



Welcome to More Choice

CD Marker Handbook

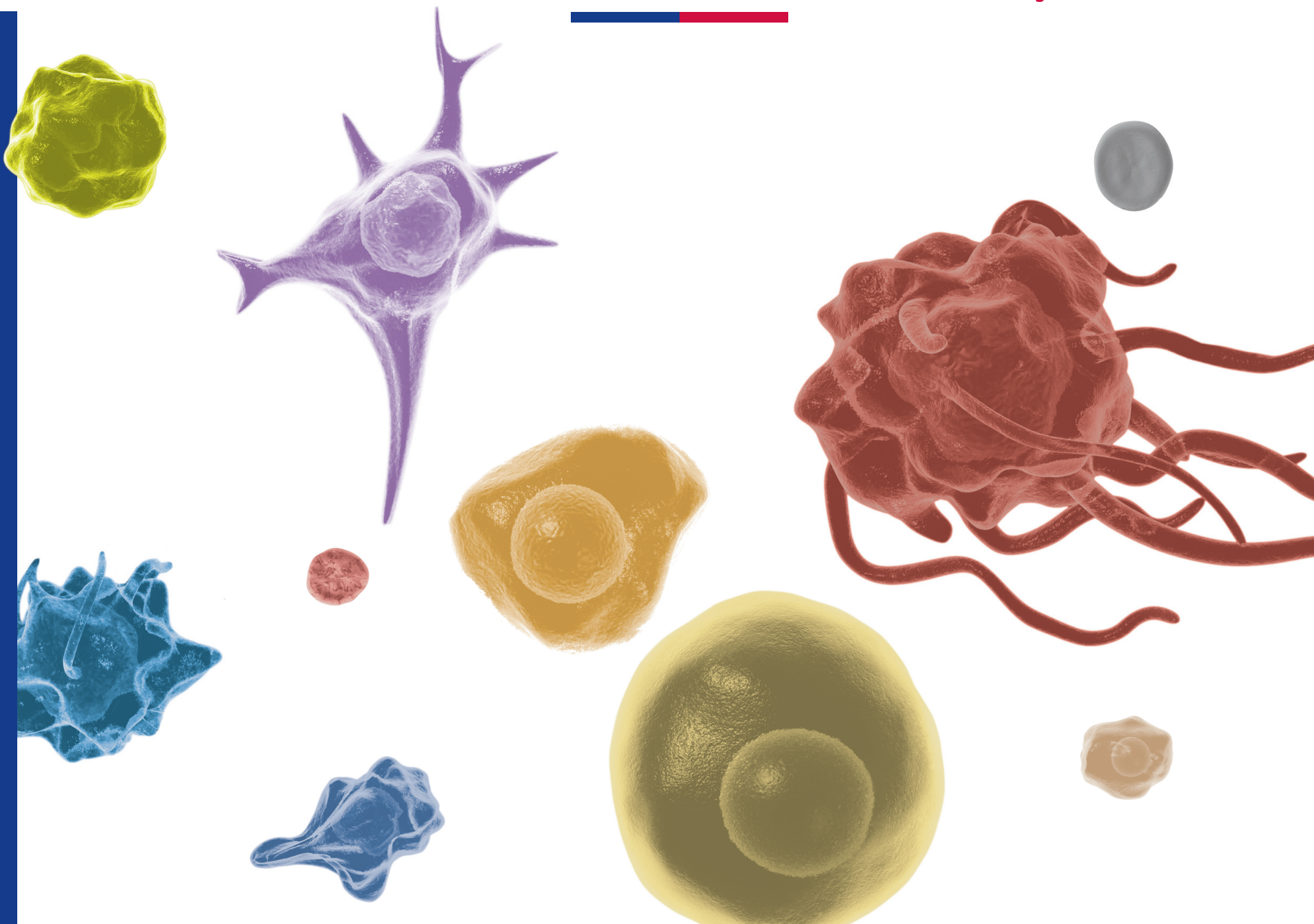
Human

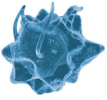
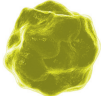

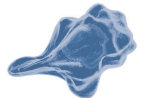
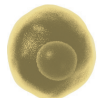
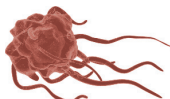
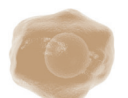


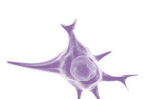

Mouse

For more information, please visit:

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		Key Markers - Human	Key Markers - Mouse
T Cell		CD3 CD4 CD8	CD3 CD4 CD8
B Cell		CD19 CD20	CD45R/B220 CD19 CD22 (B cell activation marker)
Dendritic Cell		CD11c CD123	CD11c CD123
NK Cell		CD56	CD335 (NKp46)
Stem Cell/ Precursor		CD34 <i>hematopoietic stem cell only</i>	CD34 <i>hematopoietic stem cell only</i>
Macrophage/ Monocyte		CD14 CD33	CD11b/ Mac-1 Ly-71 (F4/80)
Granulocyte		CD66b	CD66b Gr-1/Ly6G Ly6C
Platelet		CD41 CD61 CD62	CD41 CD61 (Integrin β 3) CD9 CD62P (activated platelets)
Erythrocyte		CD235a	CD235a Ter-119
Endothelial Cell		CD146	CD146 MECA-32 CD106 CD31 CD62E (activated endothelial cells)
Epithelial Cell		CD326	CD326 (EPCAM1)

CD (cluster of differentiation) molecules are cell surface markers useful for the identification and characterization of leukocytes. The CD nomenclature was developed and is maintained through the HLDA (Human Leukocyte Differentiation Antigens) workshop started in 1982. The goal is to provide standardization of monoclonal antibodies to human antigens across laboratories. To characterize or “workshop” the antibodies, multiple laboratories carry out blind analyses of antibodies. These results independently validate antibody specificity.

While the CD nomenclature has been developed for use with human antigens, it is applied to corresponding mouse antigens as well as antigens from other species. However, the mouse and other species antibodies are not tested by HLDA.

Human CD markers were reviewed by the HLDA. New CD markers were established at the HLDA9 meeting held in Barcelona in 2010. For additional information and CD markers please visit www.hcdm.org.



CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD1a	R4, T6	β-2-Microglobulin, CD74	+	+	+	-		+	-	-	-			Antigen presenting protein
CD1b	R1, T6	β-2-Microglobulin	+	+	+	-		+	-	-	-			Antigen presenting protein
CD1c	M241, R7, T6	β-2-Microglobulin	+	+	+	-		+	-	-	-			Antigen presenting protein
CD1d	R3G1	β-2-Microglobulin, MHC II	+	+	+	-			-	-	-		+	Antigen presenting protein
CD1e	cR2	β-2-Microglobulin			+	-			-	-	-			Antigen presentation of glycolipids
CD2	E-rosette R, Erythrocyte R, T11, LFA-2	CD58, CD48, CD59, CD15, LFA-3	+	+		+			-	-	-			Cell adhesion between T cells and other cell types
CD3	T3	TCR	+	-		-	-	-	-	-	-	-	-	A complex of subunits that mediates T cell signal transduction
CD3d	δ Polypeptide (TiT3 complex)	TCR	+											Part of the CD3/TCR complex that mediates T-cell receptor signal transduction
CD3e	T3e	TCR	+											Part of the CD3/TCR complex that mediates T-cell receptor signal transduction
CD3g	T3G	TCR	+											Part of the CD3/TCR complex that mediates T-cell receptor signal transduction
CD4	L3T4, W3/25, T4	MHC Class II, gp120, IL-16, Lck	+	-		-	-	+	+	-	-	-	-	Initiates or augments the early phase of T-cell activation.
CD5	T1, Tp67, Leu-1, Ly-1	CD72, BCR, gp35-37, ZAP-70, TCR, CD21	+	+		-		-	-	-	-			Acts as a negative regulator of T-cell receptor signaling
CD6	T12, TP120	gp40, gp90, CD166 (ALCAM)	+	+				-	-	-	-			Involved in T-cell activation and cell adhesion
CD7	gp40, TP41	PI3-Kinase	+	-		+	+	-	-	-	-			Important for T-cell interactions
CD8a	Leu2, T8, Lyt2,3	MHCI, Lck	+	-		+	-	-	-	-	-	-	-	May play an important role in T-cell mediated killing
CD8b	CD8, Leu2, Lyt3	MHCI, Lck	+	-		-	-	-	-	-	-	-	-	May play an important role in T-cell mediated killing
CD9	p24, DRAP-1, MRP-1	CD63, CD81, CD82, CD41/CD61, HLA-DR, Integrin β1, PI4-Kinase	+	+			-	+	+	+		+	+	Involved in platelet activation and aggregation, cell adhesion and cell motility
CD10	CALLA, NEP, gp100, EC 3.4.24.11, MME		-		-	+	-	-	-	-		+		Neutral endopeptidase that cleaves peptides and inactivates several peptide hormones.
CD11a	LFA-1α, Integrin αL	ICAM-1, 2, 3, 4, CD18	+	+		+		+	+		-	-		Involved in leukocyte-endothelial cell interactions and T-cell mediated killing.
CD11b	Integrin αM, CR3, Mo1, C3niR, Mac-1	iC3b, Fibrinogen, ICAM-1, 2, Factor X	+	+	+	+		+	+		-	-		Implicated in the various adhesive interactions of monocytes, macrophages, and granulocytes.
CD11c	Integrin αX, p150,95, AXb2, CR4	iC3b, Fibrinogen, ICAM-1, 4	+	+	+	+		+	+		-	-		Important for cell-cell interaction during inflammatory responses.



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CD11d – CD27

CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD11d	Integrin α D, ITGAD, ADB2	ICAM3, VCAM1						+						May play an important role in atherosclerotic processes such as clearing of lipoproteins.
CDw12	p90-120		–	–		+	+	+	+	–	–			Unknown
CD13	ANPEP, Aminopeptidase N, AAP, APM, LAP1, P150, PEPN, APN, gp150, EC 3.4.11.2	NGR, HNF1A, DNAK, NAALADL1, MEP1B, VCP, Corona virus Receptor	+	–		–	+	+	+	–	–	+	+	Aminopeptidase
CD14	LPS-Receptor	Endotoxin, Lipopolysaccharide (LPS), TLR4, LBP, LY96, TLR2	–	–		–		+	+					Mediates the innate immune response to bacterial lipopolysaccharide (LPS).
CD15	X-Hapten, Lewis X, SSEA-1, 3-FAL, FUT4	Selectins	–	–		–	+	+	+	–	–	–		Adhesion, granulocyte activation
CD16	FCRIIIA, CD16a	IgG Fc	+	–	+	+		+	+	–	–			Low affinity FcR, antibody binding (IgG1 and 3) and immune response modulation, mediates phagocytosis and antibody-dependent T-cell-mediated cytotoxicity
CD16b	FCRIIB	IgG Fc							+	–	–			Neutrophil transendothelial migration, immune response activation
CD17	Lactosylceramide, LacCer		+	+	+	–		+	+	+	–	+	+	May mediate homotypic adhesion and binds to bacteria and may function in phagocytosis, motility, proliferation, trapping and adhesion.
CD18	Integrin β 2, CD11a, b, c β -subunit	CD11a, b, c	+	+	+	+		+	+	+	–	–		Adhesion, cell signaling
CD19	B4	CD21, CD81, CD225, Leu-13, Lyn, Fyn, Vav, PI3-kinase	–	+	+	–	+	–	–	–	–	–	–	Assembles with the antigen receptor of B lymphocytes to decrease the threshold for antigen receptor-dependent stimulation.
CD20	B1, Bp35	Lyn, LCK, Fyn, Cell surface protein: 28-30,180-200,50-60 kDa	+	+	–	–	–	–	–	–	–	–	–	Development and differentiation of B cells into plasma cells.
CD21	CR2, EBV-R, C3dR	C3d, CD23, CD19, CD81, Leu13	+	+	+	–	+	–	–	–	–	–	+	Regulator of complement activation
CD22	BL-CAM, Siglec-2	p72sky, p53/56lyn, SHP1, PI3-kinase, CD45, PLC γ 1	–	+	–	–	+	–	–	–	–	–	–	Mediates B-cell B-cell interactions. May be involved in the localization of B cells in lymphoid tissues. Modulates B-cell signaling.
CD23	Fc ϵ RII, B6, BLAST-2, Leu-20	IgE, CD21, CD11b, CD11c	+	+	+	–		+	+	+	–	–	+	Key molecule for B-cell activation and growth. This receptor has essential roles in the regulation of IgE production and in the differentiation of B cells.
CD24	BBA-1, HSA	CD62P (P-Selectin)	–	+	–	–	–	–	+	–	–	–	+	Regulation of B-cell proliferation and maturation. Regulates binding capacity of CD49d/CD29.
CD25	Tac antigen, IL-2R α , p55, TCGFR	IL-2	+	+	–	+	–	+	–	–	–	–	–	Receptor for interleukin-2
CD26	DPP IV ectoenzyme, ADA binding protein, ADGP2, TP103	Adenosine deaminase, Collagen, CD45	+	+	–	+	–	+	–	–	–	–	+	Exopeptidase
CD27	T14, S152, TP55, TNFRSF7	CD70, TRAF5, TRAF2	+	+	–	+	–	–	–	–	–	–	–	Generation and long term maintenance of T-cell immunity

+ Positive* – Negative

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*Positive refers to any expression of this CD marker either in all cells, a subset, or upon activation.



CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD28	Tp44, T44	CD80, CD86, PI3-kinase	+	–	–	–	–	–	–	–	–	–	–	T-cell proliferation, survival, IL-2 production, and Th2 cell development
CD29	Platelet GPIIa, Integrin β 1, GP	VCAM-1, MAdCAM-1	+	+	+	+	+	+	+	+	–	+	+	Cell adhesion
CD30	Ber-H2, Ki-1	CD153, TRAF1, 2, 3, 5	+	+	–	+	+	+	–	–	–	+	–	Activation of NF- κ B, apoptosis, autoimmunity
CD31	PECAM-1, endoCAM, Platelet endothelial cell adhesion molecule, PECA1	CD38, Glycosaminoglycans (GAGs), Integrin α v β 3	+	+	–	+	–	+	+	+	–	+	–	Cell adhesion, activation, and migration
CD32a	FC γ RII, Fc- γ receptor 2, FCGR2A, Low affinity immunoglobulin γ Fc receptor II	IgG	–	+	–	–	–	+	+	+	–	–	–	Innate and adaptive immune responses
CD32b	FCG2, FCGR2B, IGFR2	IgG, INPP5D/SHIP1	+	+	–	–	–	+	+	+	–	–	+	Phagocytosis of immune complexes and regulation of antibody production.
CD32c	FCG2, FCGR2C, IGFR2	IgG	–	–	–	+	–	+	+	–	–	–	–	Low affinity receptor for Fc involved in a variety of effector and regulatory functions
CD33	gp67, SIGLEC-3, Sialic acid-binding Ig-like lectin 3, Myeloid cell surface antigen CD33	Sugar chains containing sialic acid, α -2,6-linked Sialic acid	–	–	+	–	+	+	+	–	–	–	–	Cell adhesion, cell-cell signaling, inhibitory receptor, and apoptosis
CD34	gp105-120, Hematopoietic progenitor cell antigen 1 (HPCA1)	L-Selectin, MAdCAM-1, CRKL	–	–	–	–	+	–	–	–	–	–	+	Cell adhesion
CD35	CR1, C3b/C4b receptor, Complement receptor 1, Immune Adherence receptor	C3b, C4b, iC3, iC4	+	+	+	–	–	+	+	–	+	–	–	Complements cascade regulation; mediates cellular binding of particles and immune complexes that have activated complement
CD36	Platelet glycoprotein 4, Glycoprotein IIIb (GpIIb), Glycoprotein IV (GPIV), PASIV, Fatty acid translocase (FAT), SCARB3, GP88	Thrombospondin, Collagen I, IV, V, Long-chain fatty acids	–	–	+	–	+	+	–	+	+	+	–	Cell adhesion, cholesterol transport, scavenger receptor
CD37	gp52-40, Leukocyte antigen CD37, Tetraspanin-26, TSPAN26	CD53, CD81, CD82, MHC II	+	+	–	–	–	+	+	–	–	–	–	Regulation of T-cell-B-cell interactions, development, activation, growth and motility.
CD38	ADP-ribosyl cyclase, T10, Cyclic ADP-ribose hydrolase 1	CD31, Hyaluronic acid, CD3/TcR complex, CD16, HLA Class II	+	+	+	+	+	+	–	–	–	–	–	Cell adhesion and signal transduction
CD39	Ectonucleoside triphosphate diphosphohydrolase 1 (ENTPD1), ATPdehydrogenase, NTPdehydrogenase-1	ADP/ATP	+	+	+	+	–	+	–	–	–	+	+	ADP and ATP hydrolisis, neurotransmission regulation
CD40	Bp50, MGC9013, TNFRSF5, Tumor necrosis factor receptor superfamily member 5	CD154, CD40L, TRAP	–	+	+	–	+	+	–	–	–	–	+	Cell adhesion, cell proliferation, and signal transduction
CD41	GPIIb, Integrin α IIb, Platelet membrane glycoprotein IIb, ITGA2B, Integrin α 2b, Human Platelet Antigen-3 (HPA-3)	Fibrinogen, Fibronectin, von Willebrand factor (vWF)	–	–	–	–	+	–	–	+	–	–	–	Cell adhesion, platelet aggregation

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CD Marker Handbook **Human** CD Markers

