

# BD Rhapsody™ T Cell Expression Panel Hs

**BD Biosciences Kit Part Number: 633751**

## Purpose

The BD Rhapsody T Cell Expression Panel Hs is a set of ready-to-use primer pools to use with the BD Rhapsody™ Single-Cell Analysis system. The panel consists of two sets of 259 primers: one pool of PCR1 primers for the first round of amplification of gene targets of interest and a second pool of nested primers to maximize specificity for the second round of amplification.

## Contents

Panel	PN	Component	Cap color	Quantity	Volume per unit (µL)	Storage
BD Rhapsody T Cell Expression Panel Hs (PN 633751)	650000087	PCR1 Primers-T Cell Expression Panel Hs (tube label: PCR1-T Cell Expression Hs)	Blue	1 vial	210	-25°C to -15°C
	650000088	PCR2 Primers-T Cell Expression Panel Hs (tube label: PCR2-T Cell Expression Hs)	Blue	1 vial	50	

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
AIM2	NM_004833.1	chr1:159062486	—	Miscellaneous	—	U; M
ANXA5	NM_001154.3	chr4:121668000	ANX5	Transporter	Monocyte; T subset	U; M
APOBEC3G	NM_021822.3	chr22:39087604	—	Enzyme	NK activated	U; M
ARL4C	NM_005737.3	chr2:234493045	ARL7	Enzyme	—	U; M
AURKB	NM_004217.3	chr17:8204740	AIK2	Cell cycle (M phase)	—	U; M
B3GAT1	NM_018644.3	chr11:134378766	CD57	CD marker	Cytotoxic	U; M
BAX	NM_001291428.1	chr19:48961793	BCL2L4	Apoptosis regulator	CD8 effector T	U; M
BCL11B	NM_022898.2	chr14:99169291	CTIP2	Transcription factor	—	U; M
BCL2	NM_000633.2	chr18:63123346	—	Apoptosis regulator	—	U; M
BCL6	NM_001706.4	chr3:187721385	—	Transcription factor	—	U; M
BIN2	NM_016293.3	chr12:51281039	BRAP1	Miscellaneous	—	U; M
BTG1	NM_001731.2	chr12:92143364	—	Transcription factor	—	U; M
BTLA	NM_181780.3	chr3:112464188	—	CD marker	—	U; M
C10orf54	NM_022153.1	chr10:71750316	VISTA	Immune checkpoint	CD4	U; M
CASP3	NM_004346.3	chr4:184627697	—	Miscellaneous	—	U; M
CBLB	NM_170662.4	chr3:105658273	—	Miscellaneous	—	U; M
CCL1	NM_002981.2	chr17:34360383	SCYA1	Chemokine	—	U; M
CCL2	NM_002982.3	chr17:34257197	MCP1	Chemokine	—	U; M
CCL20	NM_004591.2	chr2:227817564	LARC	Chemokine	Helper active	U; M
CCL3	NM_002983.2	chr17:36088259	MIP-1alpha	Chemokine	Cytotoxic active; NK	U; M
CCL4	NM_002984.3	chr17:36105612	MIP-1beta	Chemokine	Cytotoxic active	U; M
CCL5	NM_002985.2	chr17:35871497	RANTES	Chemokine	High in CD8 effector memory/effector; NK	U; M
CCNB1	NM_031966.3	chr5:69177694	—	Cell cycle (checkpoint)	—	U; M
CCND2	NM_001759.3	chr12:4305162	—	Cell cycle (checkpoint)	—	U; M
CCR1	NM_001295.2	chr3:46201949	SCYAR1	Chemokine receptor	—	U; M
CCR10	NM_016602.2	chr17:42679408	—	Chemokine receptor	CD4 memory regulatory T	U; M
CCR2	NM_001123041.2	chr3:46360923	CMKBR2	Chemokine receptor	—	U; M

<sup>1</sup>The coordinates are based on human genome assembly GRCh38/hg38.

<sup>2</sup>U: Gene expression detected in 10 ng of universal human reference RNA. M: Gene expression detected across 5,115 human CD3+ activated T cells or 3,436 human CD3+ resting T cells.

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
CCR3	NM_001837.3	chr3:46266706	CMKBR3	Chemokine receptor	—	U; M
CCR4	NM_005508.4	chr3:32954911	CMKBR4	Chemokine receptor	Pan T	M
CCR5	NM_000579.3	chr3:46376199	CD195	Chemokine receptor	—	U; M
CCR6	NM_004367.5	chr6:167139138	CKRL3	Chemokine receptor	—	U; M
CCR7	NM_001838.3	chr17:40553895	CMKBR7	Chemokine receptor	—	U; M
CCR8	NM_005201.3	chr3:39333680	—	Chemokine receptor	Activated T	U; M
CCR9	NM_006641.3	chr3:45902995	—	Chemokine receptor	—	U; M
CD160	NM_007053.3	chr1:145739288	BY55	CD marker	—	U; M
CD2	NM_001767.3	chr1:116769226	SRBC	Cell type marker	Pan T	U; M
CD244	NM_016382.3	chr1:160830210	2B4	CD marker	NK	U; M
CD247	NM_000734.3	chr1:167430642	CD3Z	CD marker	Pan T	U; M
CD27	NM_001242.4	chr12:6451710	TNFRSF7	CD marker	—	U; M
CD274	NM_014143.3	chr9:5470490	PD-L1	CD marker	Exhausted	U; M
CD300A	NM_007261.3	chr17:74484788	CLM8	CD marker	Gamma delta	U; M
CD3D	NM_000732.4	chr11:118339077	—	Cell type marker	Pan T	U; M
CD3E	NM_000733.3	chr11:118316170	—	Cell type marker	Pan T	U; M
CD3G	NM_000073.2	chr11:118353288	—	Cell type marker	Pan T	U; M
CD4	NM_000616.4	chr12:6820809	—	Cell type marker	Pan CD4 T	U; M
CD40LG	NM_000074.2	chrX:136659735	CD40L	CD marker	—	M
CD44	NM_000610.3	chr11:35232331	LHR	CD marker	—	U; M
CD48	NM_001778.3	chr1:160678749	BLAST	CD marker	—	U; M
CD5	NM_014207.3	chr11:61127767	Leu1	CD marker	—	U; M
CD52	NM_001803.2	chr1:26320521	CDW52	CD marker	—	U; M
CD6	NM_006725.4	chr11:61020373	—	CD marker	—	U; M
CD69	NM_001781.2	chr12:9752552	CLEC2C	Cell type marker	Activated	U; M
CD7	NM_006137.6	chr17:82314874	—	CD marker	—	U; M
CD70	NM_001252.4	chr19:6585840	CD27L	CD marker	—	U; M
CD8A	NM_001768.6	chr2:86784612	—	Cell type marker	Cytotoxic	U; M
CD8B	NM_004931.4	chr2:86841566	—	Cell type marker	Cytotoxic	U; M
CD9	NM_001769.3	chr12:6237982	MIC3	CD marker	—	U; M
CHI3L2	NM_004000.2	chr1:111243435	—	Enzyme	Follicular helper	U; M

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
CLC	NM_001828.5	chr19:39731257	Charcot-Leyden crystals	Cell type marker	—	U; M
CLEC2D	NM_013269.5	chr12:9695029	CLAX	Cell adhesion	—	U; M
CNOT2	NM_014515.5	chr12:70354991	CDC36	Transcription factor	—	U; M
CSF2	NM_000758.3	chr5:132076165	GM-CSF	Cytokine	Cytotoxic active; NK (cytokine producing)	U; M
CSF3	NM_000759.3	chr17:40017811	—	Cytokine	—	U
CST7	NM_003650.3	chr20:24959919	—	Cell type marker	Cytotoxic T; NK	U; M
CTLA4	NM_005214.4	chr2:203873963	CD152	Immune checkpoint	Regulatory T	U; M
CTSW	NM_001335.3	chr11:65883737	—	Cell type marker	Cytotoxic T; NK	U; M
CX3CR1	NM_001337.3	chr3:39263497	—	Chemokine	Cytotoxic	U; M
CXCL10	NM_001565.3	chr4:76021121	INP10	Chemokine	—	U; M
CXCL13	NM_006419.2	chr4:77611831	BCA1	Chemokine	—	U; M
CXCL8	NM_000584.3	chr4:73743713	IL8	Chemokine	CD8	U; M
CXCL9	NM_002416.2	chr4:76001472	CMK	Chemokine	—	U; M
CXCR1	NM_000634.2	chr2:218163327	—	Chemokine receptor	—	M
CXCR3	NM_001504.1	chrX:71615921	GPR9	Chemokine receptor	Cytotoxic; NK subset (cytokine producing); Th1	U; M
CXCR4	NM_003467.2	chr2:136114351	CD184	Chemokine receptor	CD8; NK (cytokine producing)	U; M
CXCR5	NM_001716.4	chr11:118896261	BLR1	Chemokine receptor	—	U; M
CXCR6	NM_006564.1	chr3:45948347	BONZO	Chemokine receptor	—	U; M
DPP4	NM_001935.3	chr2:161992364	CD26	CD marker	—	U; M
DUSP1	NM_004417.3	chr5:172768379	DUS1	Stress response	—	U; M
DUSP2	NM_004418.3	chr2:96143178	DUS2	Miscellaneous	—	U; M
DUSP4	NM_001394.6	chr8:29333066	DUS4	Miscellaneous	—	U; M
EGR1	NM_001964.2	chr5:138469025	KROX24	Stress response	—	U; M
EGR3	NM_004430.2	chr8:22687661	PILOT	Stress response	Thymocytes	U; M
ENTPD1	NM_001776.5	chr10:95867909	CD39	CD marker	Regulatory T	U; M
EOMES	NM_005442.3	chr3:27715956	TBR2	Transcription factor	Cytotoxic	U; M
F5	NM_000130.4	chr1:169514171	FA5	Enzyme	—	U; M
FAS	NM_000043.5	chr10:89015783	CD95	CD marker	Cytotoxic active; NK	U; M
FASLG	NM_000639.2	chr1:172666868	CD95LG	Cytokine	—	M
FBXO22	NM_012170.3	chr15:75930867	FBX22	Miscellaneous	Th1	U; M

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/ process	Cell type specificity	Verified <sup>2</sup>
FOSB	NM_006732.2	chr19:45475177	G0S3	Stress response	Exhausted	U; M
FOSL1	NM_005438.4	chr11:65892223	FRA1	Transcription factor	Cytotoxic active	U; M
FOXO1	NM_002015.3	chr13:40555770	FKHR	Transcription factor	—	U; M
FOXO3	NM_001455.3	chr6:108684778	FOXO3A	Transcription factor	Pan T	U; M
FOXP1	NM_032682.5	chr3:70956127	HSPC215	Transcription factor	Naive T	U; M
FOXP3	NM_014009.3	chrX:49250440	IPEX	Cell type marker	Regulatory T	U; M
FYB	NM_001465.4	chr5:39105321	SLAP130	Miscellaneous	Pan T	U; M
FYN	NM_002037.5	chr6:111661342	SYN	Kinase	—	U; M
GAPDH	NM_002046.5	chr12:6538369	GAPD	Metabolism	—	U; M
GATA3	ENST00000346208.3	chr10:8074803	—	Transcription factor	Th2	U; M
GHR	NM_000163.4	chr5:42721822	—	Nuclear receptor; transcription factor	Activated T	U
GIMAP2	NM_015660.2	chr7:150693637	IMAP2	Enzyme	Pan T	U; M
GIMAP5	NM_018384.4	chr7:150743580	IAN4L1	Enzyme	—	U; M
GIMAP7	NM_153236.3	chr7:150520994	IAN7	Enzyme	—	U; M
GLG1	NM_012201.5	chr16:74451957	CFR1	Miscellaneous	—	U; M
GNLY	NM_006433.4	chr2:85698743	LAG2	Effector molecule	Cytotoxic T; NK	U; M
GZMA	NM_006144.3	chr5:55110248	GRAA	Effector molecule	Cytotoxic T; NK	U; M
GZMB	NM_004131.4	chr14:24630959	GRAB	Effector molecule	Cytotoxic T; NK	M
GZMH	NM_033423.4	chr14:24606489	GRAH	Effector molecule	Cytotoxic T; NK	U; M
GZMK	NM_002104.2	chr5:55034131	GRAK	Effector molecule	Cytotoxic T; NK	U; M
GZMM	NM_005317.3	chr19:549911	GRAM	Effector molecule	—	U; M
HAVCR2	NM_032782.4	chr5:157086100	TIM-3	Immune checkpoint	Th1; cytotoxic; exhausted T	U; M
HLA-A	NM_002116.7	chr6:29945764	HLAA	MHC class I	All nucleated; housekeeping	U; M
HLA-C	NM_002117.5	chr6:31268841	HLAC	MHC class I	—	U; M
HLA-DMA	NM_006120.3	chr6:32948619	DMA	MHC class II	—	U; M
HLA-DMB	NM_002118.4	chr6:32934640	DMB	MHC class II	—	U; M
HLA-DPA1	NM_033554.3	chr6:33065163	DPA1	MHC class II	—	U; M
HLA-DPB1	NM_002121.5	chr6:33086724	DPB1	MHC class II	—	U; M
HLA-DQA1	NM_002122.3	chr6:32643128	DQA1	MHC class II	—	U; M
HLA-DQB1	NM_002123.4	chr6:32659937	DQB1	MHC class II	—	U; M

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
HLA-DRA	NM_019111.4	chr6:32444940	DRA	MHC class II	—	U; M
HLA-DRB3	NM_022555.3	NT_113891.3:3934021	DRB3	MHC class II	—	U; M
HMGB2	NM_002129.3	chr4:173331754	HMG1	Miscellaneous	—	U; M
HMMR	NM_012484.2	chr5:163491938	IHABP	Cell cycle (M phase)	—	U; M
ICAM1	NM_000201.2	chr19:10286614	BB2	Cell adhesion	—	U; M
ICOS	NM_012092.3	chr2:203961572	AILIM	Immune receptor	—	U; M
IER3	NM_003897.3	chr6:30743201	DIF2	Stress response	—	U; M
IER5	NM_016545.4	chr1:181090835	—	Stress response	—	U; M
IFNG	NM_000619.2	chr12:68154770	—	Cytokine	—	M
IFNGR1	NM_000416.2	chr6:137197486	—	Cytokine receptor	—	U; M
IKZF2	NM_016260.2	chr2:212999804	—	Transcription factor	—	U; M
IL12A	NM_000882.3	chr3:159996019	IL12	Interleukin	—	U; M
IL12RB1	NM_005535.2	chr19:18059073	IL12R	Interleukin	—	U; M
IL12RB2	NM_001559.2	chr1:67396900	—	Interleukin	—	U; M
IL13	NM_002188.2	chr5:132661111	NC30	Interleukin	Helper active	U; M
IL15	ENST00000477265.5	chr4:141733457	—	Interleukin	—	U; M
IL15RA	NM_002189.3	chr10:5952389	IL15R	Interleukin	Effector memory/central memory	U; M
IL17A	NM_002190.2	chr6:52190638	—	Interleukin	Th17 helper	—
IL17F	NM_052872.3	chr6:52236686	—	Interleukin	Helper active	U; M
IL18	NM_001562.3	chr11:112143262	IGIF	Interleukin	—	U; M
IL18R1	NM_003855.3	chr2:102398774	IL1RRP	Interleukin	Pan T	U; M
IL18RAP	NM_003853.3	chr2:102452560	IL1R7	Interleukin	NK	U; M
IL1R2	NM_004633.3	chr2:102028413	IL1RB	Interleukin	—	U; M
IL2	NM_000586.3	chr4:122451470	—	Interleukin	Helper active	U; M
IL21	NM_021803.3	chr4:122612628	—	Interleukin	Helper active	M
IL22	NM_020525.4	chr12:68248245	ILTIF	Interleukin	—	U; M
IL23R	NM_144701.2	chr1:67259979	—	Interleukin	Helper active	U; M
IL25	NM_022789.3	chr14:23376403	IL17E	Interleukin	Th2 helper	—
IL2RA	NM_000417.2	chr10:6010694	CD25	Interleukin	Activated NK	M
IL2RB	NM_000878.3	chr22:37125929	IL15RB	Interleukin	Cytotoxic T; NK	U; M
IL3	NM_000588.3	chr5:132063203	—	Interleukin	Helper active	M
IL31	NM_001014336.1	chr12:122172030	—	Interleukin	—	M
IL32	NM_004221.4	chr16:3069528	NK4	Interleukin	—	U; M
IL4	NM_000589.3	chr5:132682678	—	Interleukin	Helper active	M
IL4R	NM_000418.3	chr16:27364776	IL4RA	Interleukin	Helper active	U; M

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
IL5	NM_000879.2	chr5:132541445	—	Interleukin	Helper active	M
IL6	NM_000600.4	chr7:22731997	IFNB2	Interleukin	Helper active	U; M
IL6R	NM_000565.3	chr1:154469442	IL6RA	Interleukin	—	U; M
IL7R	NM_002185.3	chr5:35879599	CD127	Interleukin	Naive T	U; M
IL9	NM_000590.1	chr5:135892246	—	Interleukin	CD4 memory activated	M
IL9R	NM_002186.2	chrX:156010817	—	Cytokine receptor	—	U; M
IRF4	NM_002460.3	chr6:411439	MUM1	Transcription factor	Pan T	U; M
IRF8	NM_002163.2	chr16:85922602	ICSBP1	Transcription factor	—	U; M
ITGA4	NM_000885.5	chr2:181537748	VLA-4	Integrin	—	U; M
ITGAE	NM_002208.4	chr17:3714684	—	Integrin	Regulatory T	U; M
ITGAL	NM_002209.2	chr16:30522993	CD11A	Integrin	—	U; M
ITGAM	NM_000632.3	chr16:31332867	CD11b	Integrin	—	U; M
ITGAX	NM_000887.4	chr16:31382866	CD11c	Integrin	—	U; M
ITGB2	NM_000211.4	chr21:44886059	CD18	Integrin	—	U; M
ITK	NM_005546.3	chr5:157255099	EMT	Integrin	—	U; M
JUN	NM_002228.3	chr1:58780888	—	Stress response	—	U; M
JUNB	NM_002229.2	chr19:12793237	—	Stress response	—	U; M
KIT	NM_000222.2	chr4:54740712	c-kit	CD marker	—	U; M
KLRB1	NM_002258.2	chr12:9595274	CLEC5B	NK cell receptor	NK	U; M
KLRC1	NM_002259.4	chr12:10446028	NKG2A	NK cell receptor	NK	U; M
KLRC3	NM_002261.2	chr12:10412316	NKG2E	NK cell receptor	NK	U; M
KLRC4	NM_013431.2	chr12:10407384	—	NK cell receptor	NK	U; M
KLRF1	NM_016523.2	chr12:9844752	NKp80	NK cell receptor	NK; T subset	U; M
KLRG1	NM_005810.3	chr12:9010748	CLEC15A	NK cell receptor	NK	U; M
KLRK1	NM_007360.3	chr12:10372355	NKG2D	NK cell receptor	NK; T subset	U; M
LAG3	NM_002286.5	chr12:6778452	FDC	Cell type marker	Exhausted	U; M
LAIR2	NM_002288.5	chr19:54510684	CD306	Miscellaneous	—	U; M
LAP3	NM_015907.2	chr4:17607967	LAPEP	Enzyme	—	U; M
LAT	NM_014387.3	chr16:28990782	—	Miscellaneous	CD4 naive	U; M
LAT2	NM_014146.3	chr7:74229827	—	Miscellaneous	—	U; M
LCK	NM_005356.4	chr1:32286163	—	Cell type marker	Pan T	U; M
LEF1	NM_016269.4	chr4:108047550	—	Cell type marker	Pan T	U; M

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/ process	Cell type specificity	Verified <sup>2</sup>
LGALS1	NM_002305.3	chr22:37679799	galectin 1	Cell adhesion	NK (high in cytokine producing); upregulated in activated NK; low in regulatory T	U; M
LGALS3	NM_002306.3	chr14:55145306	galectin 3	Cell adhesion	Monocytes; regulatory T	U; M
LIF	NM_002309.4	chr22:30240453	HILDA	Cytokine	Helper active	U; M
LILRB4	NM_001278426.3	chr19:54668223	ILT3	Immune receptor	Monocyte	U; M
LRRC32	NM_005512.2	chr11:76657526	GARP	Miscellaneous	Activated regulatory T	U; M
LTA	NM_000595.3	chr6:31574320	TNF beta	Cytokine	—	U; M
LTB	NM_002341.1	chr6:31580639	lymphotox in beta	Cytokine	NK (cytokine producing)	U; M
MKI67	NM_002417.4	chr10:128096666	Ki67	Proliferation marker	—	U; M
MYC	NM_002467.4	chr8:127741273	—	Proliferation marker	—	U; M
NAMPT	NM_005746.2	chr7:106250045	PBEF	Cytokine	—	U; M
NCR3	NM_147130.2	chr6:31588904	NKp30	CD marker	NK	U; M
NINJ2	NM_016533.5	chr12:564298	—	Miscellaneous	Regulatory T	U; M
NKG7	NM_005601.3	chr19:51371623	GIG1	Cell type marker	NK; T subset	U; M
NT5E	NM_002526.3	chr6:85495791	CD73	CD marker	Regulatory T	U; M
OAS1	NM_016816.3	chr12:112919901	OIAS	Miscellaneous	—	U; M
PASK	NM_015148.3	chr2:241106298	KIAA0135	Kinase	Follicular helper	U; M
PDCD1	NM_005018.2	chr2:241849887	PD-1	Immune checkpoint	Pan T	U; M
PECAM1	NM_000442.4	chr17:64322505	CD31	CD marker	Thymocytes	U; M
PIK3IP1	NM_052880.4	chr22:31281684	HGFL gene	Miscellaneous	Pan T	U; M
PMCH	NM_002674.3	chr12:102196459	MCH	Miscellaneous	CD4 memory activated	M
PRDM1	NM_001198.3	chr6:106109933	—	Transcription factor	—	U; M
PRF1	NM_005041.4	chr10:70597350	PFP	Effector molecule	Cytotoxic; NK	U; M
PTGDR2	NM_004778.2	chr11:60850935	CRTH2	Immune receptor	Th2	U; M
PTTG2	NM_006607.2	chr4:37961010	—	Miscellaneous	Regulatory T	U; M
PYCR1	NM_006907.3	chr17:81932398	—	Enzyme	Activated T	U; M
RORA	NM_002943.3	chr15:60488351	RZRA	Nuclear receptor; transcription factor	Th17 helper	U; M



Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
RORC	NM_005060.3	chr1:151806109	—	Nuclear receptor; transcription factor	Th17 helper	U; M
RUNX3	NM_004350.2	chr1:24899758	AML2	Transcription factor	CD8 T; NK	U; M
S1PR1	NM_001400.4	chr1:101241369	CHEDG1	Miscellaneous	—	U; M
SELL	NM_000655.4	chr1:169690670	CD62L	Cell type marker	Helper T	U; M
SELPLG	NM_003006.4	chr12:108622282	PSGL-1	CD marker	—	U; M
SEMA7A	NM_003612.4	chr15:74409291	CD108	Miscellaneous	Activated T	U; M
SLAMF1	ENST00000302035.10	chr1:160610402	SLAM	Miscellaneous	—	U; M
SPOCK2	NM_014767.2	chr10:72059034	—	Cell adhesion	—	U; M
SPP1	NM_000582.2	chr4:87983244	—	Cytokine	—	U; M
STAT1	NM_007315.3	chr2:190969036	—	Transcription factor	—	U; M
STAT3	NM_003150.3	chr17:42313463	APRF	Transcription factor	Helper active	U; M
STAT4	NM_003151.3	chr2:191029580	—	Transcription factor	—	U; M
STAT5A	NM_003152.3	chr17:42311938	STAT5	Transcription factor	Regulatory T	U; M
STAT6	NM_003153.4	chr12:57095444	—	Transcription factor	Th2	U; M
TARP_refseq	NM_001003799.1	chr7:38259643	TRGC	Cell type marker	Gamma delta	U; M
TBX21	NM_013351.1	chr17:47746119	T-bet	Transcription factor	Cytotoxic active; NK	U; M
TCF7	NM_003202.3	chr5:134148043	—	Transcription factor	—	U; M
TGFB1	NM_000660.5	chr19:41330916	TGFB	Growth factor	—	U; M
TGFB3	NM_003239.3	chr14:75958157	ARVD!	Growth factor	—	U; M
TIAF1	NM_004740.3	chr17:29073522	—	Miscellaneous	Regulatory T	U; M
TIGIT	ENST00000481065.5	chr3:114308282	VSIG9	Immune receptor	NK; T subset	M
TK1	NM_003258.4	chr17:78174093	—	Kinase	—	U; M
TLR2	NM_003264.4	chr4:153705403	CD282	Toll like receptor	—	U; M
TLR9	NM_017442.3	chr3:52221083	CD289	Toll like receptor	—	U; M
TNF	NM_000594.3	chr6:31578328	TNF alpha	Cytokine	Helper active; NK (cytokine producing)	U; M
TNFRSF18	NM_004195.2	chr1:1203510	GITR	Cytokine receptor	Activated T	U; M
TNFRSF1B	NM_001066.2	chr1:12209175	TNFR2	Cytokine receptor	Regulatory T	U; M
TNFRSF25	NM_003790.2	chr1:6461161	DR3	Cytokine receptor	Activated T	U; M

Gene symbol	Accession number	Poly(A) site <sup>1</sup>	Common name	Function/process	Cell type specificity	Verified <sup>2</sup>
TNFRSF4	NM_003327.3	chr1:1211348	OX-40	Cytokine receptor	—	M
TNFRSF8	NM_001243.4	chr1:12144202	CD30	Cytokine receptor	Activated T	U; M
TNFRSF9	ENST00000377507.7	chr1:7919847	CD137	Cytokine receptor	—	U; M
TNFSF10	NM_003810.3	chr3:172505681	TRAIL	Cytokine	CD8	U; M
TOP2A	NM_001067.3	chr17:40388528	TOP2	Cell cycle (M phase)	Widely expressed	U; M
TRAC	ENST00000611116.1	chr14:22552152	TCRA	Cell type marker	Alpha beta T	U; M
TRAT1	NM_016388.3	chr3:108854867	TCRIM	Immune receptor	Pan T	U; M
TRBC2	ENST00000466254.1	chr7:142802743	TCRBC2	Cell type marker	Alpha beta T	U; M
TRDC	ENST00000390477.2	chr14:22465788	—	Cell type marker	Gamma delta	U; M
TRIB2	NM_021643.3	chr2:12742729	—	Kinase	—	U; M
TSPAN32	NM_139022.2	chr11:2318139	—	Miscellaneous	—	U; M
TXK	NM_003328.2	chr4:48066514	—	Cell cycle (M phase)	—	U; M
TYMS	NM_001071.2	chr18:673197	TS	Cell cycle (S phase)	—	U; M
UBE2C	NM_007019.3	chr20:45816953	UBCH10	Cell cycle (M phase)	Widely expressed	U; M
VNN2	NM_004665.4	chr6:132744043	—	Miscellaneous	Gamma delta	U; M
XCL1	NM_002995.2	chr1:168582077	—	Chemokine	CD8 effector T	U; M
ZAP70	NM_001079.3	chr2:97739859	SRK	Immune receptor; kinase	Pan T	U; M
ZBED2	NM_024508.4	chr3:111592902	—	Transcription factor	Helper active	M
ZBTB16	NM_006006.4	chr11:114250673	PLZF	Transcription factor	—	U; M
ZNF683	NM_173574.3	chr1:26361636	—	Transcription factor	Effector memory/effector T	M

## Handling

Store the reagents at their specified storage temperatures. Before using reagents, see the *BD Rhapsody™ Single-Cell Analysis System User Guide* (Doc ID: 47395).

## Safety

Use standard laboratory safety protocols. Read and understand the safety data sheets (SDSs) before handling chemicals. To obtain SDSs for chemicals ordered from BD Biosciences, go to [regdocs.bd.com](http://regdocs.bd.com) or contact BD Biosciences technical support at [researchapplications@bd.com](mailto:researchapplications@bd.com).

### BD Biosciences

---

1.877.232.8995, prompt 2, 2 | [researchapplications@bd.com](mailto:researchapplications@bd.com) | 2350 Qume Drive, San Jose, CA 95131 USA

*Conditions: The information disclosed herein is not be construed as a recommendation to use the above product in violation of any patents. BD Biosciences will not be held responsible for patent infringement or other violations that may occur with the use of our products. Purchase does not include or carry any right to resell or transfer this product either as a stand-alone product or as a component of another product. Any use of this product other than the permitted use without the express written authorization of Becton, Dickinson and Company is strictly prohibited.*

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Not for resale.

© 2018 BD. BD and the BD Logo are trademarks of Becton, Dickinson and Company. 04/2018

