

BD Rhapsody™ Onco-BC Panel Hs

BD Biosciences Kit Part Number: 633752

Purpose

The BD Rhapsody Onco-BC 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 389 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 Onco-BC Panel Hs (PN 633752)	650000085	PCR1 Primers-Onco-BC Panel Hs (tube label: PCR1-Onco-BC Hs)	Blue	1 vial	210	-25°C to -15°C
	650000086	PCR2 Primers-Onco-BC Panel Hs (tube label: PCR2-Onco-BC Hs)	Blue	1 vial	50	

Gene symbol	Accession number	Poly(A) site ¹	Common name	Function/process	Cell type specificity	Verified ²
ABCB1	NM_000927.4	chr7:87503997	—	Multidrug resistance	—	U; M
ABCG2	NM_004827.2	chr4:88092171	—	Multidrug resistance	—	U; M
ACTA2	NM_001613.2	chr10:88935132	—	Cell type marker	Stromal; smooth muscle; pericyte	U; M
ACTR3B	NM_020445.5	chr7:152855153	—	Cytoskeleton; structural; intracellular transport	—	U; M
ADAM23	NM_003812.3	chr2:206618464	—	Tumor suppressor	—	U; M
AIMP1	NM_004757.3	chr4:106347766	—	Tumor suppressor	—	U; M
AKR1C1	NM_001353.5	chr10:4977949	—	Cell death; survival	—	U; M
AKT1	NM_005163.2	chr14:104769353	—	Growth; signal transduction	—	U; M
ALCAM	NM_001627.3	chr3:105576714	CD166	Cell type marker	Cancer stem	U; M
ALDH1A1	NM_000689.4	chr9:72900971	—	Cell type marker	Cancer stem	U; M
ANGPT1	NM_001146.4	chr8:107249482	—	Angiogenesis; cell type marker	Endothelial	U
ANLN	NM_018685.4	chr7:36453667	—	Cell adhesion	—	U; M
APC	NM_000038.5	chr5:112844975	—	Cell adhesion	—	U; M
AR	NM_000044.3	chrX:67730391	—	Hormone receptor; transcription factor	—	U; M
AREG	NM_001657.3	chr4:74455009	—	Growth; signal transduction	—	U; M
ARG1	NM_000045.3	chr6:131584325	—	Immune checkpoint and tumor immunity associated	—	U; M
ARG2	NM_001172.3	chr14:67651110	—	Immune checkpoint and tumor immunity associated	—	U; M
ATM	NM_000051.3	chr11:108368844	—	Cell cycle; proliferation	—	U; M
AXIN2	NM_004655.3	chr17:65528635	—	Growth; signal transduction	—	U; M

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

²U: Gene expression detected in 10 ng of universal human reference RNA. M: Gene expression detected across 4,409 cells derived from a human metastatic breast tumor.

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AZU1	NM_001700.4	chr19:832018	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Neutrophil	U; M
BAD	NM_004322.3	chr11:64269834	—	Cell death; survival	—	U; M
BAX	NM_001291428.1	chr19:48961793	—	Cell death; survival	—	U; M
BBC3	NM_014417.4	chr19:47220825	—	Cell death; survival	—	U; M
BCL2	NM_000633.2	chr18:63123346	—	Cell death; survival	—	U; M
BCL2L11	NM_006538.4	chr2:111168443	—	Cell death; survival	—	U; M
BCL6	NM_001706.4	chr3:187721385	—	Cell death; survival	—	U; M
BIRC5	NM_001168.2	chr17:78224695	—	Cell death; survival	—	U; M
BLVRA	NM_000712.3	chr7:43807337	—	Metabolism	—	U; M
BMP1	NM_006129.4	chr8:22212326	—	Growth; signal transduction	—	U; M
BPI	NM_001725.2	chr20:38337503	—	Cell type marker	Neutrophil	U; M
BRCA1	NM_007294.3	chr17:43044297	—	DNA repair	—	U; M
C10orf54	NM_022153.1	chr10:71750316	—	Immune checkpoint and tumor immunity associated	—	U; M
C1QA	NM_015991.2	chr1:22639605	—	Complement system; cell type marker	Macrophage	M
C1QB	NM_000491.3	chr1:22661529	—	Complement system; cell type marker	Macrophage	M
C1QC	NM_172369.3	chr1:22648105	—	Complement system; cell type marker	Macrophage	U; M
C1S	NM_001734.3	chr12:7070757	—	Complement system; cell type marker	Fibroblast	U; M
C4A	NM_007293.2	chr6:32002680	—	Complement system	—	U; M
CA12	NM_001218.4	chr15:63323531	—	Angiogenesis	—	U; M
CASP3	NM_004346.3	chr4:184627697	—	Cell death; survival	—	U; M
CASP5	NM_004347.3	chr11:104994245	—	Cell death; survival	—	U; M
CAV1	NM_001753.4	chr7:116561175	—	Tumor suppressor	—	U; M

Gene symbol	Accession number	Poly(A) site ¹	Common name	Function/process	Cell type specificity	Verified ²
CCL3	NM_002983.2	chr17:36088259	MIP-1alpha	Effector molecules; chemokines; cytokines; receptors	Cytotoxic active T; NK	U; M
CCL4	NM_002984.3	chr17:36105612	MIP-1beta	Effector molecules; chemokines; cytokines; receptors	Effector T/effector memory T; NK	U; M
CCL5	NM_002985.2	chr17:35871497	—	Effector molecules; chemokines; cytokines; receptors	Effector T/effector memory T; NK	U; M
CCNA1	NM_003914.3	chr13:36442868	—	Cell cycle; proliferation	—	U; M
CCNB1	NM_031966.3	chr5:69177694	—	Cell cycle; proliferation	—	U; M
CCND1	NM_053056.2	chr11:69654472	—	Cell cycle; proliferation	—	U; M
CCND2	NM_001759.3	chr12:4305162	—	Cell cycle; proliferation	—	U; M
CCNE1	NM_001238.3	chr19:29824309	—	Cell cycle; proliferation	—	U; M
CCNE2	NM_057749.2	chr8:94880234	—	Cell cycle; proliferation	—	U; M
CCR2	NM_001123041.2	chr3:46360923	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CCR4	NM_005508.4	chr3:32954911	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CCR5	NM_000579.3	chr3:46376199	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CCR6	NM_004367.5	chr6:167137657	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CCR7	NM_001838.3	chr17:40553895	CD197	Surface antigen	Helper T	U; M
CD14	NM_000591.3	chr5:140631733	—	Surface antigen; cell type marker	Monocyte; macrophage	U; M
CD163	NM_004244.5	chr12:7470975	—	Surface antigen; cell type marker	Monocyte; macrophage	M
CD19	NM_001770.5	chr16:28939339	—	Surface antigen; cell type marker	B lineage (except plasma); follicular dendritic	U; M

Gene symbol	Accession number	Poly(A) site ¹	Common name	Function/process	Cell type specificity	Verified ²
CD24	NM_013230.3	chr6:106969831	—	Surface antigen/ CSC marker	B; granulocyte	U; M
CD244	NM_016382.3	chr1:160830210	—	Surface antigen	NK; T	U; M
CD247	NM_000734.3	chr1:167430642	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Pan T	U; M
CD27	NM_001242.4	chr12:6451710	—	Immune checkpoint and tumor immunity associated	—	U; M
CD274	NM_014143.3	chr9:5470490	PD-L1	Immune checkpoint and tumor immunity associated	Exhausted T	U; M
CD28	ENST00000374481.7	chr2:203737830	—	Cell cycle; proliferation	Most T; thymocyte; plasma	U; M
CD38	NM_001775.3	chr4:15853226	—	Inflammation; immune cell activation; trafficking	—	U; M
CD3D	NM_000732.4	chr11:118339077	—	Surface antigen; cell type marker	Pan T	U; M
CD3E	NM_000733.3	chr11:118316170	—	Surface antigen; cell type marker	Pan T	U; M
CD3G	NM_000073.2	chr11:118353288	—	Surface antigen; cell type marker	Pan T	U; M
CD4	NM_000616.4	chr12:6820809	—	Surface antigen; cell type marker	Helper T; majority of thymocyte; monocyte/ macrophage	U; M
CD40	NM_001250.5	chr20:46129289	—	Inflammation; immune cell activation; trafficking	—	U; M
CD40LG	NM_000074.2	chrX:136659735	—	Inflammation; immune cell activation; trafficking	—	U; M
CD44	NM_000610.3	chr11:35232331	—	Surface antigen	—	U; M
CD46	NM_002389.4	chr1:207795222	—	Complement system	Nucleated	U; M
CD69	NM_001781.2	chr12:9752552	—	Inflammation; immune cell activation; trafficking	Activated	U; M
CD74	NM_004355.3	chr5:150401643	HLA-DG	Surface antigen	HLA class II (APC)	U; M
CD79A	NM_001783.3	chr19:41881370	—	Surface antigen; cell type marker	B (pan)	U; M
CD79B	NM_000626.2	chr17:63928742	—	Surface antigen; cell type marker	B; plasma	U; M

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CD80	NM_005191.3	chr3:119524274	—	Immune checkpoint and tumor immunity associated	—	U; M
CD86	NM_006889.4	chr3:122119549	—	Surface antigen	—	U; M
CD8A	NM_001768.6	chr2:86784612	—	Surface antigen; cell type marker	Cytotoxic T	U; M
CDC20	NM_001255.2	chr1:43363186	—	Cell cycle; proliferation	—	U; M
CDC6	ENST00000209728.8	chr17:40302818	—	Cell cycle; proliferation	—	U; M
CDC7	NM_003503.3	chr1:91525754	—	Cell cycle; proliferation	—	U; M
CDCA7	NM_031942.4	chr2:173368902	—	Cell cycle; proliferation	—	U; M
CDCP1	NM_022842.4	chr3:45082525	CD318	Surface antigen	Hematopoietic stem	U; M
CDH1	NM_004360.4	chr16:68835326	—	Angiogenesis; cell type marker	Epithelial	U; M
CDH13	NM_001257.4	chr16:83796591	—	Cell adhesion	—	U
CDH3	NM_001793.5	chr16:68699035	—	Cell adhesion	—	U; M
CDH6	NM_004932.3	chr5:31324585	—	Cell adhesion	—	U
CDK2	NM_001798.4	chr12:55972684	—	Cell cycle; proliferation	—	U; M
CDKN1A	NM_000389.4	chr6:36687326	—	Cell cycle; proliferation	—	U; M
CDKN1C	NM_000076.2	chr11:2883221	—	Cell cycle; proliferation	—	U; M
CDKN2A	NM_000077.4	chr9:21968006	—	Cell cycle; proliferation	—	U; M
CDKN2B	NM_004936.3	chr9:22004650	—	Cell cycle; proliferation	—	U; M
CENPA	NM_001809.3	chr2:26794533	—	Cell cycle; proliferation	—	U; M
CENPF	NM_016343.3	chr1:214664088	—	Cell cycle; proliferation	—	U; M
CEP55	NM_018131.4	chr10:93528879	—	Cell cycle; proliferation	—	U; M
CIITA	NM_000246.3	chr16:10924860	—	Inflammation; immune cell activation; trafficking	—	U; M
CLDN3	NM_001306.3	chr7:73768999	—	Cell adhesion	—	U; M
CLDN4	NM_001305.4	chr7:73832683	—	Cell adhesion	—	U; M
CLDN7	NM_001307.5	chr17:7260142	—	Cell adhesion	—	U; M
COL1A1	NM_000088.3	chr17:50185386	—	Cell adhesion; cell type marker	Fibroblast	U; M
COL1A2	NM_000089.3	chr7:94430702	—	Cell adhesion; cell type marker	Fibroblast	U; M
COL2A1	NM_001844.4	chr12:47973199	—	Cell adhesion; cell type marker	Fibroblast	U