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CD42a – CD49c

CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD42a	GPIX, GP9, Platelet glycoprotein IX	von Willebrand factor (vWF), Thrombin, CD42b,c,d	–	–	–	–	+	–	–	+	–	–	–	Platelet adhesion
CD42b	GP1b α , Platelet glycoprotein Ib α	von Willebrand factor (vWF), Thrombin, CD42a, c, d	–	–	–	–	+	–	–	+	–	–	–	Platelet adhesion
CD42c	GP1b β , Platelet glycoprotein Ib β	von Willebrand factor (vWF), Thrombin, CD42a, b, d	–	–	–	–	+	–	–	+	–	–	–	Platelet adhesion
CD42d	GPV, Platelet glycoprotein V	von Willebrand factor (vWF), Thrombin, CD42a, b, c	–	–	–	–	+	–	–	+	–	–	–	Platelet adhesion
CD43	Sialophorin, Leukosialin, Galactoglycoprotein, SPN	Hyaluronan, EZR, Moesin	+	–	–	+	+	+	+	+	–	–	–	Cell adhesion and T cell activation
CD44	ECMR1, H-CAM, Pgp-1, Phagocytic glycoprotein I, Extracellular matrix receptor III, GP90 Lymphocyte homing/adhesion receptor, Hyaluronate receptor	Hyaluronan, Ankyrin, Fibronectin, MIP1 β , Osteopontin, Collagen, Matrix metalloproteinases (MMPs)	+	+	–	+	–	+	+	–	+	+	+	Cell adhesion and migration
CD45	Leukocyte Common Antigen (LCA), T200, B220, Ly5, Protein tyrosine phosphatase receptor type C (PTPRC)	p56lck, p59fyn, Src kinases	+	+	+	+	+	+	+	–	–	–	–	Regulator of T- and B-cell antigen receptor signaling; regulator of cell growth and differentiation
CD45RA	PTPRC	p56lck, p59fyn, Src kinases	+	+	+	+	+	+	–	–	–	–	–	CD45 isoform
CD45RB	PTPRC	p56lck, p59fyn, Src kinases	+	+	+	+	+	+	+	–	–	–	–	CD45 isoform
CD45RC	PTPRC	p56lck, p59fyn, Src kinases	+	+	+	+	+	+	–	–	–	–	–	CD45 isoform
CD45RO		p56lck, p59fyn, Src kinases	+	+	+	+	+	+	+	–	–	–	–	CD45 isoform
CD46	Membrane Cofactor Protein (MCP), Trophoblast leukocyte common antigen, TRA2.10	SCR2/3/4, Serum Factor 1 protease, CD9, CD29, CD151	+	+	–	+	–	+	+	+	–	+	+	Inhibitory complement receptor
CD47	gp42, IAP, OA3, Neuropilin, MER6	SIRP, CD61, Thrombospondin	+	+	–	+	–	+	+	+	+	+	+	Cell adhesion and signal transduction
CD48	Blast-1, Hulym3, BCM-1, OX-45, MEM-102	CD2, lck, fyn, CD229, CD244	+	+	+	+	+	+	–	–	–	–	–	Lymphocyte adhesion and activation
CD49a	VLA-1 α , Integrin α 1	Collagen, Laminin	+	–	–	+	–	+	–	–	–	–	–	Cell adhesion
CD49b	VLA-2 α , Integrin α 2, gPIa	Collagen, Laminin, MMP-1	+	+	–	+	+	+	–	+	–	+	+	Cell adhesion
CD49c	VLA-3 α , Integrin α 3, GAPB3, Galactoprotein B3, MSK18, Very Common Antigen-2 (VCA-2)	Collagen, Laminin, CD9	+	+	–	–	+	–	–	–	–	+	+	Cell adhesion

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD49d	VLA-4 α , Integrin α 4	CD106, MAdCAM, Fibronectin, Paxillin	+	+	+	+	+	+	–	–	–	+		Cell adhesion and lymphocyte homing
CD49e	VLA-5 α , Integrin α 5, Fibronectin receptor	Fibronectin, Invasin, Fibrinogen	+		+	+	+	+			+	+	+	Cell adhesion
CD49f	VLA-6 α , Integrin α 6, gpl	Laminin, Invasin	+				+	+		+		+	+	Cell adhesion
CD50	ICAM-3	LFA-1, Integrin α d/ β 2	+	+		+	+	+	+	–	–	+	–	Cell adhesion
CD51	Integrin α v, VNR- α , Vitronectin-R α	Fibrinogen, Vitronectin, MMP-2, vWF, TSP						+	–	+		+		Cell adhesion and signal transduction
CD52	CAMPATH-1, HE5, Epididymal secretory protein E52		+	+		+		+		–	–		+	Complement-mediated cell lysis and antibody-mediated cellular cytotoxicity
CD53	MOX44, TSPAN25, Tetraspanin-25	VLA-4, HLA-DR, Integrins	+	+	–	+	+	+	+	–	–		–	Cell adhesion, activation, and migration
CD54	ICAM-1	LFA-1, Mac-1, Rhinovirus	+	+				+				+		Cell adhesion, lymphocyte activation, and migration
CD55	Decay Accelerating Factor for Complement (DAF)	SCR, CD97, Echoviruses	+	+		+	+	+	+	+	+	+	+	Complement cascade (C3bBb complex) regulation
CD56	Leu-19, NKH-1, Neural Cell Adhesion Molecule (NCAM)	NCAM-1, Heparin sulfate	+			+								Cell adhesion and neural plasticity
CD57	HNK1, Leu-7, β -1,3-glucuronyltransferase 1, Glucuronosyltransferase P, galactosylgalactosyl-xylosylprotein 3- β -glucuronosyltransferase 1	L-Selectin, P-Selectin, Laminin	+			+								Cell adhesion
CD58	LFA-3	CD2, LFA-2	+	+	+	+		+	+		+	+	+	Cell adhesion
CD59	1F5Ag, H19, Protectin, MAC1F, M1RL, P-18	C8- α , C9, Ick, fyn	+			+		+	+		+			Complement cascade regulation
CD60a	GD3		+	+				+	+	+	–			Carbohydrate involved in co-stimulation
CD61	GP IIIa, Integrin β 3	Fibrinogen, PTK2, ITGB3BP, TLN1 and CIB1						+		+		+		Cell adhesion
CD62E	E-Selectin, ELAM-1, LECAM-2	Sialyl Lewis x, a, CLA, CD162										+		Cell adhesion
CD62L	L-Selectin, LAM-1, LECAM-1, MEL-14, Leu8, TQ1	CD34, GlyCAM-1, MAdCAM-1	+	+		+		+	+					Cell adhesion
CD62P	P-Selectin, GMP-140, PADGEM	CD162, CD24								+		+		Cell adhesion
CD63	LIMP, MLA1, gp55, NGA, LAMP-3, ME491, OMA81H, TSPAN30, Granulophysin, Melanoma 1 antigen	VLA-3, VLA-6, CD81, CD9, PI4-kinase, CD117, CD82	+	+	–	+		+	+	+		+		Cell growth and motility regulation; complexes with integrins
CD64a	Fc γ RI, Fc- γ Receptor 1, High affinity immunoglobulin γ Fc Receptor I, Fc γ RIA	IgG	–	–	+	–	+	+	+	–	–	–	–	Innate and adaptive immune responses

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CD65 – CD75

CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD65	Ceramide-dodecasaccharide, VIM2, Fucoganglioside (Type II)	CD62E (E-Selectin)	–	–				+	+					Cell adhesion
CD65s	Sialylated poly-N-acetyllactosamine, Sialylated-CD65, VIM2	CD62E (E-Selectin)	–	–	–			+	+	–	–	–		Cell adhesion
CD66a	CD66, NCA-160, BGP (Biliary glycoprotein), BGP1, BGPI, CEACAM1	CD62E, CD66c, CD66e, Src kinases	–	–	–				+	–	–	–	+	Cell adhesion, cellular migration, pathogen binding and activation of signaling pathways
CD66b	CD67, CGM6, NCA-95, CEACAM8	CD66c, e, Src kinases	–	–	–				+	–	–	–		Cell adhesion, cellular migration, pathogen binding and activation of signaling pathways
CD66c	NCA, NCA-50/90, CEAL, CEACAM6	CD62E, Galectins, CD66a, b, c, e, Src kinases	–	–	–				+	–	–	–	+	Cell adhesion, cellular migration, pathogen binding and activation of signaling pathways
CD66d	CGM1, CEACAM3		–	–	–				+	–	–	–		Cell adhesion, cellular migration, pathogen binding and activation of signaling pathways
CD66e	CEA CEACAM5	CD66a, c, e	–	–	–					–	–	–	+	Cell adhesion, cellular migration, pathogen binding and activation of signaling pathways
CD66f	B1G1, CD66f, DHFRP2, FLJ90598, FLJ90654, PBG1, PSBG1, PSGGA, PSGIIA, SP1 SP-1, PSBG1, B1G1, PBG1, PSGGA		–	–	–					–	–	–	+	Cell adhesion, cellular migration, pathogen binding and activation of signaling pathways
CD68	gp110, Macrosialin, SCARD1	LDL	+	+	+		+	+	+	–	–			Macrophage homing
CD69	AIM, EA 1, MLR3, gp34/28, VEA, CLEC2C, BL-AP26		+	+		+		+	+	+				Lymphocyte proliferation; signal transmission in NK cells and platelets
CD70	TNFSF7, CD27LG, CD27L, Ki-24	CD27 ligand	+	+	–	–	–	–	–	–	–	–	–	Induces the proliferation of costimulated T cells and aids in the generation of cytolytic T cells.
CD71	TFRC, T9, Transferrin receptor, TFR, TRFR	Transferrin	–	–	–	–	+					–	+	Mediates the uptake of transferrin-iron complexes
CD72	Ly-19.2, Ly-32.2, Lyb2	CD5		+		–	+	+	–	–	–			B-cell proliferation and differentiation
CD73	Ecto-5'-nucleotidase, NT5E, E5NT, NT5, NTE, eN, eNT	AMP	+	+	+	–	+	–	–	–	–	+	+	An ecto-5-prime-nucleotidase hydrolyzing extracellular nucleotides into membrane permeable nucleosides
CD74	DHLA, HLADG, Ia-γ, li, invariant chain	HLA-DR, CD44	+	+	+			+				+	+	MHC class II antigen processing
CD75	ST6GAL1, MGC48859, SIAT1, ST6GALL, ST6N, ST6 β-Galactosamide α-2,6-sialyltransferase, Sialo-masked lactosamine, Carbohydrate of α2,6 sialyltransferase	CD22		+		–	–	+	–	–	+	–	–	Functional maturation of B lymphocytes

+ Positive* – Negative

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD75S	α2,6 Sialylated lactosamine	CD22 (proposed)	+	+		-	-	+	+	-	+	+	+	Cell differentiation and cell surface recognition
CD77	A14GALT (α1,4-Galactosyltransferase), A4GALT1, Gb3S, P(k), P1, PK A4GALT, Pk antigen, BLA, CTH/Gb3A4GALT1, Gb3S, P(k), P1, PK	Shiga toxin, Verotoxin 1, CD19	-	+		-	-	-	-	-	-	+	+	May play a role in apoptotic signaling
CD79a	IGA (Immunoglobulin-associated α), MB-1	Ig, CD5, CD19, CD22, CD79b	-	+		-	-	-	-	-	-	-	-	Required for initiation of B cell signal transduction upon binding of antigen to the B-cell antigen receptor complex
CD79b	IGB (Immunoglobulin-associated β), B29	Ig, CD5, CD19, CD22, CD79a	-	+		-	-	-	-	-	-	-	-	Required for initiation of B cell signal transduction upon binding of antigen to the B-cell antigen receptor complex
CD80	CD28LG, CD28LG1, L A87, B7, B7-1, BB1	CD28, CD152 (CTLA-4)	+	+	+	-	-	+	-	-	-	-	-	Lymphocyte activation
CD81	TAPA1, S5.7	Leu-13, CD19, CD21	+	+	+	+	+	+		-	-	+	+	Cell adhesion
CD82	4F9, C33, IA4, KAI1, R2, ST6, SAR2, GR15	MHC-I, MHC-II, CD4, CD8, Integrin β1	+	+		+	+	+	+	+	-	+	+	TCR signaling
CD83	HB15, BL11		-	+	+	-	-	-	-	-	-	-	-	Antigen presentation and immune stimulation
CD84	LY9B, SLAMF5, p75, GR6, hly9-β	CD84	+	+	+	+	-	+	-	+	-	-	-	Cell adhesion
CD85A	ILT5, LIR3, HL9, LILRB3 (Leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 3, LIR-3, MGC138403, PIRB, XXbac-BCX105G6.7	HLA class I	+	-	+	-	+	+	+	-	-	-	-	Immune regulation
CD85C	LILRB5 (Leukocyte immunoglobulin-like receptor, subfamily B)(with TM and ITIM domains), member 5, LIR8					+		+						Immune regulation
CD85D*	LILRB2 (Leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 2, LILRB2, ILT4, LIR2, MIR10, MIR-10	HLA class I	-	-	+	-	-	+	+	-	-	-	-	Down-regulation of immune response
CD85E	LILRA3 (Leukocyte immunoglobulin-like receptor, subfamily A (without TM domain), member 3, HM31, HM43, ILT6, LIR-4, LIR4,e3			+	+	+		+						
CD85F	XXbac-BCX403H19.2, CD85, CD85F,LIR9, ILT11, LILRB7 (Leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 7							+						May be involved in triggering innate immune responses



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CD85G	LILRA4 (Leukocyte immunoglobulin-like receptor, subfamily A (with TM domain), member 4, ILT7, MGC129597, MGC129598)				+			+	+					Activation of eosinophils
CD85H	LILRA2 (Leukocyte immunoglobulin-like receptor, subfamily A (with TM domain), member 2, ILT1, LIR7, LIR-7, XXbac-BCX85G21.2, ILT-1)													
CD85I	LILRA1 (Leukocyte immunoglobulin-like receptor, subfamily A (with TM domain), member 1, LIR-6, LIR6, MGC126563)			+				+						
CD85J*	LILRB1 (Leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 1, FLJ37515, ILT2, LIR-1, LIR1, MIR-7, MIR7)	HLA class I	+	+	+	+	-	+		-	-	-	-	Inhibits cytotoxicity in NK and T cells upon ligand binding
CD85K*	LILRB4 (Leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 4, ILT3, LIR-5, HM18, LIR5, LILRB5)	HLA class I	-	-	+	-	+	+	+	-	-	-	-	Down regulation of the immune response
CD86	B7-2/B70, CD28LG2, LAB72, MGC34413	CD28, CD152 (CTLA-4)	+	+	+	-	-	+	-	-	-	+	-	Upon binding of CD28 serves as a costimulatory signal for T-cell activation. Binding of CD86 to CD152 (CTLA-4) negatively regulates T-cell activation.
CD87	Upar, PLAUR, URKR	uPA, Pro-UPA, Vitronectin	+	-		+	-	+	+	-	-	+	-	Receptor for urokinase plasminogen activator
CD88	C5R1, C5aR, C5AR, C5A	C5a/C5a(desArg), Anaphylatoxin	-	-	+	-	-	+	+	-	-	+	+	Receptor for anaphylatoxin C5a which stimulates chemotaxis, granule enzyme release and superoxide anion production.
CD89	FCAR	IgA1, IgA2	-	-		-		+	+	-	-	-	-	Receptor for the Fc region of IgA which mediates several immune functions including cytokine production
CD90	Thy-1	CD45, Ick, fyn, P100	-	-		-	+	-	-	-	-	+	-	Cell adhesion
CD91	LRP1, α2M-R, α2MR, APOER, APR, LRP	RAP, α2M, apoE, Lactoferrin, LDLs	-	-		-		+	-	-	-	-	+	Endocytic receptor involved in intracellular signaling, lipid homeostasis, and phagocytosis of apoptotic cells
CD92	SLC44A1, CTL1, CHTL1, RP11-287A8.1, p70		+	+				+	+	-	-	+	+	Choline transporter
CD93	C1QR1, C1qRP, MXRA4, C1qR(P), Dj737e23.1, GR11		-	-	-	-	-	+	+	-	-	+	-	Cell adhesion and clearance of apoptotic cells
CD94	KLRD1, Kp43	HLA class I, NKG2-A, p39	+	-		+		-	-	-	-	-	-	Regulation of NK cell activation and adhesion

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CD95	CD178, FASLG, APO-1, FAS, TNFRSF6, CD95L, APT1LG1, APT1, FAS1, FASTM, ALPS1A, TNFSF6, FASL	CD178 (Fas ligand)	+	+		+		+	+	-	-			Induction of apoptosis
CD96	TACTILE, MGC22596		+	-		+		-	-	-	-			Cell adhesion
CD97	TM&LN1, BL-KDD/F12	CD55 (DAF)	+	+	+	+		+	+	-	-			Following leukocyte activation is likely involved in cell adhesion and signaling
CD98	SLC3A2, 4F2, 4F2HC, 4T2HC, MDU1, NACAE, FRP-1, RL-388	Actin	+	+		+		+	+	+	-	+	+	Amino acid transport
CD99	MIC2, E2 antigen, MIC2X, MIC2Y, HBA71, MSK5X		+	+		+	+	+	-	+	+	+	+	Transmigration of monocytes and neutrophils across endothelial cell borders; T-cell activation
CD99R	CD99 Mab restricted		+	-		+	-	+		-	-			T-cell adhesion
CD100	SEMAJ, coll-4, C9orf164, FLJ33485, FLJ34282, FLJ39737, FLJ46484, M-sema-G, MGC169138, MGC169141, SEMA4D, SEMAJ	CD45, Serine kinase	+	+	-	+	-	+	+	-	-	-	-	Enhancement of B-cell and dendritic cell responses
CD101	IGSF2, P126, V7, BA27, BPC#4, P126, V7-LSB		+	-	+	-		+	+	-	-			Inhibition of T-cell proliferation
CD102	ICAM-2, Ly60	LFA-1, CD11b/CD18, Integrin α L β 2	+	+				+	-		-	+		Mediates adhesive interactions important for antigen-specific immune response
CD103	HML-1, Integrin α E, ITGAE, OX62, HML1	E-Cadherin, Integrin β 7	+	-		-		-	-	-	-	-	-	Promoting entry and retention of antigen specific CD8 effector molecules in epithelial compartments
CD104	Integrin β 4, TSP1180, ITGB4, TSP-180	Laminins (I,II,IV,V), CD49F, Integrin α 6	-	-		-	+	-	-	-	-	+	+	Potentially involved in epidermal cell-basement membrane adhesion
CD105	Endoglin, HHT1, ORW, SH-2	TGF- β 1, TGF- β 3	-	-		-	+	+	-	-	-	+		May play a role in hematopoiesis and angiogenesis
CD106	VCAM-1, INCAM-100	Integrin α 4 β 1, VLA-4	-	-	-	-		-	-	-	-	+		Adhesion of lymphocytes, monocytes, eosinophils, and basophils to vascular endothelium. It also functions in leukocyte-endothelial cell signal transduction
CD107a	LAMP-1, LAMPA, CD107a, LGP120		+	-		-			+	+	-	+		Provides selectins with carbohydrate ligands. CD107a has also been shown to be a marker of degranulation on lymphocytes such as CD8 ⁺ and NK cells.
CD107b	LAMP-2, LAMPB		+	-		-			+	+	-	+		Provides selectins with carbohydrate ligands. It may also function in the protection, maintenance, and adhesion of the lysosome.
CD108	SEMA7A, JMH blood group antigen	CD232, Tyrosine kinases	+	+					-	-	+			Stimulates cytokine production through monocytes and macrophages through integrin α 1
CD109	8A3, E123 7D1, 150kD TGF- β -1-binding protein, Platelet-specific Gov antigen		+	-		-	+	-	-	+	-	+		May play a role in hematopoiesis and in cell-mediated immunity and in hemostasis

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CD110	TPO-R, MPL, C-MPL	TPO, JAK2	–	–	–	–	+	–	–	+	–	+	+	Maintenance of hematopoietic stem cell numbers
CD111	PVRL1, HveC, PRR1, Nectin1, HlgR, CLPED1	Nectin3, Afadin gD	–	–			+	+	–	+	+	+	+	Plays a role in the organization of adherens junctions and tight junctions in epithelial and endothelial cells.
CD112	HveB, PRR2, PVRL2, Nectin2	PRR3, Afadin, CD112	–				+	+	–	+	–	+	+	A plasma membrane component of adherens junctions. Serves as an entry for certain mutant strains of herpes simplex virus and pseudorabies virus, and it is involved in cell-to-cell spreading of these viruses. Contributes to the NK-mediated lysis of both iDCs and mDCs.
CD113	PVRL3, Nectin3, PRR3	Afadin, MLLT4, PARD3											+	An adhesion molecule involved in the formation between adherens junctions between epithelial cells.
CD114	CSF3R, G-CSFR, HG-CSFR	G-CSF, Jak1, Jak2	–	–		–	+	+	+	+	–	+		Proliferation, differentiation, and survival of cells along the neutrophilic lineage.
CD115	c-fms, CSF-1R, M-CSFR, FIM2, FMS	CSF-1, Phosphotyrosine binding proteins	–		–	–	+	+	–	–	–			Receptor for colony stimulating factor 1, a cytokine which controls the production, differentiation, and function of macrophages.
CD116	GM-CSFR α , CDw116, CSF2R, CSF2RAX, CSF2RAY, CSF2RX, CSF2RY, GM-CSF-R α , GMCSFR, GMR, MGC3848, MGC4838	GM-CSF, CD131	–	–	+	–		+	+	–	–			Receptor for cytokine granulocyte-macrophage colony-stimulating factor (GM-CSF) which regulates hematopoiesis and the function of mature host defense cells.
CD117	c-KIT, SCFR, PBT	SCF, MGF, KL, PI3-kinase	–	–	–	–	+	–	–	–	–	–		Receptor tyrosine kinase important for mast-cell survival, proliferation, activation, and chemotaxis.
CD118	LIFR, gp190, SJS2, STWS, SWS	IFN- α , IFN- β											+	Receptor for the leukemia inhibitory factor (LIF), a cytokine involved in cell differentiation, proliferation, and survival.
CD119	IFN γ R, IFN γ Ra	IFN γ R, IFN γ R1	+	+		+		+	+		–	+		Receptor for interferon γ , a multifunctional immunomodulator
CD120a	CD120a, FPF, MGC19588, TBP1, TNF-R, TNF-R-I, TNF-R55, TNFR, TNFR1, TNFR55, TNFR60, p55, p55-R, p60	TNF, TRADD, TRAF, RiP, Lt α	+	+	+	+		+	+		–	+	+	Receptor for TNF- α , which can mediate apoptosis
CD120b	TNFR2, p75, TNFR p80	TNF, TRADD, TRAF, RiP, Lt α	+	+	+	+		+	+		–	+	+	Receptor for TNF- α , that recruits apoptotic suppressors antagonizing TNF- α activity
CD121a	Type 1 IL-1R, CD121A, D2S1473, IL-1R- α , IL1R, IL1RA, P80	IL-1 α and IL-1 β , IL1RA	+	–	–	–		–	–	–	–	+	–	Receptor for IL-1 α and β cytokines that induce inflammatory response
CD121b	Type 2 IL-1R	IL-1 β , IL-1 α , IL1RA	+	+				+	–	–	–	–	–	Receptor for IL-1 α and β cytokines that induce inflammatory response. Also binds the IL-1 receptor agonist protein.
CD122	IL2R β , p70-75	IL-2, IL-15, CD25, CD132, Syk, Lck, Jak1, Stat5	+	+		+		+	–	–	–	–		B subunit of the receptor for IL-2, which is involved in receptor mediated endocytosis and transduction of mitogenic signals from IL-2

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD123	CD123, IL3R, IL3RAY, IL3RX, IL3RY, MGC34174, hIL-3Ra	IL-3, CD131	-	-	+		+	-	+			+		A subunit of the IL-3 receptor and plays an important role in hematopoietic progenitor cell growth and differentiation
CD124	IL-4Rα	IL-4, IL-13, CD132, Jak1, Fes, Stat6, IRS-2	+	+	-	-	+	+	-	-	-	-	+	Receptor for both IL-4 and IL-13. Involved in Th2 differentiation and regulating IgE production.
CD125	IL-5Rα	CDw125, HSIL5R3, IL5R, MGC26560	-	+		-		-	+	-	-	-		A subunit of IL-5 receptor.
CD126	IL-6Rα	IL-6, CD130	+	+	-	-	+	-	-					A subunit of the receptor for IL-6, a pleiotropic cytokine that regulates cell growth and differentiation.
CD127	p90, IL-7R, IL-7Rα	IL-7, CD132, fyn, lyn, Jak1, PI3-kinase, Lck	+	-			+	+	-	-	-	-		Receptor for IL-7 and thymic stromal lymphopoietin (TSLP). This receptor is important for V(D)J recombination during development
CD129	IL-9Rα	IL-9	+										+	IL-9 receptor binding initiates STAT activation required for the proliferative and anti-apoptotic effects of this cytokine.
CD130	gp130, IL6ST, IL6-β or CD130	Oncostatin M, LIF, IL-6, IL-11, CNF	+	+	-	+	+	+	+	-		+		A transmembrane protein which forms one subunit of type I cytokine receptors within the IL-6 receptor family. Often referred to as the common gp130 subunit, and is important for signal transduction following cytokine engagement.
CD131	CSF2RB, IL3RB, IL5RB, CDw131	CD123, CD125, CD116, JAK2, Shc, Grb2	-	-		-	+	+	+					CSF2RB is a common subunit to the following type 1 cytokine receptors: GM-CSF receptor, IL-3R, IL-5R.
CD132	Common γ chain, IL-2Rγ	CD25, CD122, CD124, CD127, IL-9R, JAK3, JAK1, Syk, Ick	+	+		+		+	+	-				Lymphocytes expressing the common γ chain can form functional receptors for these cytokine proteins, which transmit signals from one cell to another and direct programs of cellular differentiation
CD133	AC133, PROML1, Prominin 1, Hematopoietic stem cell antigen		-	-	-	-	+	-	-	-	-	+	+	Suppression of cell differentiation
CD134	OX40, TNFRSF4	OX40 ligand	+		-			-						Member of the TNF-receptor superfamily which may suppress apoptosis
CD135	Flt3, Flk2, STK1	FL (Flt3 ligand)	-	-	-	-	+	-	-	-	-			Signaling through CD135 plays a role in cell survival, proliferation, and differentiation. CD135 is important for lymphocyte (B cell and T cell) development, but not for the development of other blood cells (myeloid development)
CD136	MSP-R, RON, p158-ron	MSP, HGFI, Shc, PLC-γ						+					+	Receptor for macrophage stimulating protein (MSP) that is a receptor tyrosine kinase
CD137	4-1BB, ILA, TNFRSF9	4-1BB ligand	+	+		-		+	-				+	A member of the TNF receptor superfamily that contributes to the clonal expansion, survival, and development of T cells
CD138	Syndecan-1, Heparan sulfate proteoglycan	Collagen I, III, V, Fibronectin, TSP	-	+		-	+	-	-	-	-	+	+	Cell proliferation, cell migration, and cell-matrix interactions
CD139	None		-	+	+	-	-	+	+		+			Unknown

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CD Marker Handbook Human CD Markers

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CD140a – CD156b

CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD140a	PDGF α Receptor	PDGF	–	–		–		–	–	+	–	+		Tyrosine kinase receptor which binds platelet derived growth factor (PDGF)
CD140b	PDGF β Receptor	PDGF	–	–		–		–	–	–	–	+		Tyrosine kinase receptor which binds platelet derived growth factor (PDGF) B and D
CD141	Thrombomodulin, Fetomodulin	Thrombin, Protein C, TAFI	–	–		–	–	+	+	+		+	+	Receptor for thrombin that upon binding results in the activation of protein C. Activated protein C degrades clotting factors and reduces the amount of thrombin generated
CD142	Tissue factor, Thromboplastin, F3	Factor VIIa, Factor Xa/TFPI	–	–		–		+	–	–		+	+	Initiation of blood coagulation cascades
CD143	ACE, Peptidyl dipeptidase A, Kinase II, DCP, DCP1	ANG-1, Bradykinin	–	–		–		+	–	–	–	+	+	Converts angiotensin I to angiotensin II resulting in vasoconstriction
CD144	VE-Cadherin, Cadherin-5	β -Catenin, p120 CAS, Plakoglobin	–	–	–	–		–	–	–	–	+	–	Calcium-dependent cell adhesion
CDw145	None					–		–	–	–	–	+	+	Unknown
CD146	Muc 18, S-endo, MCAM, Mel-CAM		+	–		–		–	–	–	–	+		Cell adhesion
CD147	Basigin, EMMPRIN, M6, OX47, TCSF		+	+		+		+	+	+	+	+		Spermatogenesis, embryo implantation, neural network formation, and tumor progression
CD148	HPTP- η , p260, DEP-1, SCC1		+	+	+	+		+	+	+		–		Protein tyrosine phosphatase that negatively regulates T-cell receptor signaling
CD150	SLAM, IPO-3	Tyrosine phosphatase CD45, CD150	+	+	+	–		–	–	–	–	+		Important for bidirectional T-cell to B-cell stimulation
CD151	PETA-3, SFA-1	Integrins α 3, α 6	–	–	–		+	–	–	+		+	+	Cell adhesion and may regulate integrin trafficking and function
CD152	CTLA-4	CD80, CD86, PI3-kinase, PTP1D	+	+	–	–		–	–	–				T-cell inhibition
CD153	CD30L, TNFSF8	CD30	+		–			+	+					TNF ligand family cytokine with pleiotropic activities. May inhibit modulation of Ig class switch. Induces proliferation of T cells
CD154	CD40L, gp39, TRAP-1, T-BAM, IMD3	CD40	+	–	–	–		–			–	–		Mediates B cell proliferation, IgE production, and is involved in immunoglobulin class switching
CD155	PVR, PVS, TAGE4, HVED				–			+		–				Cell attachment to extracellular matrix proteins. Mediates NK cell adhesion and triggers NK cell effector functions
CD156a	CD156, ADAM8, MS2	Myeloid						+	+					A Disintegrin and Metallproteinase (ADAM). May play a role in T-cell migration.
CD156b	TACE, ADAM17, cSVP	pro-TNF, pro-TGF α , MAD2	+	–	+	–	–	+	+	–	–	+	–	A Disintegrin and Metallproteinase (ADAM) which serves as a TNF- α converting enzyme. Also involved in the notch signaling pathway.

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CD156C	ADAM10, MADM, kuz							+						A Disintegrin and Metallproteinase (ADAM) which cleaves many proteins including TNF- α and E-cadherin.
CD157	Mo5, BST-1	NAD, Cyclic ADP-ribose			+		+	+	+			+		Synthesizes cyclic ADP-ribose contributing to intracellular calcium release. Facilitates pre-B cell growth
CD158a	KIR2DL1, p58.1, NKAT1	HLA-Cw4, 2, 5, 6	+			+								Inhibits the activity of natural killer cells
CD158b1	KIR2DL2, p58.2, NKAT6	HLA-Cw3, 1, 7, 8	+			+								Inhibits the activity of natural killer cells
CD158b2	KIR2DL3, p58.3, NKAT2	HLA-Cw3, 1, 7, 8	+			+								Inhibits the activity of natural killer cells
CD158d	KIR2DL4, KIR103	HLA-Bw4				+								Inhibits the activity of natural killer cells
CD158e1/e2	KIR3DL1/S1, p70, NKAT3, NKB1	HLA-Bw4	+			+								Receptor on NK cells does not inhibit their activity
CD158f	KIR2DL5		+			+								Inhibits the activity of natural killer cells
CD158g	KIR2DS5		+			+								Receptor on NK cells does not inhibit their activity
CD158h	KIR2DS1, p50.1	HLA-C	+			+								Receptor on NK cells does not inhibit their activity
CD158i	KIR2DS4, p50.3	HLA-C	+			+								Receptor on NK cells does not inhibit their activity
CD158j	KIR2DS2, p50.2	HLA-C	+			+								Receptor on NK cells does not inhibit their activity
CD158k	KIR3DL2, p140	HLA-A	+			+								Inhibits the activity of natural killer cells
CD159a	NKG2A	CD94/CD159a heterodimer binds to HLA-E	+			+								Receptor for the recognition of MHC class I HLA-E molecules by NK and some cytotoxic T cells
CD159c	NKG2C	C type Lectin superfamily member				+								Receptor for the recognition of MHC class I HLA-E molecules by NK and some cytotoxic T cells
CD160	BY55, NK1, NK28	MHC class I	+	-		+								Broad specificity receptor for classical and non-classical MHC class I molecules
CD161	NKR, NKRP1A		+	-	-	+			-	-	-	-	-	Inhibits NK cell cytotoxicity. Enhances T-cell proliferation induced by anti-CD3.
CD162	PSGL-1	Selectins	+	+			+	+	+	-	-	-		Mediates rapid rolling of leukocytes over vascular surfaces during inflammation
CD163	M130, GHI/61, RM3/1	Hemoglobin	-	-	-			+	-	-	-	-	-	Clearance and endocytosis of hemoglobin/haptoglobin complexes by macrophages
CD164	MGC-24, MUC-24		+	+			+	+	-		-	-	+	Facilitates the adhesion of CD34 ⁺ cells to the stroma and negatively regulates their proliferation

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CD156C – CD164



CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD165	AD2, gp37						–	+	–	+	–		+	Cell adhesion
CD166	ALCAM, KG-CAM, SC-1, BEN, DM-GRASP	CD6, CD166, NgCAM	+	+				+	–			+	+	Cell adhesion molecule important for intrathymic T-cell development
CD167a	DDR1, trkE, cak	ShcA, FRS2, Collagens		+	+								+	Receptor tyrosine kinase involved in cell-cell interactions
CD168	RHAMM, IHABP, HMMR	Ras, Src, Erk, Actin, Calmodulin, MAPKK, Hyaluronic acid	–	–	+		+	+						Involved in cell motility
CD169	Sialoadhesin, Siglec-1	CD227, CD206, CD43, α 2, 3-Sialylated ligands			+			+						Macrophage-restricted cell adhesion molecule that mediates cell-cell interactions
CD170	Siglec-5	Sialylated glycans	–	+	+	–		+	+					Mediates protein-carbohydrate interactions
CD171	L1CAM, HSAS, HSAS1, MASA, MIC5, N-CAML1, S10, SPG1, NILE	CD171, Neurocan, Phosphocan, Laminin, CD9, CD24, CD56, Axonin-1, CD51/61, CD41/61, CD49e/CD29, α -9, Ankyrins, Kinases	+	+	+			+	+			+	+	Multidomain cell adhesion molecule required for normal neurohistogenesis.
CD172a	BIT, MFR, MYD-1, P84, SHPS-1, SHPS1, SIRP, SIRP α , SIRP α 2	CD47, PTPN11			+		+	+	+					Negative regulation of receptor tyrosine kinase-coupled signaling processes.
CD172b	SIRP β	TYROBP			+			+						Phagocytosis
CD172g	SIRP γ , SIRP-B2, bA77C3.1		+			+								Cell adhesion
CD173	Blood group H type 2, FUT1					–	+				+	+		Involved in the creation of a precursor of the H antigen, which is required for the final step in the soluble A and B antigen synthesis pathway
CD174	Lewis Y, FUT3, Les, FT3B					–	+						+	Marker of early hematopoiesis
CD175	Tn		–	+		–	+						+	Potentially involved in cell adhesion
CD175s	Sialyl-Tn (s-Tn)		–	+		–	+					+	+	Potentially involved in cell adhesion
CD176	TF Antigen			–			+				+	+	+	Potentially involved in cell adhesion
CD177	NB1, HNA-2a, NB1gp, Neutrophil-specific antigen 1, PRV1								+					Neutrophil transmigration
CD178	Fas Ligand, FASL, CD95L, TNFSF6, APT1LG1	DcR3, CD95 (Fas), TNFRSF6B, PTPN12, FADD, TNFRSF1A	+	–	+			–	+	–	–	+	+	Apoptosis
CD179a	VpreB, IGVPB, VPRED1	CD179b, Ig μ heavy chain												May regulate Ig gene rearrangements in the early steps of B-cell differentiation
CD179b	Iambda5, 14.1, IGL5, IGGL1	CD179a, Ig μ heavy chain												B-cell proliferation and differentiation

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD180	RP105, Bgp95, Ly64, Ly78,	MD-1		+	+			+						Controls B-cell recognition and signaling of LPS
CD181	(formerly CD128a) CXCR1, IL-8R α	IL-8	+					+	+					Chemotaxis
CD182	(formerly CD128b) CXCR2, IL-8R β , CMKAR2, IL8R2	IL-8	+					+	+					Chemotaxis
CD183	CXCR3, GPR9, CKR-L2, CMKAR3, IP10, Mig-R, TAC	IP10, Mig, I-TAC	+			+	+		+					Chemotaxis, adhesion
CD184	CXCR4, NPY3R, Fusin, CMKAR4, LESTR, HM89, FB22, LCR1	SDF-1, viral MIP-2, CXCL12	+	+	+	-		+	-			+		Mediates blood cell migration in response to SDF-1
CD185	CXCR5, BLR1, MDR15, MGC117347	CXCL13, CCL13	+	+	+	+		+	-					Homing and cell movement
CD186	CXCR6, STRL33, TYMSTR, BONZO		+											Receptor for the C-X-C chemokine CXCL16
CD191	CCR1, CKR1, CD191, CKR-1, HM145, CMKBR1, MIP1 α R, SCYAR1	MIP-1 α , RANTES, MCP-3, MIP-5, LD78	+				+	+						Chemotaxis, adhesion
CD192	CCR2, CKR2, CCR2A, CCR2B, CKR2A, CKR2B, CMKBR2, MCP-1-R, CC-CKR-2, FLJ78302, MGC103828, MGC111760, MGC168006	MCPs	+	+				+	+			+		Receptor for MCP-1, which mediates monocyte chemotaxis
CD193	CCR3, CKR3, CMKBR3, CC-CKR-3, MGC102841	CCL11, CCL26, MCP-3 (CCL7), MCP-4 (CCL13), RANTES(CCL5)	+		+				+				+	Cell adhesion, cellular defense response
CD194	CCR4, CC-CKR-4, CKR4, CMKBR4, ChemR13, HGCN	MIP-1, RANTES, TARC, MCP-1	+					+		+				Homing receptor for circulating memory lymphocytes
CD195	CCR5, CMKBR5, IDDM22, CC-CKR-5, FLJ78003	MIP-1a, 1b, MCP-2, RANTES	+	-		-		+	+	-	-	-		Regulates lymphocyte chemotaxis activation during and transendothelial migration during inflammation
CD196	CCR6, BN-1, DCR2, DRY6, CKRL3, GPR29, CKR-L3, CMKBR6, GPRCY4, STRL22, CC-CKR-6	MIP-3a	+	+	+	-		-	-					B-lineage maturation and antigen-driven B-cell differentiation
CD197	CCR7 (formerly CDw197), BLR2, EBI1, CMKBR7	CCL19/ECL, CCL21	+	+	+									Activates B and T lymphocytes, stimulates dendritic cell maturation
CDw198	CCR8,CKR-L1, CKRL1, CMKBR8, CMKBRL2, CY6, GPR-CY6, TER1	I-309, TARC, MIP-1b	+					+						Monocyte chemotaxis and thymic cell apoptosis; preferentially expressed in the thymus
CDw199	CCR9, GPR28, GPR-9-6	CCL25	+											Chemotaxis, cellular defense response
CD200	OX2, MRC, MOX1, MOX2	CD200R1	-	+	+	-	+	-	-	-	-	+		Co-stimulates T-cell proliferation. May regulate myeloid cell activity

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CD Marker Handbook **Human** CD Markers

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CD201 – CD213a2

CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD201	EPCR, CCCA, CCD41, MGC23024, ba4204.2, PROCR	Protein C					+					+		Cytoprotection
CD202b	TEK, Tie2, VMCM, TIE-2, VMCM1	Angiopoietin-1, 2, and 4										+		Migration and signaling
CD203c	PDNP3, B10, PDIβ, E-NPP3	cAMP, NAD, Nucleoside phosphates							+					Ectoenzyme involved in the hydrolysis of extracellular nucleotides
CD204	MSR, SR-A, phSR1, phSR2, SCARA1, MSR1	LDL, β-Amyloid fibrils						+						Macrophage scavenger receptor that mediates the endocytosis of modified low density lipoproteins (LDLs)
CD205	DEC-205, CLEC13B, GP200-MR6, LY75	MIR98	+	+	+		+	+						Phagocytosis, endocytosis
CD206	Mannose receptor C type-1 (MRC1), Macrophage mannose receptor (MMR), C-type Lectin domain family 13 member D (CLEC13D)	Glycoforms of sialoadhesin (CD169) and CD45, Bacterial cell wall molecules, Viral glycoproteins, Yeast proteins, Chitin, Lysosomal hydrolases, Plant glycoproteins, Neoglycoproteins, Lutropin, Chondroitin sulfate			+			+				+	+	Pathogen receptor; Ag endocytosis
CD207	Langerin, C-type Lectin domain family 4 member K (CLEC4K)	Mannose-bearing glycoproteins and glycolipids on microbial pathogens, including HIV gp120			+									Pathogen receptor; Ag endocytosis; Birbeck granule formation
CD208	Lysosomal-associated membrane protein 3 (LAMP3), DC-LAMP, DCLAMP, LAMP, TSC403				+									Ag processing
CD209	Dendritic cell-specific ICAM-3-grabbing non-integrin (DC-SIGN), DC-SIGN1, CDSIGN, C-type lectin domain family 4 member L (CLEC4L), HIV gp120-binding protein	CD50 (ICAM-3), CD102 (ICAM-2), Mannose-bearing glycoproteins on several pathogens including HIV gp120			+			+				+		DC migration; T-cell proliferation; pathogen receptor; HIV-1 receptor; Ag endocytosis and degradation
CD210a	Interleukin 10 Receptor A (IL-10RA, IL-10R1)	IL-10, vIL-10	+	+	-	-		+	-					Cytokine receptor; Immunoregulation
CDw210b	Interleukin 10 Receptor B (IL-10RB, IL-10R2)	IL-10 and vIL-10	+	+	+	+		+						Cytokine receptor; Immunoregulation
CD212	Interleukin 12 receptor β1 chain (IL-12β1), IL-12β, CD212b1	IL-12, IL-23, associates with IL-12Rβ2 or IL-23R to form high-affinity receptors	+	+	-	+		-	-					Dimerizes with IL-12Rβ2 to form high-affinity IL-12 receptor, promoting cell-mediated and Th1 immunity. Combines with IL-23R to form IL-23 receptor; promoting Th17 immunity
CD213a1	Interleukin 13 receptor α1 chain (IL-13Rα1), NR4	IL-13, IL-4, associates with IL-4Rα to form receptors		+	+			+				+		Associates with IL-4Rα to form the IL-13 receptor, regulating inflammation and supporting B cell activity. Also involved in the type II IL-4 receptor system.
CD213a2	Interleukin 13 receptor α2 chain (IL-13Rα2), interleukin-13-binding protein (IL13BP)	IL-13		+				+					+	Reduces the biological effects of IL-13

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CD215	Interleukin 15 receptor alpha chain (IL-15RA)	IL-15	+	+	-	-		-	-					Associates with CD132 and CD122 to form the IL-15 receptor, regulating apoptosis and phagocytosis, crucial for generation and maintenance of memory CD8 ⁺ T cells
CD217	Interleukin 17 receptor A (IL-17RA), IL-17R, CDw217	IL-17A, vIL-17, IL-17F (weak binding), associates with IL-17RC to form receptor for IL-17A, IL-17F, and IL-17A/F heterodimers, associates with IL-17RB to form receptor for IL-17E (IL-25)	+	+	+	+	+	+	+			+	+	Associates with IL-17RC to form receptor for IL-17A, IL-17F, and IL-17A/F heterodimers, promoting inflammatory responses. Associates with IL-17RB to form receptor for IL-17E (IL-25), suppressing Th17 responses and promoting Th2 responses.
CD218a	Interleukin 18 receptor 1 (IL-18R1), IL-18RA, IL-18R α , IL1 receptor-related protein (IL-1Rrp), IL-R5, CDw218a	IL-18, associates with IL-18R β to form high-affinity IL-18 receptor	+	+	+	+			+			+		Associates with IL-18R β to form high-affinity IL-18 receptor, promoting inflammatory Th1 and Th2 responses
CD218b	Interleukin 18 receptor β (IL-18R β), IL-18 receptor accessory protein (IL-18RAP, IL-18RAcP), IL-1R accessory protein-like (IL-1RAcPL), IL-1R7, CDw218b	Associates with IL-18R α to form high-affinity IL-18 receptor	+	+	+	+			+					Associates with IL-18R β to form high-affinity IL-18 receptor, promoting inflammatory Th1 and Th2 responses
CD220	Insulin receptor (INSR), IR	Insulin, IGF-2	+	+	+	+	+	+	+			+	+	Insulin receptor. Causes internalization and degradation of insulin and stimulates glucose uptake
CD221	Insulin-like growth factor 1 receptor (IGF1R), IGF-1R, type I IGF receptor (IGF-IR), JTK13	Insulin-like growth factor 1 (IGF-I), IGF-II, Insulin	+	+	+	+	+	+	+			+	+	Receptor for IGF-I and IGF-II. Mediates mitogenic and anti-apoptotic signals
CD222	Cation-independent mannose-6-phosphate receptor (M6P-R, CIM6PR, CIMPR, CI-MPR), Insulin-like growth factor 2 receptor (IGF2R, IGFIIIR, IGF-IIR), MPR1, MPRI	IGF-II, TGF- β latency-associated peptide (LAP), Proliferin, Prorenin, Plasminogen, Leukemia inhibitory factor (LIF), Herpes simplex virus, Thyroglobulin, Retinoic acid, Cathepsin B, D, L, Mannose-6-phosphate (M6P)-containing proteins, CD87	+	+	+	+	+	+	+			+	+	Receptor that internalizes various extracellular ligands and directs them to lysosomes. Associates with CD87 to activate latent TGF- β . Binding IGF-II stimulates insulin secretion. Mediates proliferin-induced angiogenesis
CD223	Lymphocyte activation gene 3 (LAG3, LAG-3), FDC protein	MHC class II, TCR-CD3 complex	+	-	-	+	+							Binds MHC class II with high affinity and regulates homeostatic expansion of T cells through association with TCR-CD3 complex. Allows activated T cells to fully activate monocytes and dendritic cells.
CD224	γ -Glutamyl transferase 1 (GGT1), γ -Glutamyl transpeptidase 1 (GGTP), GGT, GTG, EC2.3.2.2	Glutathione, GSH, Leukotriene C4, GSNO	+	+			+	+				+	+	Protects cells from oxidative stress by participating in γ -glutamyl cycle
CD225	Interferon-induced transmembrane protein 1 (IFITM1), Interferon-induced protein 17 (IFI17), Interferon-inducible protein 9-27 (9-27), Leu13, fragilis2	CD21, CD19, TAPA-1, CD81	+	+		+	+					+		Expression is induced by IFN- α and IFN- γ . Component of the CD21/CD19/TAPA-1 complex, which is involved in B-cell activation



CD Marker Handbook **Human** CD Markers

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD226	DNAX accessory molecule 1 (DNAM-1), Platelet and T-cell activation antigen 1 (PTA-1), T lineage-specific activation antigen 1 antigen (TLISA1)	CD112, CD155, LFA-1 when phosphorylated by PKC	+	+		+	+	+	-	+	-		-	Involved in platelet adhesion and activation, megakaryocyte adhesion and maturation, and adhesion of cytotoxic T and NK cells to target cells. Important for tumor immunosurveillance
CD227	Mucin 1 (MUC1, MUC-1), DF3 antigen, H23 antigen, Peanut-reactive urinary mucin (PUM), Polymorphic epithelial mucin (PEM), Epithelial membrane antigen (EMA), Tumor-associated mucin, Episialin	CD54, CD169, Selectins, Grb2, β -Catenin, GSK-3 β	+	+	+		+	+					+	Involved in cell-cell interactions and adhesion. May confer cell surface protection by protruding from the cell surface. Cytoplasmic tail is involved in many cell signaling pathways
CD228	Melanotransferrin (MT, MTF1), p97 Melanoma antigen (p97, MAP97), Mfi2, gp95	Iron, Plasminogen, pro-UPA					+					+		Presumed role in iron transport based on high affinity binding or iron. Influences migration of endothelial and melanoma cells
CD229	Lymphocyte antigen 9 (Ly9), T-lymphocyte surface antigen Ly-9, Signaling lymphocyte activation molecule family member 3 (SLAMF3), Lgp100, T100	CD229 (homophilic binding), SAP, Grb2	+	+	+	+	+	-	-	-	-			Homophilic binding may promote T cell/B cell adhesion. Promotes Th2 polarization and T-cell activation
CD230	Prion protein (PrP, PrNP), Major prion protein, prP27-30, prP33-35C, PrPc	CD230 (homophilic binding), N-CAM (CD56)	+	+	+	+	+	+	+			+	+	Unknown function, but implicated in copper binding, oxidative stress homeostasis, cell survival, and signal transduction.
CD231	Tetraspanin 7 (TSPAN7), T-cell acute lymphoblastic leukemia-associated antigen 1 (TALLA-1), Transmembrane 4 superfamily member 2 (TM4SF2), Membrane component X chromosome surface marker-1 (MXS1), A15		T-ALL											Neuronal function. Marker for T-cell acute lymphoblastic leukemia (T-ALL)
CD232	Plexin C1 (PLXNC1), Virus-encoded semaphorin protein receptor (VESPR, VESP-R)	Semaphorin 7A (CD108), Poxvirus semaphorin A39R		+	+	+		+	+					May be involved in promoting DC adhesion and migration. Binding of poxvirus semaphorin A39R induces cytoskeletal rearrangement and secretion of IL-6 and IL-18
CD233	Solute carrier family 4 anion exchanger member 1 (SLC4A1), Band 3, Anion exchanger 1 (AE1), Diego blood group, Erythroid protein band 3 (EPB3)	Glycophorin A, Ankyrin, Hemoglobin, Glycolytic enzymes	-	-	-	-		-	-		+			Mediates anion exchange and bicarbonate export in erythrocytes and kidney cells. Links red cell cytoskeleton to membrane. Regulates several glycolytic enzymes.
CD234	Duffy antigen/chemokine receptor (DARC), Duffy blood group antigen (Dfy, FY), Fy-Glycoprotein, Glycoprotein D	CXCL1 (MGSa), CXCL8 (IL-8), CCL2 (MCP-1), CCL5 (RANTES), Malarial parasites Plasmodium knowlesi and P. vivax	-	-	-	-		-	-		+	+	+	Binds and internalizes several chemokines, modulating levels in blood by acting as both a sink and a reservoir. Receptor allowing malarial parasite entry into erythrocytes
CD235a	Glycophorin A (GYPA), Sialoglycoprotein α , Sialoglycoprotein A, MN blood group antigen, PAS-2	CD170, Influenza virus, Plasmodium falciparum erythrocyte binding antigen EBA-175	-	-	-	-	+	-	-		+			Major sialoglycoprotein of the erythrocyte membrane. Contains the M/N blood group antigens. Prevents agglutination. Receptor allowing parasite entry into erythrocytes

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CD235b	Glycophorin B (GYPB), Sialoglycoprotein δ , ss-Active sialoglycoprotein, SS blood group antigen, PAS-3						+				+			Major sialoglycoprotein of the erythrocyte membrane. Contains the S/s blood group antigens. Prevents agglutination
CD236	Glycophorin C & D (GYPC & GYPD), Glycophorin C/D, Gerbich blood group antigen, CD236R (glycophorin C only)	Plasmodium falciparum erythrocyte binding protein 2 (PfEBP-2), p55, band 4.1					+				+			Minor sialoglycoprotein of the erythrocyte membrane. Contains the Gerbich blood group antigens. Interacts with p55 and band 4.1 to maintain mechanical stability and deformability in erythrocytes. Receptor allowing parasite entry into erythrocytes
CD236R	Glycophorin C, GYPC	Plasmodium falciparum erythrocyte binding protein 2 (PfEBP-2), p55, band 4.1					+				+			Minor sialoglycoprotein of the erythrocyte membrane. Contains the Gerbich blood group antigens. Interacts with p55 and band 4.1 to maintain mechanical stability and deformability in erythrocytes. Receptor allowing parasite entry into erythrocytes
CD238	Kell blood group glycoprotein (Kel), Kell blood group antigen, Endothelin-3-converting enzyme (ECE3)	Big endothelin-3 (intermediate precursor of endothelin-3)					+				+			Contains the Kell blood group antigens. Zinc endopeptidase that cleaves endothelin-3 to its active form
CD239	Basal cell adhesion molecule (BCAM, B-CAM), Lutheran blood group glycoprotein, Lutheran blood group antigen (Lu)	α 5 chain of Laminin 10/11									+	+	+	Contains the Lutheran blood group antigens. Adhesion molecule with proposed roles in epithelial cell cancer and in vaso-occlusion by red blood cells in sickle cell disease
CD240	Rh blood group system, CD240CE (Rh30CE, Cc & Ee blood antigens), CD240D (Rh30D, D blood antigen), CD240DCE (Rh30D/CE)	CD241, CD242, CD47, CD235b					+				+			Contains the Rh blood group antigens. Forms large complex through interactions with other erythrocyte membrane proteins. May help maintain erythrocyte mechanical properties by associating with cytoskeletal ankyrin-R
CD241	RhAG, Rh50A, RH2	ANK1	-	-	-	-	-	-	-	-	+			May have transport or channel function in erythrocyte membranes
CD242	ICAM4, LW	LFA-1, Mac-1, VLA-4	-	-	-	-	+	-	-	-	+	+		Ligand for the leukocyte adhesion protein LFA-1
CD243	ABC20, CD243, CLCS, GP170, MDR1, P-gp, PGY1		-	-		-	+	-	-	-	-			Transports various substrates across the cell membrane
CD244	2B4, NAIL, NKR2B4, Nmrk, SLAMF4	CD48	+	-	+	+		+	+					Modulation of other receptor-ligand interactions to enhance leukocyte adhesion and NK-cytolytic activity
CD245	p220/240	Lymphocyte receptor	+											Unknown
CD246	ALK, TFG/ALK, NBLST3	Pleiotrophin	+									+		Plays an important role in the development of the brain and exerts its effects on specific neurons within the nervous system
CD247	CD3- ζ , CD3H, CD3Q, CD3Z, T3Z, TCRZ	Janus kinase 3, Protein unc-119 homolog	+			+								Couples antigen recognition to several intracellular signaling pathways
CD248	TEM1, Endosialin, CD164L1, MGC119478, MGC119479											+		Tissue remodeling and peripheral lymph node expansion

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CD235b – CD248



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CD249	APA, gp160, EAP, ENPEP												+	Potentially involved in regulating the growth and differentiation of early B lineage cells and in the catabolic pathway of the renin-angiotensin system
CD252	TNFSF4, GP34, OX40L, TXGP1, CD134L, OX-40L, OX40L	CD134 (OX40)		+	+							+		Co-stimulates T-cell proliferation and cytokine production
CD253	TNFSF10, TL2, APO2L, TRAIL, Apo-2L	Apo2	+	+				+						Induces cell death by apoptosis
CD254	TRANCE, RANKL, TNFSF11, ODF, OPGL, sOdf, OPTB2, hRANKL2	RANK	+											Involved in dendritic cell maturation
CD256	TNFSF13, APRIL, TALL2, TRDL-1, UNQ383/PRO715	TNFRSF17/BCMA, TACI	+		+			+	+					Important for B cell development
CD257	TNFSF13b, BAFF, BLYS, TALL1, THANK, TNFSF20, ZTNF4	TNFRSF13B/TACI, TNFRSF17/BCMA, TNFRSF13C/BAFFR	+	+	+	+		+	+					A potent B cell activator. Plays an important role in the proliferation and differentiation of B cells
CD258	TNFSF14, LTg, TR2, HVEM, LIGHT	TNFRSF14/HVEM	+	+	+	-		+	+					A costimulatory factor for the activation of lymphoid cells and as a deterrent to infection by herpesvirus.
CD261	TNFRSF10a, APO2, DR4, MGC9365, TRAILR1	TRAIL, DAP3	+	+	-	+		+	+					Involved in cell death processes
CD262	TNFRSF10b, KILLER/DR5, TRAILR2, TRICK2, TRICK2A, TRICK2B, TRICKB, ZTNFR9	TNFSF10, TRAIL	+	+	-	+		+	+					Involved in cell death processes
CD263	TNFRSF10c, DCR1, LIT, TRAILR3, TRID	TRAIL	+	+	+	+		+	+					An antagonistic receptor that protects cells from TRAIL-induced apoptosis
CD264	TNFSF10d, DCR2, TRAILR4, TRUND	TRAIL	+	+	-	+		+	+					Plays an inhibitory role in TRAIL-induced cell apoptosis
CD265	TNFRSF11a, EOF, FEO, ODFR, OFE, PDB2, RANK, TRANCE	TNFSF11, RANKL, TRANCE, OPGL			+			+						Essential for RANKL-mediated osteoclastogenesis. Involved in the regulation of interactions between T cells and dendritic cells.
CD266	TNFRSF12A, FN14, TWEAKR	TWEAK										+		Angiogenesis and cell proliferation of endothelial cells.
CD267	TNFRSF13B, CVID, TACI, FLJ39942, MGC39952, MGC133214, TNFRSF14B	TALL1, BLYS, BAFF	+	+	-			+	-					Controls T-cell-independent B cell antibody responses, isotype switching, and B cell homeostasis
CD268	TNFRSF13C, BAFFR, CD268, BAFF-R, MGC138235	BAFF	+	+	-	-		+	+					The principal receptor required for BAFF-mediated mature B-cell survival
CD269	TNFRSF17, BCM, BCMA	TNFSF13B, TALL-1, BAFF		+										Promotes B-cell survival
CD270	TNFRSF14, HVEM	CD258, CD272, CD160	+	+	+	+		+	+					Apoptosis and activation
CD271	NGFR, Gp80-LNGFR, TNFRSF16, p75(NTR), p75NTR	NGF, BDNF, NT-3, NT-4			+									Apoptosis, differentiation, neurogenesis

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD272	BTLA1, FLJ16065, MGC129743	B7H4	+	+	+	-		+	-					Ligand for tumour necrosis factor (ligand) superfamily, member 14 (TNFSF14), also known as herpes virus entry mediator (HVEM). BTLA-HVEM complexes negatively regulates T-cell immune responses.
CD273	B7DC, Btdc, PDL2, CD273, PD-L2, PDCD1L2, MGC142238, MGC142240, bA574F11.2, PDCD1LG2	PD2	+		+			+						Modulation of T-cell proliferation (positive or negative depending on binding)
CD274	B7-H, B7H1, PDL1, PD-L1, PDCD1L1, PDCD1LG1, MGC142294, MGC142296, CD274	PD1	+	+	+	+		+	+					Found on activated T cells, B cells, and myeloid cells, to modulate activation or inhibition
CD275	B7H2, GL50, B7-H2, B7RP1, CD275, ICOSL, LICOS, B7RP-1, ICOS-L, KIAA0653, ICOSLG	ICOS	+	+	+	-		+	+					Positive regulation of activated T-cell proliferation, T and B-cell activation.
CD276	B7H3, B7-H3, 4Ig-B7-H3, CD276	ICOS			+			+						Co-stimulatory B7 molecules (e.g., B7-1, or CD80) signal through CD28 family molecules such as CD28, CTLA4, and ICOS.
CD277	BTF5, BT3.1, CD277, MGC141880, BTN3A1		+	+	+	+	+	+						Lipid metabolic process
CD278	AILIM, CD278, MGC39850, ICOS	B7-H3	+											A CD28-superfamily costimulatory molecule that is expressed on activated T cells. It is thought to be important for Th2 cells
CD279	PD1, CD279, SLEB2, hPD-1, hPD-L, PDCD1	PDL1	+	+										Expressed in pro-B-cells and is thought to play a role in their differentiation
CD280	CD280, UPARAP, CLEC13E, ENDO180, FLJ35911, KIAA0709, MRC2, KIAA0709	uPARAP				+		+				+		Functions in cell motility and remodeling of the extracellular matrix by promoting cell migration and uptake of collagens for intracellular degradation
CD281	TIL, CD281, rsc786, KIAA0012, MGC104956, MGC126311, MGC126312, TIL, LPRS5, DKFZp547I0610, DKFZp564I0682, TLR1	Bacterial lipoprotein						+	+					Plays a fundamental role in pathogen recognition and activation of innate immunity.
CD282	TIL4, CD282, TLR2	Peptidoglycan						+	+					Plays a role in pathogen recognition and activation of innate immunity and mediates host response to Gram-positive bacteria and yeast via stimulation of NF-κB
CD283	TLR3, TOLL-like receptor 3	dsRNA	+	+	+	-		-	-					Recognizes dsRNA associated with viral infection, and induces the activation of NF-κB and the production of type I interferons. It may thus play a role in host defense against viruses.
CD284	TOLL, CD284, hToll, ARMD10, TLR4	LPS						+						Implicated in signal transduction events induced by lipopolysaccharide (LPS) found in most gram-negative bacteria.
CD286	CD286, TLR6, TOLL-like receptor 6	LPS			+			+					+	Receptor functionally interacts with toll-like receptor 2 to mediate cellular response to bacterial lipoproteins

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CD288	CD288, MGC119599, MGC119600, TLR8, TOLL-like receptor 8	CpG oligonucleotides, MyD88	+		+			+						Participates in the innate immune response to pathogens
CD289	TLR9, TOLL-like receptor 9	CpG oligonucleotides	+	+	+	-		+	+					Receptor mediates the cellular response to unmethylated CpG dinucleotides in bacterial DNA to mount an innate immune response
CD290	TLR10, TOLL-like receptor 10	MyD88	+	+	+				+					May participate in the innate immune response to pathogens
CD292	BIMPR1A, 10q23del, ACVRLK3, ALK3, SKR5	Members of TGF- β superfamily					+							BIMPR1A is necessary for the extracellular matrix deposition by osteoblasts
CDw293	BMPR1B, ALK-6, ALK6,	BMPs (members of the TGF- β superfamily)					+							Involved in endochondral bone formation and embryogenesis
CD294	CRTH2, PGRD2, G protein-coupled receptor 44 (GPR44), DL1R, DP2	Prostaglandin D2	+						+					A prostaglandin D2 receptor that mediates the pro-inflammatory chemotaxis of eosinophils, basophils, and Th2 lymphocytes generated during allergic inflammation
CD295	LEPR, OBR	Leptin	+	+	+	+	+	+	+	+		+	+	Receptor for leptin (an adipocyte-specific hormone that regulates body weight), and is involved in the regulation of fat metabolism, as well as in a novel hematopoietic pathway that is required for normal lymphopoiesis.
CD296	ART1, ADP-ribosyltransferase 1, RT6, ART2, MGC133217	Arginine residues in proteins	+										+	Catalyzes the ADP-ribosylation of arginine residues in proteins
CD297	ART4, ADP-ribosyltransferase 4, Dombrock blood group glycoprotein, DO, DOK1	Antigens of the Dombrock blood group system are located on the gene product, which is glycosylphosphatidylinositol-anchored to the erythrocyte membrane.						+				+		Member of the ADP-ribosyltransferase gene family but enzymatic activity has not been demonstrated experimentally
CD298	ATP1B3, Na K ATPase β 3 subunit, ATPB-3, FLJ29027	Part of the glycoprotein subunits of Na ⁺ /K ⁺ -ATPase.	+	+	+	+	+	+	+	+				Establishing and maintaining the electrochemical gradients of Na and K ions across the plasma membrane
CD299	DCSIGN-related, L-SIGN, DCSIGNR, HP10347, DC-SIGN2, DC-SIGNR, MGC47866, MGC12996, CLEC4M	Carbohydrate ligands on the surface of microbes and endogenous cells										+		The encoded protein is involved in the innate immune system and recognizes numerous evolutionarily divergent pathogens ranging from parasites to viruses
CD300a	IRC1, IRC2, CLM-8, Irp60, IGSF12, CMRF35H, CMRF-35H, CMRF35-H, CMRF35H9, CMRF35-H9, IRC1/IRC2, CMRF-35-H9	Unknown	+	+	+			+						NK cell function; also suppresses the effects of eotaxin, IL-5 and GM-CSF on neutrophils; and inhibits Ig-E dependent, but not Ig-E independent, activities on mast cells.
CD300c	CMRF-35A, LIR, CLM-6, CMRF35, IGSF16, CMRF-35, CMRF35A, CMRF35A1, CMRF35-A1	Unknown	+	+	+			+						Unknown
CD300e	CMRF-35L1, CLM2, CLM-2, IREM2, PlgR2, IREM-2, PlgR-2, CD300LE, CMRF35-A5	Unknown			+			+						Activating receptor of the immunoglobulin (Ig) superfamily that mediates activating signals by interacting with DAP12

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CD301	MGL1, CLEC10A, CLECSF14, HML	Terminal galactose and N-acetylglucosamine units linked to serine or threonine			+			+						Possible roles in cell adhesion, glycoprotein turnover, and inflammation
CD302	DCL1	F-actin			+			+	+					Cell adhesion, migration, endocytosis, and phagocytosis
CD303	BDCA2, CLEC4C	TLR-9			+									Antigen-capture
CD304	Neuropilin 1	VEGF			+									Angiogenesis, axon guidance, cell survival, migration, and invasion
CD305	LAIR1	PTPN6, PTPN11	+	+	+	+		+	+					Negative regulator of NK, B, and T cells
CD306	LAIR2	LAIR1, Collagen	+	+				+						Soluble receptor that modulates LAIR1 (CD305)
CD307a	FCRL1, IRTA5		-	+	-	-		-	-					B cell activation and differentiation
CD307b	FCRL2, IRTA4		-	+	-	-		-	-					B cell activation and differentiation
CD307c	FCRL3, IRTA3		+	+	-	-		-	-					B cell activation and differentiation
CD307d	FCRL4, IRTA1		-	+	-	-		-	-					B cell activation and differentiation
CD307e	FCRL5, IRTA2		-	+	-	-	-	-	-					B cell activation and differentiation
CD309	VEGFR2, KDR, Flk1	VEGF					+					+		Vascular development and regulation of vascular permeability
CD312	EMR2	Chondroitin sulphates			+			+	+					Cell adhesion and migration
CD314	NKG2D	MICA, MICB, ULBP2, ULBP1	+	+	-	+		+	+					Receptor for the recognition of MHC class I HLA-E molecules
CD315	PTGFRN, CD9P1	CD9, CD81		+				+						Cell motility
CD316	EWI2, IGSF8	CD82, CD81, CD9	+	+		+								Potentially a negative regulator of cell motility
CD317	BST2		+	+	+	+		+						Tethering mature virions to the host cell surface preventing egress of enveloped viruses
CD318	CDCP1	N-Cadherin, P-Cadherin, Syndecan-1, Syndecan-4					+							Cell differentiation, homing and dissemination. May also have a pro-survival role
CD319	CRACC, SLAMF7	CD319	+	+	+	+		+	-					NK cell activation; may also be involved in lymphocyte adhesion
CD320	8D6	8D6 Antigen, FDC			+									Augments the proliferation of plasma cell precursors
CD321	JAM1, F11 receptor		+	+		+		+	+	+	+	+	+	Plays a role in epithelial tight junction formation. Also involved in regulating monocyte transmigration involved in integrity of epithelial barrier. Involved in platelet activation.

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CD322	JAM2											+		May play a role in the processes of lymphocyte homing to secondary lymphoid organs.
CD324	E-Cadherin						+				+		+	A calcium dependent cell adhesion protein. E-Cad/CTF2 promotes non-amyloidogenic degradation of Aβ precursors.
CD325	N-Cadherin						+							Functions during gastrulation and is required for the establishment of left-right asymmetry.
CD326	Ep-CAM												+	A homotypic calcium-independent T-cell adhesion molecule
CD327	Siglec6, CD33L	Silylated glycans		+										Putative adhesion molecule that mediates sialic-acid dependent binding to cells.
CD328	Siglec7	Silylated glycans	+	+	+	+		+	+					Putative adhesion molecule that mediates sialic-acid dependent binding to cells. Mediates inhibition of natural killer cell cytotoxicity. May play a role in hematopoiesis. Inhibits differentiation of CD34 ⁺ cell precursors towards myelomonocytic cell lineage and proliferation of leukemic myeloid cells (in vitro).
CD329	Siglec9	Silylated glycans, sMUC16	-	+	-	+		+	+					Putative adhesion molecule that mediates sialic-acid dependent binding to cells.
CD331	FGFR1	FGF											+	Receptor for basic fibroblast growth factor.
CD332	FGFR2	FGF											+	Receptor for acidic and basic fibroblast growth factors.
CD333	FGFR3	FGF											+	Receptor for acidic and basic fibroblast growth factors that referentially bind FGF1.
CD334	FGFR4	Acidic FGF											+	Receptor for acidic fibroblast growth factor. Does not bind to basic fibroblast growth factor.
CD335	NKp46, NCR1, Ly94	HA, CD3z, FCERIG				+								Cytotoxicity-activating receptor that may contribute to the increased efficiency of activated natural killer (NK) cells to mediate tumor cell lysis
CD336	NKp44, NCR2, Ly95	DAP12				+								Cytotoxicity-activating receptor that may contribute to the increased efficiency of activated natural killer (NK) cells to mediate tumor cell lysis.
CD337	NKp30, NCR3	Viral proteins, CD3z				+								Cytotoxicity-activating receptor that may contribute to the increased efficiency of activated natural killer (NK) cells to mediate tumor cell lysis.
CD338	ABCG2		-	+		-	+	+	-					Xenobiotic transporter that may play an important role in the exclusion of xenobiotics from the brain and cancer cells.
CD339	Jagged-1, JAG1	Notch 1, 2, 3											+	Ligand for multiple Notch receptors and involved in the mediation of Notch signaling. May be involved in cell-fate decisions during hematopoiesis.
CD340	ERB-B2, Neu, Her-2	EGFR											+	Binds tightly to other ligand-bound EGF receptor family members to form a heterodimer, stabilizing ligand binding and enhancing kinase-mediated activation of downstream signaling pathways.

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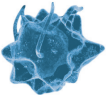
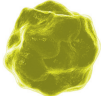

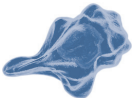
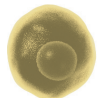
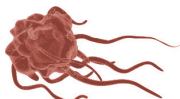
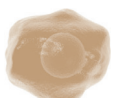


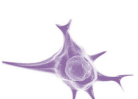



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CD344	FZD4, Frizzled homolog 4	MAGI3, Norrin					+					+	+	A receptor for Wnt proteins that plays an important role in retinal vascularization
CD349	FZD9, Frizzled homolog 9	Wnt-2					+							A receptor for Wnt proteins that may play a role in B cell development.
CD350	FZD10, Frizzled homolog 10	Wnt-7					+						+	A receptor for Wnt proteins that may play a role in lung and neural development
CD351	FCAMR, Fc receptor, IgA, IgM, high affinity	IgA, IgM	+	+	-	-		+	-					A high affinity receptor for Fc fragments IgA and IgM and mediates their endocytosis.
CD352	SLAMF6, Ly108, NTB-A	CD352, SH2D1A, SAPPTN6, PTN11	+	+	+	+		+	+					Triggers cytolytic activity only on NK cells expressing high surface densities of natural cytotoxicity receptors.
CD353	SLAMF8, BLAME		-	+	-	-		+	-					Regulates macrophage function; may play a role in B cell lineage commitment.
CD354	TREM1	TYROBP/DAP12	+	+	+	+		+	+					Stimulates neutrophil and monocyte-mediated inflammatory responses. Triggers release of pro-inflammatory chemokines and cytokines, as well as increased surface expression of cell activation markers. Amplifier of inflammatory responses that are triggered by bacterial and fungal infections and is a crucial mediator of septic shock.
CD355	CRTAM, Cytotoxic and regulatory T-cell molecule	CADM1	+	+	-	+		-	-					Interaction with CADM1 promotes natural killer (NK) cell cytotoxicity and interferon- γ (IFN- γ) secretion by CD8+ cells in vitro as well as NK cell-mediated rejection of tumors expressing CADM3 in vivo.
CD357	TNFRSF18, Tumor necrosis factor receptor superfamily, member 18, GITR	TRAF1, TRAF2, TRAF3, SIVA1/SIVA, GITRL	+	+	+	+		+	-					GITR signaling on conventional T cells is believed to be an activator. In contrast activation of GITR on Tregs results in functional inactivation.
CD358	TNFRSF21, Tumor necrosis factor receptor superfamily, member 21, DR6	TRADD, N-APP	+	+	-	-		+	-					Involved in the activation of apoptosis.
CD359	PI16	MSMB	+	-		-		-	-					Serine protease inhibitor, potential suppressive activity. Initially identified as a serum binding partner of prostate secretory protein 94.
CD360	IL21R	IL-21, common γ subunit, JAK1	+	+	-	+		+	+					Upon binding to IL-21, IL-21R has pleiotropic actions such as augmenting the proliferation of T cells, driving of B cells into memory cells, terminally differentiating plasma cells and augmenting the activity of natural killer cells
CD361	EVI2B (ectopoc viral integration site 2B)		+	+	+	+		+	+					
CD362	Syndecan-2	CD267 (TACI), FGF2, GM-CSF, TGF β	+	+	-	-		+	+					A cell surface heparan sulfate proteoglycan that functions as cell surface receptors in the regulation of adhesion-dependent signaling during cell adhesion and migration.
CD363	S1PR1, Sphingosine-1-phosphate receptor 1, EDG-1	SIP	+	+	-	+		-	-					Involved in the egress of newly formed T cells from the thymus and the exit of mature T and B cells from secondary lymphoid organs.

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		Key Markers - Human	Key Markers - Mouse
T Cell		CD3 CD4 CD8	CD3 CD4 CD8
B Cell		CD19 CD20	CD45R/B220 CD19 CD22 (B cell activation marker)
Dendritic Cell		CD11c CD123	CD11c CD123
NK Cell		CD56	CD335 (NKp46)
Stem Cell/ Precursor		CD34 <i>hematopoietic stem cell only</i>	CD34 <i>hematopoietic stem cell only</i>
Macrophage/ Monocyte		CD14 CD33	CD11b/ Mac-1 Ly-71 (F4/80)
Granulocyte		CD66b	CD66b Gr-1/Ly6G Ly6C
Platelet		CD41 CD61 CD62	CD41 CD61 (Integrin β 3) CD9 CD62P (activated platelets)
Erythrocyte		CD235a	CD235a Ter-119
Endothelial Cell		CD146	CD146 MECA-32 CD106 CD31 CD62E (activated endothelial cells)
Epithelial Cell		CD326	CD326 (EPCAM1)



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CD1d	CD1.1, CD1.2, Ly-38	Lipid, Glycolipid Ag	+	+	+	+	+	+	+				+	Antigen presentation
CD2	LFA-2, Ly-37, Ly37	CD48, CD58, CD59, CD15	+	+		+	+	+						Activation/costimulation, adhesion
CD3γ	CD3 γ , CD3 γ chain, T3 γ	TCR complex	+											Signal transduction
CD3δ	CD3 δ , CD3 δ chain, T3 δ	TCR complex	+											Signal transduction
CD3ϵ	CD3 ϵ , CD3 ϵ chain, CD3, T3 ϵ	TCR complex	+			+								Signal transduction
CD4	L3T4, Ly-4	MHC class II, HIV gp120, IL-16	+		+	+	+	-						Signal transduction, receptor/coreceptor
CD5	Ly-1, Lyt-1, Ly-12, Ly-A	CD72	+	+										Adhesion, regulates T-B lymphocyte interaction
CD5.1	Ly-1.1	CD72	+	+										Regulates T-B lymphocyte interaction
CD6	T12	CD166 (ALCAM), 3A11	+											Activation/costimulation, adhesion, differentiation/development
CD7	gp40		+	+		+	+							Immunoregulation, T costimulation
CD8a	Ly-2, Lyt-2, Ly-B, Ly-35	MHC class I	+		+									Signal transduction, receptor/coreceptor for MHC class I molecules
CD8b	Ly-3, Lyt-3, Ly-C, CD8b1	MHC class I	+											Signal transduction, receptor/coreceptor for MHC class I molecules
CD8b.2	Ly-3.2, Lyt-3.2	MHC class I	+											Signal transduction, receptor/coreceptor for MHC class I molecules
CD9	Tspan29	CD63, CD81, CD82, CD315, CD316	+	+	+		+	+	+	+				Adhesion and migration, platelet activation/costimulation, signal transduction
CD10	CALLA, MME, NEP	Peptides	+	+			+							Enzymatic activity, differentiation/development: regulates B cell growth
CD11a	Ly-15, Ly-21, Integrin α L	CD54, CD102, CD50	+	+	+	+		+	+					Adhesion, differentiation/development
CD11b	Integrin α M, Ly-40, CR3, CR3A, MAC1	CD54, iC3b, Fibronectin			+	+		+						Adhesion, chemotaxis, apoptosis
CD11c	ITGAx [Integrin α x], CR4 [complement receptor-4], iC3b receptor, Leu M5, p150,95, CD18/CD11c	iC3b, Fibronectin, ICAM-1	+		+	+	+	+	+					Adhesion, cell migration, survival, and proliferation
CD13	Aminopeptidase N, gp150	L-Leucyl- β -naphthylamine			+			+				+	+	Enzymatic activity
CD14	Mo2, LPS Receptor	LPS/LPB complex, TLR2, TLR4			+			+	+					Receptor/coreceptor for LPS and LBP complex
CD15	SSEA-1, FAL, Lewis x	CD62					+		+					Adhesion, differentiation
CD16	Fc γ RIII, Fc γ RIIIa, Ly-17, FCGR3, IGFR3	IgG Fc		+	+	+		+	+					Low affinity IgG Fc receptor III

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CD18	Integrin $\beta 2$	CD11a, b, c	+	+	+	+		+	+	+	-	-	-	Signal transduction, adhesion
CD19	B4	CD21, CD81	-	+	+	-	+	-	-	-	-	-	-	Signal transduction, receptor/coreceptor
CD20	Ly-44, B1			+				+	+					B cell activation/costimulation, differentiation/development
CD21	CR2/CR1	C3d, EBV, CD23, CD19, CD81	+	+										Signal transduction
CD22.2	Lyb-8.2, Siglec-2	N-Glycolyl neuraminic acid		+										B cell adhesion, immunoregulation, receptor/coreceptor, signal transduction
CD23	Fc ϵ RII, Ly-42	IgE, CD21, CD11b, CD11c		+	+									Regulates B cell activation
CD24	Heat Stable Antigen, Ly-52, Nectadrin	CD62P (P-Selectin)	+	+	+		+							T and B lymphocyte activation and differentiation, adhesion
CD25	Ly-43, IL-2 Receptor α chain, p55	IL-2 Receptor α	+	+	+			+						Activation/costimulation, receptor/coreceptor
CD26	Dipeptidyl peptidase, DPP IV, THAM	Polypeptides	+	+		+							+	Activation/costimulation, adhesion, enzymatic activity
CD27	T14, s152, tnfrs7, Tp55	CD70, TRAF2, TRAF5	+	+		+								Activation/costimulation, receptor/coreceptor
CD28	T90/44 antigen or Tp44	CD80 (B7-1), CD86 (B7-2)	+	-		+								T cell costimulation leading to proliferation, cytokine production and T cell activation
CD29	Integrin $\beta 1$, VLA β , gpIIa	VCAM-1, MAdCAM-1, ECM	+	+	+	+		+	+	+		+	+	Signal transduction, adhesion, differentiation/development
CD30	Ki-1	CD153	+	+		+		+						Immunoregulation, receptor/coreceptor, cytotoxicity
CD31	PECAM-1, gpIIa, endoCAM, platelet endothelial cell adhesion molecule, PECA1	CD38, Vitronectin receptor	+	+		+		+	+	+	-	+		Cell adhesion, activation and migration
CD32	Fc γ RII, Ly-17, Ly-m20; Fc- γ receptor 2, Low affinity immunoglobulin γ Fc receptor II	IgG		+				+	+	+				Clearance of immune complexes by macrophages, B-cell antibody regulation
CD33	gp67; SIGLEC-3; Sialic acid-binding Ig-like lectin 3, myeloid cell surface antigen CD33	Sialylated glycoproteins; Sugar chains containing sialic acid; α -2,6-linked sialic acid	-	-	+	-	+	+	+	-	-	-	-	Cell adhesion
CD34	Mucosialin	CD62L (L-Selectin)	-	-	-	-	+	-	-	-	-	+		Cell adhesion
CD35	CR1, C3b receptor	C3b, C4b, iC3, iC4	+	+	+			+	+		+			Complement cascade regulation, mediates cellular binding of particles and immune complexes that have activated complement.
CD36	Scavenger receptor, FAT, GPIV, Scarb3	Oxidized LDL, Thrombospondin, Collagen			+		+	+		+	+	+		Adhesion, receptor/coreceptor, phagocytosis, cholesterol transport, scavenger receptor
CD37	gp52-40, Leukocyte antigen CD37, Tetraspanin-26, TSPAN26	CD53, CD81, CD82, MHC class II	+	+		-		+	+	-	-			Regulation of T cell/B cell interactions, development, activation, growth and motility.

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD38	ADP-ribosyl cyclase, T10, Cyclic ADP-ribose hydrolase 1	CD31, Hyaluronic acid, CD3/TcR complex, CD16, HLA Class II	+	+	+	+	+	+	-					Cell adhesion and signal transduction
CD39	NTPDase-1; Ectonucleoside triphosphate diphosphohydrolase 1 (ENTPD1), ATPdehydrogenase, NTPdehydrogenase-1	ATP, ADP		+	+	+		+		-		+	+	ADP and ATP hydrolysis, neurotransmission regulation
CD40	gp39 receptor, Bp50, MGC9013, TNFRSF5, Tumor necrosis factor receptor superfamily member 5	CD154	-	+	+	-	+	+	-		-	+	+	Cell adhesion, cell proliferation and signal transduction
CD41	GPIIb, Integrin α IIb, Platelet membrane glycoprotein IIb, ITGA2B, Integrin α 2b, Human Platelet Antigen-3 (HPA-3)	Fibronectin, Fibrinogen, von Willebrand factor, Thrombospondin	-	-	-	-	+	-	-	+	-	-	-	Cell adhesion, platelet aggregation
CD42a	GPIX, GP9, Platelet glycoprotein IX	von Willebrand factor	-	-	-	-	+	-	-	+	-	-	-	Platelet adhesion
CD42b	GPIb α , Platelet glycoprotein Ib α	von Willebrand factor	-	-	-	-	+	-	-	+	-	-	-	Platelet adhesion
CD42c	GPIb β , Platelet glycoprotein Ib β	von Willebrand factor	-	-	-	-	+	-	-	+	-	-	-	Platelet adhesion
CD42d	GPV, Platelet glycoprotein V	von Willebrand factor	-	-	-	-	+	-	-	+	-	-	-	Platelet adhesion
CD43	Ly-48, Sialophorin, Leukosialin, Galactoglycoprotein, SPN	CD54	+			+	+	+	+	+				Cell adhesion and T-cell activation
CD44	Ly-24, ECMRII, H-CAM, Pgp-1, Phagocytic glycoprotein I, Extracellular matrix receptor III, GP90 lymphocyte homing/adhesion receptor, Hyaluronate receptor	Hyaluronate, Collagen, Fibronectin, Laminin, Osteopontin	+	+		+		+	+		+	+	+	Cell adhesion and migration
CD45	Leukocyte Common Antigen (LCA)	CD150, Galectin-1, CD2, CD3, CD4, CD45AP, p56lck, p59fyn, Src kinases	+	+	+	+	+	+	+	-	-	-	-	Regulator of T- and B-cell antigen receptor signaling, regulator of cell growth and differentiation
CD45.1	Ly-5.1, Ly-5a, PTPRCa		+	+	+	+	+	+	+	-	-	-	-	Regulator of T- and B-cell antigen receptor signaling, regulator of cell growth and differentiation
CD45.2	Ly-5.2, Ly-5b, PTPRCb		+	+	+	+	+	+	+	-	-	-	-	Regulator of T- and B-cell antigen receptor signaling, regulator of cell growth and differentiation
CD45R	B220, Ly-5, Lyt-4, T200, Protein tyrosine phosphatase receptor type C (PTPRC)		+	+	+	+	+	+	-	-	-	-	-	Regulator of T- and B-cell antigen receptor signaling, regulator of cell growth and differentiation
CD45RA			+	+	+	+	+	+	-	-	-	-	-	



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CD45RB			+	+	+	+	+	+	+	-	-	-	-	
CD45RC	Protein tyrosine phosphatase receptor type C (PTPRC)		+	+	+	+	+	+	-	-	-	-	-	
CD45RO			+	+	+	+	+	+	-	-	-	-	-	
CD46	Membrane Cofactor Protein (MCP), Trophoblast leukocyte common antigen, TRA2.10	C3b, C4b, Measles virus	+	+		+		+	+	+	-	+	+	Inhibitory complement receptor
CD47	Integrin-associated protein (IAP), OA3, Neuropilin, MER6, gp42	SIRP (CD172), CD61, Thrombospondin	+	+	+	+		+	+	+	+	+	+	Cell adhesion and signal transduction
CD48	Blast-1, Hulym3, BCM-1, OX-45, MEM-102	CD2, Ick, fyn, CD229, CD244	+	+		+	+	+						Lymphocyte adhesion and activation
CD49a	VLA-1 α , Integrin α 1	Collagen, Laminin	+	-		+		+	-	-	-	-	-	Cell adhesion
CD49b	VLA-2 α , Integrin α 2, gPIa	Collagen, Laminin, MMP-1	+	+		+	+	+	-	+	-	+	+	Cell adhesion
CD49c	VLA-3 α , Integrin α 3, GAPB3, Galactoprotein B3, MSK18, Very Common Antigen-2 (VCA-2)	Fibronectin, laminin, collagen	+	+		-		+			-	+	+	Cell adhesion
CD49d	VLA-4 α , Integrin α 4	CD106 (VCAM1), MAdCAM, Fibronectin, Paxillin	+	+	+	+	+	+	-	-	-	+		Cell adhesion and lymphocyte homing
CD49e	VLA-5 α , Integrin α 5, Fibronectin receptor	Fibronectin, Invasin, Fibrinogen	+		+	+	+	+		+	+	+	+	Cell adhesion
CD49f	VLA-6 α , Integrin α 6, gpl	Laminin, Invasin	+				+	+		+		+	+	Cell adhesion
CD51	Integrin α v, VNR- α , Vitronectin-R α	Vitronectin, fibronectin, fibrinogen, thrombospondin, von Willebrand factor, CD31						+	-	+		+		Cell adhesion and signal transduction
CD52	CAMPATH-1, HE5, Epididymal secretory protein E52, CLS1, MB7, B7		+	+		+		+		-	-		+	Complement mediated cell lysis and antibody mediated cellular cytotoxicity
CD53	MOX44, TSPAN25, Tetraspanin-25	VLA-4, Integrins	+	+	-	+	+	+	+	-	-		-	Cell adhesion, activation and migration
CD54	ICAM-1, Ly-47, MALA-2	LFA-1, Mac-1, CD43, CD11a/CD18, CD11b/CD18, Rhinovirus, CD227	+	+				+				+		Cell adhesion, lymphocyte activation and migration
CD55	Decay accelerating factor (DAF), complement-glycosylphosphatidylinositol, Cromer blood group, Daf-GPI, Daf1, GPI-DAF	C3b, C4b, CD97, Echovirus	+	+		+	+	+	+	+	+	+	+	Complement cascade (C3bBb complex) regulation
CD56	Leu-19, NKH-1, Neural Cell Adhesion Molecule (NCAM)	NCAM-1, Heparin sulfate	+			+								Cell adhesion and neural plasticity

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CD59	1F5Ag, H19, protectin, MACIF, M1RL, P-18	C8- α , C9, Ick, fyn	+			+		+	+		+			Complement cascade regulation
CD61	GP IIIa, Integrin β 3	Fibrinogen, PTK2, ITGB3BP, TLN1 and CIB1						+		+		+		Cell adhesion
CD62E	E-Selectin, ELAM-1, LECAM-2	Sialyl Lewis x,a, CLA, CD162										+		Cell adhesion
CD62L	L-Selectin, LECAM-1, Lnhf, Ly-22, Ly-m22, Lyam-1, Lyam1	CD34, GlyCAM-1, MAdCAM-1	+	+		+		+	+					Cell adhesion
CD62P	P-Selectin, GMP-140, PADGEM	CD162, CD24								+		+		Cell adhesion
CD63	LIMP, MLA1, gp55, NGA, LAMP-3, ME491, OMA81H, TSPAN30, granulophysin, melanoma 1 antigen	VLA-3, VLA-6, CD81, CD9, PI4-kinase, CD117, CD82						+	+	+		+		Cell growth and motility regulation, complexes with integrins
CD64	Fc γ RI, Fc- γ receptor 1, High affinity immunoglobulin γ Fc receptor I, Fc γ RIA	IgG	-	-	+	-	+	+	+	-	-	-	-	Ig Fc receptor
CD66a	BGP, CEA-1				+				+	+				Signal transduction, adhesion, angiogenesis
CD66b	CGM6, CEA-3								+					Adhesion, neutrophil activation
CD68	Macrosialin lysosomal glycoprotein 110	LDL			+			+						Phagocytosis
CD69	Very Early Activation Antigen					+								Activation/costimulation, differentiation/development
CD70	CD27 Ligand	CD27	+	+										Activation/costimulation
CD71	Transferrin Receptor	Transferrin	+	+		+								Activation/costimulation, metabolism
CD72	Lyb-2, Ly-m19	CD5, CD100	+	+	+			+						Activation/costimulation, differentiation/development
CD73	NT, Ecto-5'-nucleotidase	NMP	+	+	+									Enzymatic activity
CD74	Ia-associated invariant chain (Ii)	CD44, MHC class II	+	+	+									Antigen presentation, differentiation/development
CD77	Pk blood group antigen; BLA; CTH; Gb3, α -1,4-Galactosyltransferase, Gb3 synthase, A4galt													
CD79a	Iga, mb-1, Ly-54	Ig, CD5, CD19, CD22, CD79b		+										Signal transduction, cell surface expression
CD79b	Igb, B29	Ig, CD5, CD19, CD22, CD79a		+										Signal transduction, cell surface expression, differentiation/development
CD80	B7/BB1, B7-1, Ly-53	CD28, CD152	+	+	+			+						Activation/costimulation, immunoregulation
CD81	TAPA-1	CD9, CD19, CD21, CD225, CD315, CD316	+	+	+	+		+						Activation/costimulation, adhesion, differentiation/development

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CD82	C33 Ag, KAI1	MHC molecules, CD4, CD8, CD20, CD37, CD81, Integrins								+				Activation/costimulation
CD83	HB15		+	+	+									Activation/costimulation
CD84	GR6	TLR4	+	+	+			+	+	+				Leukocyte activation
CD86	B7-2, B70, Ly-58	CD28, CD152	+	+	+			+				+		Activation/costimulation, immunoregulation
CD87	uPA Receptor	uPA, Vitronectin	+			+		+	+					Adhesion, receptor/coreceptor
CD88	C5a Ligand, C5aR	C5a			+			+	+					Activation/costimulation, complement pathways
CD90	Thy-1, q, T25		+		+	+		+						Signal transduction, activation/costimulation, adhesion, differentiation/development
CD90.1	Thy-1.1, q-AKR		+		+	+		+						Signal transduction, activation/costimulation, adhesion, differentiation/development
CD90.2	Thy-1.2, q-C3H		+		+	+		+						Signal transduction, activation/costimulation, adhesion, differentiation/development
CD90.2	LRP, A2MR, AI316852, α 2-Macroglobulin receptor	LDL, LRPAP1, α 2M						+						Antigen presentation, hemostasis, metabolism
CD93	AA4.1, C1qRp	CCL21						+				+		Potentially involved in angiogenesis, endothelial cell migration, and clearance of dying cells
CD94	KP43, klrd1	Qa-1/Qdm	+			+	+							Antigen recognition, immunoregulation
CD95	Fas, APO-1	CD178 (Fas Ligand)	+	+	+			+			+			Apoptosis
CD96	Tactile	CD155, Nectin-1	+	+		+								Promotes NK cell adhesion to target cells
CD97	TM7LN1, TM7S	CD55	+	+	+	+		+			+			Neutrophil migration
CD98	4F2, Ly-10, RL-388	CD29, CD147, Tropomyosin, Actin	+	+		+								Activation/costimulation, immunoregulation
CD99	Paired immunoglobulin-like type 2 receptor-ligand	PILRB	+	+					+			+		T-cell recruitment to inflamed skin
CD100	Semaphorin H, coll-4, Semaphorin 4D, Sema 4D	CD72, Plexin-B1, CD45	+	+										Immunoregulation
CD101	IGSF2, V7		+		+			+	+					May be involved in Treg function

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CD102	ICAM-2, Ly-60	LFA-1, Mac-1	+	+	+			+		+				Mediates adhesive interactions important for antigen-specific immune response, NK-cell mediated clearance, lymphocyte recirculation, and other cellular interactions important for immune response and surveillance.
CD103	Integrin αEL	E-Cadherin	+											Likely important for T cell homing to the intestinal sites through its ligand αEβ7.
CD104	Integrin β4	Laminin, Plectin	+											Adhesion
CD105	Endoglin	TGF-β					+	+						Adhesion, receptor/coreceptor
CD106	VCAM-1	VLA-4			+			+						Adhesion, differentiation/development
CD107a	LAMP-1	Collagen, Laminin, Fibronectin	+	+				+						Possibly adhesion, marker of degranulation on lymphocytes
CD107b	LAMP-2, LGP-96, LAMP-B		+					+						Cell adhesion
CD108	Sema7a	Tyrosine kinases	+											Possibly monocyte activation, possibly adhesion
CD110	Thrombopoietin, Receptor, c-mpl	JAK2, Thrombopoietin					+			+				Differentiation/development
CD111	PRR1, Nectin-1, CD111, CLPED1, ED4, HlgR, HVEC, MGC142031, MGC16207, OFC7, PRR, PVRR, PVRR1, SK-12	a-Herpesvirus, Nectin-3, Afadin,					+							Adhesion
CD112	PRR2, Nectin-2, PVRL2, HVEB, MPH, Pvr, Pvs, CD112, AI325026, AI987993, Nectin-2, Pvrl2	CD226, PRR3, afadin						+				+	+	Adhesion
CD113	PVRL3, Nectin-3	Nectin-1, Nectin-2, PVR										+		Adhesion
CD114	G-CSF Receptor, CSF3R, HG-CSFR, Granulocyte colony-stimulating factor receptor, G-CSFR	G-CSF, JAK1, JAK2					+		+					Signal transduction, differentiation/development, receptor/coreceptor
CD115	M-CSF Receptor, CSF-1R, c-fms, Fim-2	M-CSF					+	+						Signal transduction, differentiation/development, receptor/coreceptor
CD116	GM-CSF Receptor α chain	GM-CSF			+			+	+			+		Signal transduction, differentiation/development, receptor/coreceptor
CD117	c-kit, Steel factor receptor, Dominant white spotting	c-Kit Ligand (Steel, stem-cell, or mast-cell growth factor)	+	+	+	+	+	+	+					Signal transduction, differentiation/development, receptor/coreceptor
CD118	IFN-α/β Receptor, Type I IFN-R, IFN-α Receptor	IFN-α, IFN-β					+	+						Differentiation, LIF receptor/coreceptor, proliferation
CD119	IFN-γ Receptor α chain	IFN-γ	+	+	+	+		+	+			+	+	Immunoregulation, receptor/coreceptor
CD120a	TNFR1, TNF-R55	TNF, Lymphotoxin A (TNF-β)	+	+	+	+	+	+	+			+		Signal transduction, apoptosis, receptor/coreceptor

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CD102 – CD120a



CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD120b	TNFR2, TNF-R75	TNF, Lymphotoxin A (TNF-β)	+	+	+	+	+	+	+			+		Signal transduction, apoptosis, necrosis, receptor/coreceptor
CD121a	IL-1 Receptor, Type I	IL-1α, IL-1β	+		+							+		Signal transduction, activation/costimulation, receptor/coreceptor
CD121b	IL-1 Receptor, Type II	IL-1α, IL-1β	+	+	+			+						Immunoregulation, receptor/coreceptor
CD122	IL-2 and IL-15 Receptor b chain	IL-2, IL-15	+	+		+		+						Signal transduction, immunoregulation, receptor/coreceptor
CD123	IL-3 Receptor α chain	IL-3			+		+	+	+			+		IL-3 receptor/coreceptor
CD124	IL-4 Receptor α chain	IL-4, IL-13	+	+	+				+		+		+	Signal transduction, receptor/coreceptor
CD125	IL-5 Receptor α chain	IL-5		+					+					Activation/costimulation, immunoregulation, receptor/coreceptor
CD126	IL-6 Receptor α chain	IL-6	+	+	+				+				+	Differentiation/development, immunoregulation, receptor/coreceptor
CD127	IL-7 Receptor α chain	IL-7	+	+				+						Signal transduction, differentiation/development, receptor/coreceptor
CD130	gp130, Common β chain	CD126, IL-11R, LIF-R	+	+	+	+					+	+		Signal transduction
CD131	AIC2A and AIC2B, bIL-2 and bc	IL-3 (AIC2A), CD123, CD125, CD116	+	+			+							Signal transduction, receptor/coreceptor
CD132	Common γ chain	Subunit of IL-2, IL-4, IL-7, IL-9, IL-15, IL-21 receptors	+	+	+			+						Signal transduction
CD133	AC133, Prominin-1 (PROM1)						+					+	+	Stem cell marker
CD134	Ly-70, OX-40 antigen, ACT35 antigen	OX-40 Ligand	+	+										Activation/costimulation
CD135	Flk-2, Flt3, Ly-72	flt3 Ligand	+	+	+			+			+			Differentiation/development, receptor/coreceptor
CD136	STK, Mst1r, RON, MSP Receptor	MSP, HGFI					+	+					+	Proliferation, anti-apoptosis
CD137	4-1BB, Ly-63, Tnfrsf9	4-1BBL, Fibronectin, Laminin, Vitronectin, Collagen VI	+	+	+	+		+					+	Antigen presentation, signal transduction, activation/costimulation, adhesion
CD138	Syndecan-1, Sdc1	Interstitial matrix proteins		+						+			+	Adhesion
CD140a	PDGF Receptor α chain, PDGFR-α	PDGF-A, PDGF-B, PDGF-C								+				Signal transduction, differentiation/development, receptor/coreceptor
CD140b	PDGF Receptor β chain, PDGFR-β	PDGF-B, PDGF-D												Signal transduction, differentiation/development, receptor/coreceptor
CD141	Thrombomodulin, TM	Thrombin						+		+		+		Hemostasis
CD142	Tissue Factor, Coagulation Factor III	Plasma Factor VII/VIIIa (FVII)						+		+		+	+	Differentiation/development, hemostasis, angiogenesis

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CD143	Angiotensin converting enzyme, Dipeptidyl peptidase, ACE	Angiotensin I, Bradykinin			+			+				+	+	Enzymatic activity
CD144	VE-Cadherin, Cdh5, 7B4, VECD	CD144, β Catenin					+					+		Adhesion, angiogenesis
CD146	MUC18, S-endo, Mcam		+		+							+		Adhesion
CD147	Basigin, HT7, Neurothelin, gp42, Neurothelin									+	+	+		Adhesion
CD148	PTPb2, ByP, Scc-1, RPTPJ		+	+	+			+	+	+		+		Signal transduction
CD150	IPO-3, ESTM51, Slam	Measles virus, CD45	+	+	+				+			+		Signal transduction
CD151	SFA-1, PETA-3, Tspan24	Integrin β 1								+		+	+	Adhesion
CD152	CTLA-4, Ly-56	CD80, CD86	+	+										Immunoregulation
CD153	CD30 Ligand	CD30	+	+				+						Activation/costimulation, immunoregulation
CD154	gp39, CD40 Ligand, Ly-62, HIGM1, IMD3, T-BAM, Tnfsf5	CD40	+	+				+		+				Activation/costimulation
CD155	Polio virus receptor (pvr), Tage4	CD96, CD226, Nectin-3	+	+	+			+					+	Cell adhesion
CD156a	MS2, ADAM 8							+	+					Adhesion, enzymatic activity
CD156b	TACE, ADAM17	TNF- α , APP, CD62L	+	+	+			+	+	+		+	+	Adhesion, enzymatic activity, receptor/coreceptor
CD156c	ADAM10, Kuz, Kubanian, Madm	pro-TNF- α , APP, Notch												Adhesion, proliferation
CD157	Ly-65, BP-3; BST-1		+	+				+	+			+		Pre-B-cell growth
CD159a	NKG2A, NKG2B	Qa-1/Qdm, HLA-E	+			+								Antigen recognition, signal transduction
CD159c	NKG2C, KLRC2	HLA-E, CD94	+			+								NK cell activation
CD160	BY55	HLA-C	+			+								Costimulation
CD161a	NKR-P1A, Ly55a		+			+								NK cell-mediated cytotoxicity, proliferation
CD161b	NKR-P1B, Ly55b, Ly55d		+			+								NK cell-mediated cytotoxicity, proliferation
CD161c	NKR-P1C, NK-1.1, Ly-55c, Ly-59		+			+								NK cell-mediated cytotoxicity, proliferation
CD162	P-Selectin glycoprotein ligand (PSGL-1), P-Selectin-IgG fusion protein	CD62P, CD62L	+				+	+	+	+				Adhesion

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CD163	Scavenger receptor cysteine-rich type 1 protein M130	CSNK2B						+						Clearance of hemoglobin/haptoglobin complexes
CD164	MGC-24, A115, A24	CXCR4					+	+					+	Adhesion, proliferation, and differentiation of hematopoietic stem and progenitor cells
CD166	ALCAM, BEN, DM-Grasp, MuSC, SC1	CD6	+	+			+	+					+	Activation/costimulation, adhesion
CD167a	Cak, Nep, Ddr1	Collagen			+								+	Adhesion
CD168	RHAMM, Hmnr	CD44	+					+						Adhesion
CD169	Sialoadhesin, Siglec-1, Sn	CD43, CD162, CD227, CD206	+	+				+						Adhesion
CD170	Siglec-5, Siglec f, Siglec9	Ganglioside			+			+						Adhesion
CD171	L1, L1-NCAM, NCAM-L1, L1cam	L1, CD56, CD24	+	+	+			+						Adhesion
CD172a	SIRPa, SHPS-1, BIT, P84 Antigen, SIRP, SHP-1, Ptpns1, AI835480	CD47, PTPN11, CD22, PTPN6			+		+	+	+					Signal transduction, adhesion
CD172b	SIRPb1, 9930027N05Rik, Sirpb1a	DAPI2			+			+	+					Cell activation, phagocytosis
CD176	TFHP, Tfn, hpx, AI266983, MGC102653, Trf	TFRC, Transferrin receptor												Iron transport
CD177	NB1, Pdp3, 1190003K14Rik		+			+		+	+			+		Possible role as a hematopoietic receptor molecule
CD178	CD95L, Fas Ligand, Tnfsf6; APT1LG1	CD95	+		+									Signal transduction, activation/costimulation, differentiation/development, apoptosis inducer
CD178.1	mFasL.1	CD95	+		+									Signal transduction, activation/costimulation, differentiation/development, apoptosis inducer
CD179a	VpreB, MGC151428, Vpreb1	IGLL1	+	+				+						Differentiation/development
CD179b	I5			+										Differentiation/development
CD180	RP105, Ly-78, F630107B15	LPS, LY86		+	+			+						Signal transduction
CD181	CXCR1, IL8Ra	MIP2, KC, (human IL-8)				+		+	+			+		Activation/costimulation, receptor/coreceptor
CD182	CXCR2, IL8Rb, CDw128, Cmkar2, Gpcr16	CXCL2, CXCL3, CXCL5, CXCL6, MIP2, KC, (human IL-8), GCP-2, LIX				+		+	+			+		Activation/costimulation, receptor/coreceptor
CD183	CXCR3, Cmkar3, gpr9	CXCL9, CXCL10, CXCL11, IP-10, CRG-2, 6Ckine, Mig, I-TAC	+	+		+		+						Receptor/coreceptor, chemotaxis

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CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD184	CXCR4, Cmkar4, Fusin/LESTR	CXCL12, SDF-1, PBSF, HIV-1	+	+				+	+					Receptor/coreceptor, chemotaxis
CD185	CXCR5, BLR1, Gpcr6	CXCL13, BLC	+	+	+									Cell migration
CD186	CXCR6, BONZO, STRL33, BB217514	CXCL16, HIV-1, SIV	+	+	+	+								T cell recruitment, HIV-1 coreceptor
CD191	CCR1, MIP-1aR, Cmkbr1	CCL3, 5, 7, 8, 14, 15, 23, MIP-1a, RANTES, MRP2, CCF18, MIP-1g	+	+	+		+	+						HIV receptor/coreceptor, chemotaxis
CD192	CCR2, Ckr2, Ccr2a, Ccr2b, Ckr2a, Ckr2b, mJe-r, Cmkbr2, Cc-ckr-2	CCL2, 7, 8, 12, 13, 16, HIV-1, MCP-5	+	+	+			+						HIV receptor/coreceptor, chemotaxis
CD193	CCR3, MIP-1aRL2, CKR3, Cmkbr3, CC-CKR3, Cmkbr1I2, MGC124265, MGC124266, Ccr3	CCL3, 5, 7, 8, 11, 14, 15, 24, 26, HIV-1	+		+			+	+					HIV receptor/coreceptor, chemotaxis
CD195	CCR5, Cmkbr5, AM4-7	MIP-1a, MIP-1b, RANTES, MCP-1, HIV-1	+		+	+		+						HIV receptor/coreceptor, chemotaxis
CD196	CCR6, KY411, Cmkbr6, CC-CKR-6	CCL20, CCL19, b-Defensin, MIP-3a, LARC, Exodus-1	+	+	+									HIV receptor/coreceptor, cell migration
CD197	CCR7, EBI-1, BLR2, CMKBR7	CCL21, CCL19, SLC	+	+	+									Adhesion
CDw198	CCR8, TER1, CC-CKR-8, CKRL1, CMKBR8, CMKBRL2, CY6, GPRCY6, MGC129966, MGC129973	CCL1, vCCL1	+	+	+			+						HIV receptor/coreceptor, cell migration
CDw199	CCR9, CMKBR10, GPR-9-6; A130091K22Rik	CCL25, TECK												HIV receptor/coreceptor, cell migration
CD200	OX-2, Mox2	CD200 receptor (OX-2R)	+	+	+							+		Immunoregulation
CD201	CCD41, EPCR, Protein C Receptor, Ccca, A1325044, Procr	Protein C					+					+		Receptor/coreceptor, hemostasis
CD202	Endothelial-specific receptor tyrosine kinase, Tie2, Tek, Hyk, CD202b, RP23-345A23.1, AA517024	Angiopoietin					+					+		Differentiation/development
CD203c	Ly-41, PC-1, E-NPP1, Pca, ttw, twy, M6S1, NPP1, Npps	Extracellular nucleotides		+					+					Cleaves phosphodiester and phosphosulfate bonds
CD204	Macrophage scavenger receptor, MSR1, Scvr, SR-AII, Scara1	LPS, collagen, LDL, lipoproteins						+				+		Adhesion
CD205	DEC-205, Ly-75			+	+			+						Antigen presentation



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CD206	Mannose receptor C type-1 (MRC1), MMR, CLEC13D	CD169 , CD45, Bacterial cell wall molecules, Viral glycoproteins, Yeast proteins, Chitin, Lyso-somal hydrolases, Plant glycoproteins, Neogly-coproteins, Lutropin, Chondroitin sulfate			+			+						Binds glycoproteins containing mannose, fucose, or N-acetylglucosamine, allowing endocytosis by macrophages. Promotes phagocytosis of viruses, bacteria, and fungi bearing mannose-containing glycoproteins.
CD207	Langerin, C-type lectin domain family 4 mem-ber K (CLEC4K)	Mannose-bearing glycoproteins, Glycolipids on microbial pathogens			+									Endocytic receptor that internalizes glycoprotein ligands into Birbeck granules. Required for Birbeck granule formation.
CD208	LAMP3, DC-LAMP, LAMP, TSC403, 1200002D17Rik				+									Transiently expressed in MHC class II-containing intracellular compartments within activated DC, suggesting a role in antigen processing.
CD209a	DC-SIGN, CDSIGN, CIRE, CD209 antigen-like protein A (CD209a), CLEC4L	CD50 (ICAM-3), CD102 (ICAM-2), Mannose-bearing glycoproteins on several pathogens including HIV gp120			+			+				+		Receptor for HIV-1 and other pathogens, promotes pathogen endocytosis and degradation. Interaction with CD102 enables DC migration into tissues. Interaction with CD50 promotes T cell proliferation.
CDw210a	IL-10RA , IL-10R1	IL-10, CDw210b	+	+	+	+		+						Signals through CDw210 are associated with immunosuppression and myeloid progenitor survival.
CDw210b	IL-10RB, IL-10R2	IL-22, IL-28, IL-29, CDw210a, IL-22RA1, IL-28R1, IL-29R1	+	+	+	+		+						Signals through CDw210 are associated with immunosuppression and myeloid progenitor survival.
CD212	IL-12β1, IL-12β, CD212b1	IL-12, IL-23, IL-12R 2, IL-23R	+	+	+	+		+						Dimerizes with IL-12R 2 to form high-affinity IL-12 receptor, promoting cell-mediated and Th1 immunity. Combines with IL-23R to form IL-23 receptor, promoting Th17 immunity.
CD213a1	IL-13Rα1, NR4	IL-13, IL-4, IL-4Rα		+	+			+	+			+		Associates with IL-4Rα to form the IL-13 receptor, regulating inflammation and supporting B cell activity. Also involved in the type II IL-4 receptor system.
CD213a2	IL-13Rα2, Interleukin-13-binding protein (IL13BP)	IL-13		+	+			+					+	Functions as a decoy receptor for IL-13, binding with high affinity but unable to induce a signal. Reduces the biological effects of IL-13.
CD217	Interleukin 17 receptor A (IL-17RA), IL-17R, CDw217	IL-17A, IL-17F, IL-17RC, IL-17RB	+	+	+	+	+	+	+			+	+	Associates with IL-17RC to form receptors for IL-17A, IL-17F, and IL-17A/F heterodimers, promoting inflammatory responses. Associates with IL-17RB to form the receptor for IL-17E (IL-25), suppressing Th17 responses and promot-ing Th2 responses.
CD218a	IL-18R1) IL-18RA, IL-18Rα, IL1 receptor-related protein (IL-1Rrp), IL-R5	IL-18, IL-18Rβ	+	+	+	+			+			+		Associates with IL-18Rβ to form high-affinity IL-18 receptor, promoting inflam-matory Th1 and Th2 responses.
CD218b	IL-18Rβ, IL-18 receptor accessory protein (IL-18RAP, IL-18RAcP), IL-1R accessory protein-like (IL-1RAcPL), IL-1R7, CDw218b	Associates with IL-18Rα to form high-affinity IL-18 receptor	+		+	+		+	+			+		Associates with IL-18Rβ to form high-affinity IL-18 receptor, promoting inflam-matory Th1 and Th2 responses.
CD220	Insulin receptor (INSR), IR	Insulin, IGF-2	+	+	+	+	+	+	+			+	+	Insulin receptor. Causes internalization and degradation of insulin and stimu-lates glucose uptake.

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CD Marker Handbook **Mouse** CD Markers



CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD221	Insulin-like growth factor 1 receptor (IGF1R), IGF-1R, type I IGF receptor (IGF-IR), JTK13	Insulin-like growth factor 1 (IGF-I), IGF-II, Insulin	+	+	+	+	+	+	+			+	+	Receptor for IGF-I and IGF-II. Mediates mitogenic and anti-apoptotic signals.
CD222	Cation-independent mannose-6-phosphate receptor (M6P-R, CIM6PR, CIMPR, CI-MPR), Insulin-like growth factor 2 receptor (IGF2R, IGFIR, IGF-IIR), MPR1, MPRI	IGF-II, TGF-β latency-associated peptide (LAP), Proliferin, Prorenin, Plasminogen, Leukemia inhibitory factor (LIF), Herpes simplex virus, Thyroglobulin, Retinoic acid, Cathepsin B, D, L, CD87	+	+	+	+	+	+	+			+	+	Internalizes various extracellular ligands and directs them to lysosomes. Associates with CD87 to activate latent TGF-β. Binding IGF-II stimulates insulin secretion. Mediates proliferin-induced angiogenesis.
CD223	Lymphocyte activation gene 3 (LAG3, LAG-3), FDC protein, Ly-66	MHC class II, TCR-CD3 complex	+	-	-	+								Binds MHC class II with high affinity and regulates homeostatic expansion of T cells through association with TCR-CD3 complex. Allows activated T cells to fully activate monocytes and dendritic cells.
CD224	γ-glutamyltransferase 1 (GGT1), γ-glutamyl transpeptidase 1 (GGTP), GGT, GTG, EC2.3.2.2	Glutathione, GSH, Leukotriene C4, GSNO	+	+			+	+	+			+		Protects cells from oxidative stress by participating in g-glutamyl cycle.
CD225	Interferon-induced transmembrane protein 1 (IFITM1), IFI17, Interferon-inducible protein 9-27 (9-27), Leu13, Frigilis2	CD21, CD19, TAPA-1, CD81	+	+		+	+					+		Expression is induced by IFN-α and IFN-γ. Component of the CD21/CD19/TAPA-1 complex, which is involved in B-cell activation.
CD226	DNAX accessory molecule 1 (DNAM-1), Platelet and T cell activation antigen 1 (PTA-1), T lineage-specific activation antigen 1 antigen (TLISA1)	CD112, CD155, LFA-1	+	+		+	+	+	-	+	-		-	Involved in platelet adhesion and activation, megakaryocyte adhesion and maturation, and adhesion of cytotoxic T and NK cells to target cells. Important for tumor immunosurveillance.
CD227	Mucin 1 (MUC1, MUC-1), DF3 antigen, H23 antigen, PUM, PEM, EMA, Tumor-associated mucin, Episialin	CD54, CD169, Selectins; Grb2, -Catenin, GSK-3	+	+	+		+	+					+	Involved in cell-cell interactions and adhesion. May confer cell surface protection by protruding from cell surface. Cytoplasmic tail is involved in many cell signaling pathways.
CD228	Melanotransferrin (MT, MTF1), p97 Melanoma antigen (p97, MAP97), Mfi2, gp95	Iron, Plasminogen, pro-UPA					+					+		Presumed role in iron transport based on high affinity binding or iron. Influences migration of endothelial and melanoma cells.
CD229	Lymphocyte antigen 9 (Ly9), T-Lymphocyte surface antigen Ly-9, SLAMF3, Lgp100, T100	CD229, SAP, Grb2	+	+		+	+	-	-	-	-			Homophilic binding may promote T cell/B cell adhesion. Promotes Th2 polarization and T-cell activation.
CD229.1	Lgp-100, Ly-9.1		+	+				+	+		+			Adhesion, lymphocyte differentiation
CD230	Prion Protein (PrP, PRNP), Major prion protein, prP27-30, prP33-35C, PrPc	CD230 (homophilic binding); N-CAM (CD56)	+	+	+	+	+	+	+			+	+	Implicated in copper binding, oxidative stress homeostasis, cell survival, and signal transduction. Abnormal isoform PrPsc causes neuropathology.
CD231	Tetraspanin 7 (TSPAN7), T-cell acute lymphoblastic leukemia-associated antigen 1 (TALLA-1), TM4SF2, Membrane component X chromosome surface marker-1 (MXS1), A15		T-ALL											Neuronal function. Marker for T-cell acute lymphoblastic leukemia (T-ALL).

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CD232	Plexin C1 (PLXNC1), Virus-encoded semaphorin protein receptor (VESPR, VESP-R)	Semaphorin 7A (CD108), poxvirus semaphorin A39R		+	+	+		+	+					May be involved in promoting DC adhesion and migration. Cytoskeletal rearrangement and secretion of IL-6 and IL-18.
CD233	Solute carrier family 4 anion exchanger member 1 (SLC4A1), Band 3, Anion exchanger 1 (AE1), Diego blood group, EPB3	Glycophorin A, Ankyrin, Hemoglobin, Multiple glycolytic enzymes	-	-	-	-		-	-		+			Mediates anion exchange and bicarbonate export in erythrocytes and kidney cells. Links red cell cytoskeleton to membrane.
CD234	Duffy antigen/chemokine receptor (DARC), Dfy, FY, Fy-glycoprotein, Glycoprotein D	CXCL1 (MGSA), CXCL8 (IL-8), CCL2 (MCP-1), CCL5 (RANTES), Malarial parasites Plasmodium knowlesi and P. vivax	-	-	-	-		-	-		+	+	+	Binds and internalizes several chemokines, modulating levels in blood by acting as both a sink and a reservoir. Receptor allowing malarial parasite entry into erythrocytes.
CD235a	Glycophorin A (GYPA), Sialoglycoprotein α, Sialoglycoprotein A, MNS blood group antigen, PAS-2	CD170, Influenza virus, Plasmodium falciparum erythrocyte binding antigen EBA-175	-	-	-	-	+	-	-		+			Major sialoglycoprotein of the erythrocyte membrane. Contains the M/N blood group antigens. Prevents agglutination. Receptor allowing parasite entry into erythrocytes.
CD236R	Glycophorin C (GYPC), Gerbich blood group antigen	Plasmodium falciparum erythrocyte binding protein 2 (PfEBP-2), p55, 4.1					+				+			Interacts with p55 and band 4.1 to maintain mechanical stability and deformability in erythrocytes. Receptor allowing parasite entry into erythrocytes.
CD238	Kell blood group glycoprotein (Kel), endothelin-3-converting enzyme (ECE3)	Big Endothelin-3 (intermediate precursor of endothelin-3)					+				+			Zinc endopeptidase that cleaves endothelin-3 to its active form.
CD239	Basal cell adhesion molecule (BCAM, B-CAM), Lutheran blood group glycoprotein, Lu	α5 chain of Laminin 10/11									+	+	+	Potentially involved in epithelial cell cancer and in vaso-occlusion by red blood cells in sickle cell disease.
CD240	Rh blood group system, CD240D (Rh30D, D blood antigen)	CD241, CD242, CD47, CD235b					+				+			May help maintain erythrocyte mechanical properties by associating with cytoskeletal ankyrin-R.
CD241	RHAG, Rh50, Rh-associated glycoprotein	ANK1									+			Metabolism
CD242	ICAM-4, LW blood group	CD11a, b, CD18, CD49b, d, e												Adhesion
CD243	P-gp; Pgy1, Mdr1, Abcb1	Cancer drugs, Xenobiotics												Involved in multidrug resistance as well as antigen presentation
CD244	2B4, C9.1, Ly90, NAIL, Nmrk, NKR2B4, SLAMF4	CD48			+	+								Signal transduction
CD246	Alk													Plays an important role in the development of the brain and exerts its effects on specific neurons in the nervous system
CD247	CD3ζ, CD3 ζ chain	Janus kinase 3, Protein unc-119 homolog	+											Plays an important role in coupling antigen recognition to several intracellular signal-transduction pathways.
CD248	TEM1, Endosialin													Angiogenesis
CD249	APA, Bp-1/6C3, Ly-51, Ly51			+	+		+					+	+	May be involved in B cell proliferation

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CD252	OX-40 Ligand, gp34, TNFSF4	OX-40, CD134		+	+									Costimulation
CD253	TRAIL, APO-2L, TL2, Ly81, Trail, APO-2L, Tnfsf10	TNFRSF10B						+						Apoptosis
CD254	ODF, OPG, OPGL, RANKL, Trance, Tnfsf11	RANK, OPG	+											Bone development; T cell, B cell, and dendritic cell interactions
CD256	APRIL, TALL2, TRDL1, Tnfsf13	TACI, BCMA						+						B cell development
CD257	BlyS, BAFF, TALL-1, TNFSF13B, TNFSF20	TACI, BAMA, BAFF-R		+										A potent B cell activator which also play an important role in proliferation and differentiation of B cells
CD258	LTg, HVEM, LIGHT, TR2, HVEM-L, Tnfsf14	HVEM, LTbR, Tnsrsf14												A costimulatory factor for the activation of lymphoid cells and acts as a deterrent to infection by herpesvirus
CD261	APO2, CD261, DR4, MGC9365, TRAILR-1, TRAILR1 Tnfsf10a	DAP3												Transduces cell death signals and induces cell apoptosis
CD262	TRAIL-R2, Apo2, DR5, TRICK2, KILLER	CD253												Apoptosis inducer
CD265	RANK, TRANCE-R, ODFR, Tnfsf11a	RANK ligand, OPGL, CD254			+									Osteoclastogenesis and T cell/dendritic cell interactions
CD266	TWEAK Receptor, Fn14, Tnfsf12a	TWEAK (CD255)												Cell death and proliferation, angiogenesis and inflammation
CD267	TACI, Tnfsf13b	BAFF, APRIL		+										Controls T cell-independent B cell antibody responses, isotype switching, and B cell homeostasis
CD268	BAFFR, Tnfsf13c	BAFF		+										The principal receptor required for BAFF-mediated mature B-cell survival
CD269	BCMA, BCM, Tnfsf17	TNFSF13B/TALL-1/BAFF		+										B cell development and autoimmune responses
CD271	NGFR, Bex3, Ngfrap1p75, LNGFR, p75NTR, p75NGFR, Tnfsf16	NGF, BDNF, NT-3		+				+						Apoptosis, receptor for NGF
CD272	BTLA, B- and T Lymphocytes, MGC124217, MGC124218, A630002H24	HVEM	+	+	+	+		+						T and NKT cell inhibition
CD273	B7DC, PD-L2, Btdc, PD-L2, MGC124039, MGC124040, F730015O22Rik, Pdcd1lg2	PD1 (CD279)	+		+			+						Costimulation, inhibition
CD274	B7-H1, PD-L1, Pdcd1I1, Pdcd1lg1, A530045L-16Rik	CD279	+	+	+	+		+					+	Costimulation, inhibition

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CD275	B7-H2, GL50, B7RP-1, B7h, GI50, LICOS, B7RP-1, GL50-B, ICOS-L, Icoslg, Ly115l, AU044799, BG071784, KIAA0653, mKIAA0653, Icosl	CD278		+	+			+						Costimulation
CD276	B7h3, B7RP-2, AU016588, 6030411F23Rik	CD26, CD152, TLT-2	+	+	+	+		+					+	Possibly costimulation or inhibition
CD278	ICOS, Ly115, H4, AILIM	CD275	+											T cell development
CD279	PD-1, Programmed death-1, Pdc1, Ly101	CD274, CD273	+	+										T cell tolerance
CD280	ENDO180, MRC2, UPARAP, MGC141530, mKIAA0709	Collagen, uPAR						+				+		Cellular matrix degradation
CD281	TLR1	Lipoproteins, TLR2			+			+						TLR2 regulator
CD282	TLR2, Ly105	Lipoproteins, Glycans, TLR1, TLR6	+		+			+	+					Immune response to gram-positive bacteria and mycobacteria
CD283	TLR3, AI957183	dsRNA			+				+				+	Immune response to ds RNA from viral pathogens
CD284	TLR4, Ly87, Ran/M1, Rasl2-8	Lipopolysaccharides, MD2, CD14												Immune response to gram-negative bacteria
CD286	TLR6	MyD88, TRAF6						+	+			+		Immune response to gram-positive bacteria and fungi
CD288	TLR8	MyD88, UNC93B1, poly(A)/T rich DNA		+	+			+						Regulation of TLR7 and prevention of spontaneous autoimmunity
CD289	TLR9	CpG DNA		+	+			+						Immune response to bacteria or virus
CD292	BMPR1A, ALK3, SKR5, ALK3, Bmpr, AU045487, 1110037122Rik	BMP2, 4, 7, GDF-5												Embryogenesis, kinase, regulates hair morphogenesis
CDw293	BMPR1B, ALK6, SKR6, Acvrlk6, CFK-43a, AI385617, AV355320	BMP2, 4, 7, GDF-5												Regulates cartilage formation, kinase
CD294	CRTH2, GPR44, Grp45, MGC130436	PGD2	+						+					Th2 cell inducer, regulates immune and inflammatory response
CD295	LeptinR, LEPR, db, Obr, obl, Modb1, LEPROT, OB-RGRP, MGC105189, obese-like	Leptin					+							Anti-apoptosis, regulates fat metabolism, proliferation
CD296	ART1, RT6, ART2, ADPRT, Yac-1	PDGFb, Integrins, Defensin												Cell metabolism regulator
CD297	ART4, Dombrock blood group, DO, DOK1, 4432404K01Rik		+											Cell metabolism regulator
CD298	Na ⁺ /K ⁺ -ATPase b3 subunit, AA409958, AI664000, AW212096, Atp1b3		+	+	+			+	+		+	+		Ion transport

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CD301a	Clec10a, Mgl, Mgl1				+			+						Binds and internalizes molecules with terminal nonsialylated GalNAc carbohydrates
CD302	Clec13A, DCL-1				+			+						Cell adhesion and migration, apoptosis and phagocytosis
CD304	BDCA4, Neuropilin 1, NP-1	VEGF165, SEMA3A	+		+							+		Angiogenesis, dendritic cell and T cell interactions
CD305	LAIR1	Ep-CAM, CD326	+	+	+	+		+						Inhibits cellular activation and inflammation
CD307	Fcrl5 Fc receptor-like 5, Fcrl3, mBXMH2, Fcrl5		+											May inhibit BCR mediated signaling
CD309	VEGFR2, Flk-1, KDR	VEGF-A, C, D, E					+					+		Angiogenesis
CD314	NKG2D, KLRK1	MICA, MICB, H60, ULBPs	+		+	+								NK cell activation
CD315	CD9P1	CD9, CD81		+				+					+	May play a role in cell migration
CD316	EWI2, PGRL, KASP	CD9, CD81	+	+		+						+	+	Cell migration
CD317	BST2		+											Possibly plays a role in pre-B cell growth
CD318	CDCP1	CDH2/N-Cadherin, CDH3/P-Cadherin, SDC1/Syndecan-1, SDC4/Syndecan-4, ST14/MT-SP1					+							May modulated cell adhesion
CD319	CRACC, SLAMF7	CS1	+	+	+	+								NK cell cytotoxicity
CD320	Transcobalamin receptor				+			+						Supports B cell proliferation and plasma cell differentiation
CD321	JAM1, F11 receptor, KAR	PAR3, LFA-1, Reovirus	+	+		+				+	+		+	Platelet aggregation
CD322	JAM2, VE-JAM	PAR3, JAM3	+					+						Lymphocyte migration
CD324	E-Cadherin, Uvomorulin	CD103, