDH2, KMT2D, MAP2K1, MED12, MYD88, NOTCH2, NRAS, PIK3R1, PPM1D, PTEN, RGS7, RHOA, SRSF2, STAT6, ZMYM3.

Gamma-Delta T Cell Lymphomas: STAT3, STAT5B.

Hepatosplenic T Cell Lymphomas: STAT3, STAT5B.

Hodgkin Lymphomas: ARID1A, ASXL1, B2M, BCOR, CDKN2A, DNMT3A, EZH2, NFKBIE, NRAS, PAX5, PIK3R1, PPM1D, SF3B1.

Lymphoplasmacytic Lymphomas: ARID1A, BTK, CD79B, CXCR4, DNMT3A, MYD88.

Mucosa-Associated Lymphoid Tissue (MALT) Lymphomas: MYD88, NOTCH2.

Mantle Cell Lymphomas: ARID1A, ASXL1, ATM, B2M, BCOR, BRAF, BTK, CDKN2A, CREBBP, DNMT3A, IDH2, KMT2D, KRAS, MED12, NCOR1, NFKBIE, NOTCH2, NRAS, NSD2, PAX5, POT1, PPM1D, PTEN, STAT3, TERT, ZFH3.

Marginal Zone Lymphomas: AMER1, ARID1A, ASXL1, ATM, BRAF, CD79B, CREBBP, CXCR4, DNMT3A, EZH2, FBXW7, GNAS, JAK3, KIT, KMT2D, MAP2K1, MYD88, NFKBIE, NOTCH2, PIK3R1, RHOA, SRSF2, TRRAP, XPO1.

Mycosis Fungoides (Sezary Syndrome): AMER1, ARID1A, ATM, BCOR, CDKN2A, DNMT3A, JAK1, JAK3, KMT2D, KRAS, NCOR1, NRAS, PIK3CA, PLCG1, POT1, PTEN, STAT3, STAT5B.

NK-T Cell Lymphomas: ALK, AMER1, APC, ARID1A, ASXL1, ATM, B2M, BCOR, BRAF, CTNNB1, DNMT3A, EZH2, FBXW7, HLA-A, JAK1, JAK3, KIT, KMT2D, KRAS, MED12, NCOR1, NOTCH2, NRAS, POT1, RGS7, RHOA, SMO, STAT3, STAT5B, WT1, XPO1, ZFH3.

Peripheral T Cell Lymphomas: ALK, ARID1A, ASXL1, ATM, CDKN2A, CTNNB1, DNMT3A, IDH2, IRS4, KIT, KMT2D, KRAS, MAP2K1, MSN, NRAS, PLCG1, PTEN, RGS7, RHOA, STAT3, STAT5B, TRRAP, XPO1, ZFH3, ZNF479.

Precursor T Cell Lymphoblastic Lymphomas: CTNNB1, FBXW7, NRAS, WT1.

Primary Central Nervous System Lymphomas: B2M, BCL2, CD79B, CDKN2A, CXCR4, DNMT3A, HLA-A, JAK3, KIT, KRAS, MYD88, NOTCH2, POT1, STAT3, STAT5B, TERT, TRRAP, WT1.

Primary Effusion Lymphomas: CDKN2A, PTEN.

Ordering Information

Product	Contents	Cat. no.
QIAseq RNA Fusion XP Panel (12)	Kit containing ALL reagents (except indices) sufficient to process 12 samples for RNA sequencing analysis of gene fusions, gene expression and RNA SNP/InDel	334602
QIAseq RNA Fusion XP Panel (96)	Kit containing ALL reagents (except indices) sufficient to process 96 samples for RNA sequencing analysis of gene fusions, gene expression and RNA SNP/InDel	334605
QIAseq RNA Fusion XP Custom Panel	Kit containing reagents for first-strand synthesis, second- strand synthesis, end-repair/A-addition, gene-specific amplification, and QIAseq Beads for RNA Fusion XP sequencing, custom panel for 96 samples	334625
QIAseq RNA Fusion XP Booster Panel	Pool of primers used in combination with either catalogued or custom panels	334635
QIAseq 8-Unique Dual Index Set A (48)	Box containing unique dual-indexed adapters, for indexing up to 8 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 48 samples; the first of 2 sets required for multiplexing up to 16 samples	333715
QIAseq 8-Unique Dual Index Set B (48)	Box containing unique dual-indexed adapters, for indexing up to 8 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 48 samples; the second of 2 sets required for multiplexing up to 16 samples	333716
QIAseq 96-Unique Dual Index Set A (384)	Box containing unique dual-indexed adapters, for indexing up to 96 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 384 samples; the first of 2 sets required for multiplexing up to 192 samples	333725
QIAseq 96-Unique Dual Index Set B (384)	Box containing unique dual-indexed adapters, for indexing up to 96 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 384 samples; the second of 2 sets required for multiplexing up to 192 samples	333735
QIAseq 96-Unique Dual Index Set A V2 (96) *	Box containing unique dual-indexed adapters, for indexing up to 96 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 96 samples; four sets are required for multiplexing up to 384 samples	331745

Product	Contents	Cat. no.
QIAseq 96-Unique Dual Index Set B V2 (96) *	Box containing unique dual-indexed adapters, for indexing up to 96 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 96 samples; four sets are required for multiplexing up to 384 samples	331755
QIAseq 96-Unique Dual Index Set C V2 (96) *	Box containing unique dual-indexed adapters, for indexing up to 96 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 96 samples; four sets are required for multiplexing up to 384 samples	331765
QIAseq 96-Unique Dual Index Set D V2 (96) *	Box containing unique dual-indexed adapters, for indexing up to 96 samples for QIAseq Targeted Panel sequencing on Illumina platforms; enough to process a total of 96 samples; four sets are required for multiplexing up to 384 samples	331775
QIAseq 12-Index L (48)	Box containing oligos, enough for a total of 48 samples, for indexing up to 12 samples for targeted panel sequencing on Ion Torrent platforms	333764
QIAseq 96-Index L (384)	Box containing oligos in arrays, enough for a total of 384 samples, for indexing up to 96 samples for targeted panel sequencing on Ion Torrent platforms	333777
Human XpressRef Universal Total RNA	2 tubes each containing 100 µg human RNA at 1mg/mL	338112
RNeasy Mini Kit (50)	50 RNeasy Mini Spin Columns, Collection Tubes (1.5 mL and 2 mL), RNase-free reagents, and buffers	74104
RNeasy FFPE Kit (50)	50 RNeasy MinElute® Spin Columns, Collection Tubes, Proteinase K, RNase-Free DNase I, DNase Booster Buffer, RNase-free buffers, and Nuclease-Free Water	73504
PAXgene® Blood RNA Kit (50)	50 PAXgene Spin Columns, 50 PAXgene Shredder Spin Columns, Processing Tubes, RNase-Free DNase I, RNase-free reagents, and buffers; to be used in conjunction with PAXgene Blood RNA Tubes	762174
RNeasy Micro Kit (50)	50 RNeasy MinElute Spin Columns, Collection Tubes (1.5 mL and 2 mL), RNase-free DNase I, Carrier RNA, RNase-free reagents, and buffers	74004
QIAamp® RNA Blood Mini Kit (50)	50 QIAamp Mini Spin Columns, 50 QIAshredder Spin Columns, Collection Tubes (1.5 mL and 2 mL), RNase-free reagents, and buffers	52304

Product	Contents	Cat. no.
QIAseq FastSelect – rRNA HMR Kit (24)	Includes 3 tubes of QIAseq FastSelect reagent for rRNA removal: sufficient for 24 reactions from human, mouse, and rat samples	334386
QIAseq FastSelect – rRNA/Globin Kit (24)	Includes 1 tube of QIAseq FastSelect reagent for rRNA removal and 1 tube of QIAseq FastSelect reagent for globin mRNA removal	335376

QIAseq RNA Fusion XP Panels are intended for molecular biology applications. These products are not intended for the diagnosis, prevention or treatment of a disease.

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