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COL3A1	NM_000090.3	chr2:189012053	—	Cell adhesion; cell type marker	Fibroblast	U; M
COL9A1	NM_001851.4	chr6:70216040	—	Cell adhesion	—	U
CSF1	NM_000757.5	chr1:109930991	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CST6	NM_001323.3	chr11:66013503	—	Protease	—	M
CTLA4	NM_005214.4	chr2:203873963	—	Immune checkpoint and tumor immunity associated	Activated T, B; Regulatory T	U; M
CTNNB1	NM_001904.3	chr3:41240448	—	Cell adhesion	—	U; M
CTSD	NM_001909.4	chr11:1752815	—	Protease	Macrophage	U; M
CTSG	NM_001911.2	chr14:24573557	—	Protease	Neutrophil	U
CTSW	NM_001335.3	chr11:65883737	—	Protease	NK (cytokine producing); CD8 T	U; M
CX3CR1	NM_001337.3	chr3:39263497	—	Effector molecules; chemokines; cytokines; receptors	Cytotoxic T	U; M
CXCL12	NM_000609.6	chr10:44370305	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CXCL14	NM_004887.4	chr5:135570687	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CXCL16	NM_022059.3	chr17:4733541	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
CXCL8	NM_000584.3	chr4:73743713	IL8	Effector molecules; chemokines; cytokines; receptors	CD8 T	U; M
CXCR1	NM_000634.2	chr2:218163327	IL8RA	Effector molecules; chemokines; cytokines; receptors	NK (cytotoxic); granulocyte	M
CXCR3	NM_001504.1	chrX:71615921	—	Effector molecules; chemokines; cytokines; receptors	—	U; M

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CXCR4	NM_003467.2	chr2:136114351	CD184	Effector molecules; chemokines; cytokines; receptors	—	U; M
CXXC5	NM_016463.8	chr5:139683879	—	Growth; signal transduction	—	U; M
DCK	NM_000788.2	chr4:71030914	—	Metabolism	—	U; M
DCN	NM_001920.4	chr12:91145921	—	Cell type marker	Stromal	U; M
DEFA3	NM_005217.3	chr8:7015871	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Neutrophil	U
DEFA4	NM_001925.2	chr8:6935826	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Neutrophil	M
DIABLO	NM_019887.5	chr12:122207838	—	Cell death; survival	—	U; M
DKK1	NM_012242.2	chr10:52317657	—	Growth; signal transduction	—	U
DTL	NM_016448.3	chr1:212104843	—	Cell cycle; proliferation	—	U; M
EBF4	NM_001110514.1	chr20:2760089	—	Transcription factor	—	U; M
EDNRA	NM_001957.3	chr4:147544954	—	Cell type marker	Endothelial	U; M
EGF	NM_001963.5	chr4:110012261	—	Growth; signal transduction	Epithelial	U
EGFR	NM_005228.3	chr7:55207332	—	Growth; signal transduction	Epithelial	U
EGLN1	NM_022051.2	chr1:231366319	—	Angiogenesis	—	U; M
ELANE	NM_001972.3	chr19:856242	—	Cell type marker	Neutrophil	U
ENG	NM_000118.3	chr9:127815018	—	Cell type marker	Stromal	U; M
EOMES	NM_005442.3	chr3:27715956	—	Transcription factor	Cytotoxic T; effector T; NK	U; M
EPCAM	NM_002354.2	chr2:47387028	—	Surface antigen; cell type marker	Epithelial	U; M
EPHA6	NM_001278301.1	chr3:97010129	—	Growth; signal transduction	—	U; M
ERBB2	NM_004448.3	chr17:39728486	Her2	Growth; signal transduction	Epithelial	U; M
ERBB3	NM_001982.3	chr12:56103499	—	Growth; signal transduction	Epithelial	U; M
ERBB4	NM_005235.2	chr2:211375728	—	Growth; signal transduction	Epithelial	U; M
ESM1	NM_007036.4	chr5:54977870	—	Cell type marker	Endothelial	U; M

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ESR1	NM_000125.3	chr6:152103270	ER-alpha	Hormone receptor; transcription factor	—	U; M
EVL	NM_016337.2	chr14:100143941	RNB6	Cytoskeleton; structural; intracellular transport	—	U; M
FAP	NM_004460.3	chr2:162170686	—	Cell type marker	Fibroblast	U; M
FBLN1	NM_001996.3	chr22:45563353	—	Cell type marker	Fibroblast	U; M
FCGR3A	NM_000569.6	chr1:161542009	CD16a	Surface antigen; cell type marker	Nk	U; M
FCRLA	NM_032738.3	chr1:161714350	FREB	Cell type marker	B	U; M
FGF18	NM_003862.2	chr5:171457617	—	Growth; signal transduction	—	U; M
FGFR4	NM_002011.4	chr5:177098141	—	Growth; signal transduction	—	U; M
FLT1	NM_002019.4	chr13:28300575	—	Angiogenesis; cell type marker	Fibroblast	U; M
FN1	NM_002026.3	chr2:215360865	—	Cell type marker	Stromal	U; M
FOXA1	NM_004496.3	chr14:37589991	—	Transcription factor	—	U; M
FOXC1	NM_001453.2	chr6:1613891	—	Transcription factor	—	U; M
FOXO1	NM_002015.3	chr13:40555770	—	Transcription factor; cell type marker	Regulatory T	U; M
FOXP3	NM_014009.3	chrX:49250440	—	Transcription factor; cell type marker	Regulatory T	U; M
FYB	NM_001465.4	chr5:39105321	—	Cytoskeleton; structural; intracellular transport	T	U; M
GAPDH	NM_002046.5	chr12:6538369	—	Housekeeping	—	U; M
GATA3	ENST00000346208.3	chr10:8074803	—	Transcription factor	—	U; M
GLI1	NM_005269.2	chr12:57472260	—	Growth; signal transduction	—	U; M
GNLY	NM_006433.4	chr2:85698743	—	Protease; cell type marker	CD8 T; NK (higher in NK)	U; M
GPNMB	NM_002510.2	chr7:23275104	—	Growth; signal transduction	—	U; M
GPR160	NM_014373.2	chr3:170085307	—	Growth; signal transduction	—	U; M
GRB7	NM_005310.3	chr17:39747282	—	Growth; signal transduction	—	U; M
GSTP1	NM_000852.3	chr11:67586651	—	Metabolism	—	U; M
GZMA	NM_006144.3	chr5:55110248	—	Protease; cell type marker	Cytotoxic active T; effector T; NK	U; M

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GZMB	NM_004131.4	chr14:24630959	—	Proteasol; cell type marker	Cytotoxic active T; effector T; NK	M
GZMH	NM_033423.4	chr14:24606489	—	Proteasol; cell type marker	Cytotoxic active T; effector T; NK	U; M
GZMK	NM_002104.2	chr5:55034131	—	Proteasol; cell type marker	Cytotoxic resting, active; effector; NK (cytokine producing)	U; M
GZMM	NM_005317.3	chr19:549911	—	Proteasol; cell type marker	NK; CD8 T	U; M
HAVCR2	NM_032782.4	chr5:157085832	TIM-3	Inflammation; immune cell activation; trafficking	—	U; M
HIC1	NM_006497.3	chr17:2059685	—	Transcription factor	—	U; M
HIF1A	NM_001530.3	chr14:61748257	—	Angiogenesis	—	U; M
HLA-A	NM_002116.7	chr6:29945764	—	Surface antigen	—	U; M
HLA-DQA1	NM_002122.3	chr6:32643128	—	Surface antigen	B; APC	U; M
HLA-DQB1	NM_002123.4	chr6:32659471	—	Surface antigen	B; APC	U; M
HLA-DRA	NM_019111.4	chr6:32444940	—	Surface antigen	—	U; M
HLA-DRB1	NM_002124.3	chr6:32578780	—	Surface antigen	—	U; M
HPRT1	NM_000194.2	chrX:134500396	—	Metabolism	—	U; M
HRAS	NM_005343.3	chr11:532244	—	Cell cycle; proliferation	—	U; M
HRASLS	NM_020386.4	chr3:193270854	—	Growth; signal transduction	—	U
ICOS	NM_012092.3	chr2:203961572	—	Immune checkpoint and tumor immunity associated	—	U; M
ICOSLG	NM_015259.5	chr21:44227558	—	Immune checkpoint and tumor immunity associated	—	U; M
ID1	NM_002165.3	chr20:31606504	—	Oncogenic transcription factor	—	U; M
IFNG	NM_000619.2	chr12:68154770	—	Effector molecules; chemokines; cytokines; receptors	Cytotoxic active T; NK (effector molecule)	M
IFNGR1	NM_000416.2	chr6:137197486	—	Effector molecules; chemokines; cytokines; receptors	Monocyte	U; M
IGF1	NM_000618.4	chr12:102395901	—	Growth; signal transduction	—	U; M

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IGF1R	NM_000875.4	chr15:98964325	—	Growth; signal transduction	—	U; M
IGFBP3	NM_000598.4	chr7:45912425	—	Growth; signal transduction	—	U; M
IGFBP5	NM_000599.3	chr2:216672388	—	Growth; signal transduction	Stromal; some cancer	U; M
IGFBP7	NM_001553.2	chr4:57031265	—	Growth; signal transduction	Cancer-associated fibroblast	U; M
IGHA1_secreted	ENST00000633714.1	K1270846.1:174887	—	Immunoglobulin; cell type marker	B	U; M
IGHD_membrane	ENST00000390556.6	chr14:105836767	—	Immunoglobulin; cell type marker	B	M
IGHE_secreted	ENST00000390541.2	chr14:105599944	—	Immunoglobulin; cell type marker	B	U; M
IGHG1_membrane	ENST00000390548.6	chr14:105736343	—	—	—	U; M
IGHG1_secreted	ENST00000390542.6	chr14:105741340	—	Immunoglobulin; cell type marker	B	U; M
IGHG3_secreted	ENST00000390551.6	chr14:105769104	—	Immunoglobulin; cell type marker	B	U; M
IGHM_membrane	ENST00000637539.1	chr14:105851709	—	Immunoglobulin; cell type marker	B	U; M
IGHM_secreted	ENST00000390559.6	chr14:105854224	—	Immunoglobulin; cell type marker	B	M
IGKC	ENST00000390237.2	chr2:88857168	—	Immunoglobulin; cell type marker	B	U; M
IGLC3	ENST00000390325.2	chr22:22906803	—	Immunoglobulin; cell type marker	B	U; M
IKZF2	NM_016260.2	chr2:212999804	—	Transcription factor	—	U; M
IL12A	NM_000882.3	chr3:159996019	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
IL13	NM_002188.2	chr5:132661111	—	Effector molecules; chemokines; cytokines; receptors	Th2	U; M
IL17F	NM_052872.3	chr6:52236686	—	Effector molecules; chemokines; cytokines; receptors	Helper active T; Th17	U
IL18	NM_001562.3	chr11:112143262	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
IL1B	NM_000576.2	chr2:112829760	—	Effector molecules; chemokines; cytokines; receptors	—	U; M

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IL1RN	NM_173843.2	chr2:113134014	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
IL2	NM_000586.3	chr4:122451470	—	Effector molecules; chemokines; cytokines; receptors	Helper active T	U; M
IL21	NM_021803.3	chr4:122612628	—	Effector molecules; chemokines; cytokines; receptors	—	M
IL22	NM_020525.4	chr12:68248245	—	Effector molecules; chemokines; cytokines; receptors	Helper active T; Th17	—
IL2RA	NM_000417.2	chr10:6012554	CD25	Effector molecules; chemokines; cytokines; receptors	Activated T, B; monocyte/macrophage	M
IL4	NM_000589.3	chr5:132682678	—	Effector molecules; chemokines; cytokines; receptors	Helper active T; Th2	U; M
IL5	NM_000879.2	chr5:132541445	—	Effector molecules; chemokines; cytokines; receptors	Helper active T; Th2	—
IL6	NM_000600.4	chr7:22731997	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
IL7R	NM_002185.3	chr5:35879599	—	Effector molecules; chemokines; cytokines; receptors	Naive T; effector memory/central memory T	U; M
IRF4	NM_002460.3	chr6:411439	—	Transcription factor	Lymphocyte	U; M
ITGA6	NM_000210.3	chr2:172506455	CD49f	Cell adhesion	—	U; M
ITGAE	NM_002208.4	chr17:3714684	—	Cell adhesion	—	U; M
ITGAX	NM_000887.4	chr16:31382866	CD11c	Cell adhesion	NK cytokine producing; myeloid	U; M
ITGB1	NM_002211.3	chr10:32900394	CD29	Cell adhesion	—	U; M
ITGB2	NM_000211.4	chr21:44886059	—	Cell adhesion	Regulatory T	U; M
JCHAIN	NM_144646.3	chr4:70655789	IGJ	Immunoglobulin; cell type marker	IgA or IgM secreting B	U; M

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JUN	NM_002228.3	chr1:58780888	—	Oncogenic transcription factor; IEG	—	U; M
KDR	ENST00000263923.4	chr4:55078588	—	Angiogenesis; cell type marker	Endothelial	U; M
KIF2C	NM_006845.3	chr1:44767746	—	Cytoskeleton; structural; intracellular transport	—	U; M
KIT	NM_000222.2	chr4:54740712	—	Growth; signal transduction	—	U; M
KRAS	NM_004985.4	chr12:25205248	—	Growth; signal transduction	—	U; M
KRT14	NM_000526.4	chr17:41582279	CK14	Cytoskeleton; structural; intracellular transport	—	U; M
KRT17	NM_000422.2	chr17:41619444	CK17	Cytoskeleton; structural; intracellular transport	—	U; M
KRT18	NM_000224.2	chr12:52952899	CK18	Cytoskeleton; structural; intracellular transport	—	U; M
KRT19	NM_002276.4	chr17:41523619	—	Cytoskeleton; structural; intracellular transport	—	U; M
KRT5	NM_000424.3	chr12:52514579	CK5	Cytoskeleton; structural; intracellular transport	—	U; M
KRT72	NM_080747.2	chr12:52585590	CK6	Cytoskeleton; structural; intracellular transport	—	U; M
KRT8	NM_002273.3	chr12:52897193	—	Cytoskeleton; structural; intracellular transport	—	U; M
KRT81	NM_002281.3	chr12:52285916	—	Cytoskeleton; structural; intracellular transport	—	U; M
LAG3	NM_002286.5	chr12:6778452	—	Immune checkpoint and tumor immunity associated	Exhausted T	U; M
LAMP1	NM_005561.3	chr13:113323243	—	Growth; signal transduction	—	U; M
LCK	NM_005356.4	chr1:32286163	—	Growth; signal transduction	—	U; M
LGALS1	NM_002305.3	chr22:37679799	—	Cell adhesion	—	U; M
LGALS3	NM_002306.3	chr14:55145306	—	Cell adhesion	Monocyte; regulatory T	U; M

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LGALS9	NM_002308.3	chr17:27649553	—	Cell adhesion	—	U; M
LIN9	NM_173083.3	chr1:226231878	—	Cell cycle; proliferation	—	U; M
LPCAT1	NM_024830.3	chr5:1461427	AYTL2	Metabolism	—	U; M
LTA	NM_000595.3	chr6:31574320	—	Effector molecules; chemokines; cytokines; receptors	Helper active T	U; M
LTB	NM_002341.1	chr6:31580639	—	Effector molecules; chemokines; cytokines; receptors	NK cytokine producing	U; M
LYZ	NM_000239.2	chr12:69353957	—	Protease; cell type marker	Monocyte/macrophage	U; M
MALAT1	ENST00000534336.1	chr11:65506465	—	LncRNA	—	U; M
MAP2K4	NM_003010.3	chr17:12143729	—	Growth; signal transduction	—	U; M
MAPK1	NM_002745.4	chr22:21762775	ERK2	Growth; signal transduction	—	U; M
MAPK3	NM_002746.2	chr16:30114107	ERK1	Growth; signal transduction	—	U; M
MAPK8	NM_001323329.1	chr10:48435876	JNK	Growth; signal transduction	—	U; M
MAPT	NM_005910.5	chr17:46024425	—	Cytoskeleton; structural; intracellular transport	—	U; M
MCM6	NM_005915.5	chr2:135840446	—	Cell cycle; proliferation	—	U; M
MDM2	NM_001145339.2	chr12:68844192	—	Cell cycle; proliferation	Ubiquitous	U; M
MELK	NM_014791.3	chr9:36677681	—	Cell cycle; proliferation	—	U; M
MGMT	ENST00000306010.7	chr10:129767101	—	DNA repair	—	U; M
MIA	NM_006533.3	chr19:40777486	—	Growth; signal transduction	—	U
MKI67	NM_002417.4	chr10:128098610	Ki67	Cell cycle; proliferation	—	U; M
MLH1	NM_000249.3	chr3:37050674	—	DNA repair	—	U; M
MLPH	NM_024101.6	chr2:237553894	—	Cytoskeleton; structural; intracellular transport	Ubiquitous	U; M
MME	NM_000902.3	chr3:155183729	—	Cell type marker	Stromal	U; M
MMP11	NM_005940.4	chr22:23784314	—	Protease	Tumor associated endothelial	U; M
MMP2	NM_004530.5	chr16:55505957	—	Protease	—	U; M
MMP9	NM_004994.2	chr20:46016552	—	Protease	—	U; M
MPO	NM_000250.1	chr17:58269857	—	Cell type marker	Neutrophil	U; M

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MTAP	NM_002451.3	chr9:21865967	—	Metabolism	—	U; M
MTDH	NM_178812.3	chr8:97726312	—	Cell cycle; proliferation	—	U; M
MUC1	NM_002456.5	chr1:155185834	CD227	Cell type marker	Epithelial	U; M
MYB	NM_005375.3	chr6:135219170	—	Oncogenic transcription factor	—	U; M
MYBL2	NM_002466.3	chr20:43716483	—	Cell cycle; proliferation	Ubiquitous	U; M
MYC	NM_002467.4	chr8:127741273	—	Oncogenic transcription factor	Ubiquitous	U; M
NAT1	NM_000662.7	chr8:18223687	CD56	Metabolism	—	U; M
NCAM1	NM_000615.6	chr11:113278422	—	Surface antigen	NK cytokine producing	U; M
NDC80	NM_006101.2	chr18:2616633	—	Cytoskeleton; structural; intracellular transport	—	U; M
NEAT1	NR_028272.1	chr11:65426524	—	LncRNA	—	U; M
NKG7	NM_005601.3	chr19:51371623	—	Cell type marker	NK; CD8 T	U; M
NME1	NM_000269.2	chr17:51162031	—	DNA repair	—	U; M
NOTCH1	NM_017617.4	chr9:136494517	—	Growth; signal transduction	—	U; M
NR3C1	NM_000176.2	chr5:143278189	—	Hormone receptor; transcription factor	—	U; M
NRG1	NM_004495.3	chr8:32728623	—	Growth; signal transduction	—	U
NUF2	NM_031423.3	chr1:163355757	—	Cytoskeleton; structural; intracellular transport	—	U; M
NUSAP1	NM_016359.4	chr15:41380792	—	Cell cycle; proliferation	—	U; M
PDCD1	NM_005018.2	chr2:241849887	CD279/PD-1	Immune checkpoint and tumor immunity associated	Activated T/B	U; M
PDGFA	NM_002607.5	chr7:497320	—	Growth; signal transduction	—	U; M
PDGFB	NM_002608.3	chr22:39223727	—	Growth; signal transduction	—	U; M
PDGFRA	NM_006206.4	chr4:54298043	—	Growth; signal transduction; cell type marker	Pericyte	U
PDGFRB	NM_002609.3	chr5:150113843	—	Growth; signal transduction; cell type marker	Pericyte	U; M

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PGR	NM_000926.4	chr11:101029626	—	Hormone receptor; transcription factor	—	U
PHGDH	NM_006623.3	chr1:119744212	—	Metabolism	—	U; M
PITRM1	NM_014889.3	chr10:3137731	—	Protease	—	U; M
PLAU	NM_002658.4	chr10:73917492	—	Growth; signal transduction	—	U; M
POU5F1	NM_002701.5	chr6:31164344	4-Oct	Cell type marker	Putative cancer stem	U; M
PPP2R2A	NM_002717.3	chr8:26370857	—	Growth; signal transduction	—	U; M
PRC1	NM_003981.3	chr15:90966046	—	Cell cycle; proliferation	—	U; M
PRDM2	NM_012231.4	chr1:13825073	—	Transcription factor	—	U; M
PRF1	NM_005041.4	chr10:70597350	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Cytotoxic T; NK	U; M
PROM1	NM_006017.2	chr4:15968229	CD133	Cell type marker	Hematopoietic; epithelial stem	U; M
PTEN	NM_000314.6	chr10:87971815	—	Growth; signal transduction	—	U; M
PTGDS	NM_000954.5	chr9:136981740	—	Inflammation; immune cell activation; trafficking	B; dendritic; macrophage	U; M
PTGS2	NM_000963.3	chr1:186671839	—	Inflammation; immune cell activation; trafficking	—	U; M
PTPRC	NM_002838.4	chr1:198756421	CD45	Surface antigen	—	U; M
PTTG1	NM_004219.3	chr5:160428736	—	Growth; signal transduction	—	U; M
PVR	NM_006505.4	chr19:44663342	—	Surface antigen	—	U; M
PYCARD	NM_013258.4	chr16:31201489	—	Inflammation; immune cell activation; trafficking	—	U; M
QSOX2	NM_181701.3	chr9:136206340	—	Cell death; survival	—	U; M
RAB7A	NM_004637.5	chr3:128814795	—	Growth; signal transduction	—	U; M
RARA	NM_000964.3	chr17:40356793	—	Epithelial-to-mesenchymal transition	—	U; M
RARB	NM_000965.4	chr3:25597934	—	Hormone receptor; transcription factor	—	U; M

Gene symbol	Accession number	Poly(A) site ¹	Common name	Function/process	Cell type specificity	Verified ²
RASSF1	NM_007182.4	chr3:50329789	—	Growth; signal transduction	—	U; M
RB1	NM_000321.2	chr13:48481885	—	Cell cycle; proliferation	—	U; M
RECQL5	NM_004259.6	chr17:75626872	—	Cell cycle; proliferation	—	U; M
RFC4	NM_002916.3	chr3:186789902	—	Cell cycle; proliferation	—	U; M
RHOB	NM_004040.3	chr2:20449346	—	Cell cycle; proliferation	—	U; M
RNASE2	NM_002934.2	chr14:20956435	—	Effector molecules; chemokines; cytokines; receptors	Classical monocyte; eosinophil	U; M
RNASE3	NM_002935.2	chr14:20892348	—	Effector molecules; chemokines; cytokines; receptors	Neutrophil	U; M
RNASE4	NM_002937.4	chr14:20700378	—	Effector molecules; chemokines; cytokines; receptors	Classical monocyte	U; M
RNASE6	NM_005615.4	chr14:20782459	—	Effector molecules; chemokines; cytokines; receptors	B	U; M
ROS1	NM_002944.2	chr6:117288367	—	Growth; signal transduction	—	U
RRM2	NM_001034.3	chr2:10131419	—	Metabolism	—	U; M
RUNDC1	NM_173079.3	chr17:42993456	—	Cell cycle; proliferation	—	U; M
RUNX3	NM_004350.2	chr1:24899758	—	Transcription factor	Monocyte; T	U; M
S100A4	NM_002961.2	chr1:153543621	—	Cell cycle; proliferation	T	U; M
S100A8	NM_002964.4	chr1:153390034	—	Cell cycle; proliferation	Classical monocyte	U; M
S100A9	NM_002965.3	chr1:153361020	—	Cell cycle; proliferation	Classical monocyte	U; M
S1PR1	NM_001400.4	chr1:101241369	—	Growth; signal transduction	—	U; M
SCUBE2	NM_020974.2	chr11:9020885	—	Tumor suppressor	—	U; M
SELE	NM_000450.2	chr1:169722640	—	Inflammation; immune cell activation; trafficking	Endothelial	U; M

Gene symbol	Accession number	Poly(A) site ¹	Common name	Function/process	Cell type specificity	Verified ²
SELL	NM_000655.4	chr1:169690670	—	Inflammation; immune cell activation; trafficking	Helper T; resting; B; NK (cytokine producing); classical monocyte	U; M
SELP	NM_003005.3	chr1:169588853	—	Inflammation; immune cell activation; trafficking	Endothelial	U; M
SERPINE1	NM_000602.4	chr7:101138302	—	Cell type marker	Fibroblast; endothelial	U; M
SFN	NM_006142.3	chr1:26864455	—	Growth; signal transduction	—	U; M
SFRP1	NM_003012.4	chr8:41261965	—	Growth; signal transduction	—	U; M
SFRP4	NM_003014.3	chr7:37907013	—	Growth; signal transduction	Epithelial	U; M
SLC2A3	NM_006931.2	chr12:7919232	—	Metabolism	—	U; M
SLC39A6	NM_012319.3	chr18:36108533	—	Metabolism	—	U; M
SLIT2	NM_004787.3	chr4:20620308	—	Epithelial-to-mesenchymal transition	—	U; M
SNAI2	NM_003068.4	chr8:48917677	—	Epithelial-to-mesenchymal transition	—	U; M
SOX2	NM_003106.3	chr3:181714432	—	Transcription factor; cell type marker	Cancer stem	U; M
SPARCL1	NM_004684.5	chr4:87473467	—	Cell type marker	Endothelial	U; M
SPDEF	NM_012391.2	chr6:34537804	—	Transcription factor	—	U; M
SPHK1	NM_021972.3	chr17:76387853	—	Cell cycle; proliferation	—	U; M
SRC	NM_005417.4	chr20:37405413	—	Cell cycle; proliferation	—	U; M
STAT1	NM_007315.3	chr2:190969036	—	Transcription factor	—	U; M
STAT4	NM_003151.3	chr2:191029580	—	Transcription factor	—	U; M
STAT5A	NM_003152.3	chr17:42311938	—	Transcription factor	—	U; M
STAT6	NM_003153.4	chr12:57095986	—	Transcription factor	—	U; M
STK32B	NM_018401.2	chr4:5500988	—	Growth; signal transduction	—	U; M
TARP_refseq	NM_001003799.1	chr7:38259643	TRGC	Effector molecules; chemokines; cytokines; receptors; cell type marker	Gamma delta T	U; M
TCF4	NM_003199.2	chr18:55223457	—	Transcription factor	Pre-B	U; M

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TCL1A	NM_021966.2	chr14:95710059	—	Cell type marker	B; low in plasma	U; M
TCTN1	NM_024549.5	chr12:110649125	—	Growth; signal transduction	—	U; M
TFF3	NM_003226.3	chr21:42312075	—	Growth; signal transduction	—	U; M
TGFB1	NM_000660.5	chr19:41330916	—	Epithelial-to-mesenchymal transition	—	U; M
TGFB3	NM_003239.3	chr14:75958157	—	Growth; signal transduction	—	U; M
THBS1	NM_003246.3	chr15:39597464	—	Angiogenesis	Cancer-associated fibroblast	U; M
THY1	NM_006288.4	chr11:119418178	—	Cell type marker	Cancer stem	U; M
TIGIT	ENST00000481065.5	chr3:114308282	—	Immune checkpoint and tumor immunity associated	—	M
TLR1	NM_003263.3	chr4:38796290	—	Surface antigen	—	U; M
TMEM45B	NM_138788.3	chr11:129859508	—	Cytoskeleton; structural; intracellular transport	—	U; M
TNF	NM_000594.3	chr6:31578328	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
TNFRSF14	NM_003820.3	chr1:2563742	HVEM	Surface antigen	—	U; M
TNFRSF18	NM_004195.2	chr1:1203510	GITR	Surface antigen	—	U; M
TNFRSF1A	NM_001065.3	chr12:6328961	—	Surface antigen	—	U; M
TNFRSF4	NM_003327.3	chr1:1211348	OX-40	Surface antigen	—	M
TNFRSF9	ENST00000377507.7	chr1:7919847	CD137	Surface antigen	—	U; M
TNFSF13	NM_003808.3	chr17:7561600	APRIL	Effector molecules; chemokines; cytokines; receptors	—	U; M
TNFSF13B	NM_006573.4	chr13:108308346	BAFF	Effector molecules; chemokines; cytokines; receptors	—	U; M
TNFSF4	NM_003326.4	chr1:173183736	OX-40L	Effector molecules; chemokines; cytokines; receptors	—	U; M
TNFSF9	NM_003811.3	chr19:6535923	CD137L	Effector molecules; chemokines; cytokines; receptors	—	U; M

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TP73	NM_005427.3	chr1:3736199	—	Cell death; survival	—	U; M
TRAC	ENST00000611116.1	chr14:22552152	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Alpha beta T	U; M
TRBC2	ENST00000466254.1	chr7:142802743	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	Alpha beta T	U; M
TRDC	ENST00000390477.2	chr14:22465788	—	Effector molecules; chemokines; cytokines; receptors; cell type marker	—	U; M
TSLP	ENST00000420978.6	chr5:111076793	—	Effector molecules; chemokines; cytokines; receptors	—	U; M
TSPYL5	NM_033512.2	chr8:97273489	—	Cell cycle; proliferation	—	U; M
TWIST1	NM_000474.3	chr7:19115687	—	Epithelial-to-mesenchymal transition	—	U; M
TYMS	NM_001071.2	chr18:673197	—	Metabolism	—	U; M
UBE2C	NM_007019.3	chr20:45816953	—	Cell cycle; proliferation	—	U; M
UBE2T	NM_014176.3	chr1:202331740	—	Cell cycle; proliferation	—	U; M
VCAM1	NM_001078.3	chr1:100739036	—	Cell type marker	Endothelial	U; M
VEGFA	NM_003376.5	chr6:43786255	—	Angiogenesis	—	U; M
VIM	NM_003380.3	chr10:17237334	—	Cytoskeleton; structural; intracellular transport	Mesenchymal	U; M
VWF	NM_000552.4	chr12:5948882	—	Cell type marker	Endothelial	U; M
WISP1	NM_003882.3	chr8:133231594	—	Growth; signal transduction	—	U; M
XBP1	NM_005080.3	chr22:28794560	—	Transcription factor	—	U; M
ZAP70	NM_001079.3	chr2:97739859	—	Growth; signal transduction	Pan T; NK	U; M
ZNF703	NM_025069.2	chr8:37700017	—	Oncogene	—	U; M

Handling

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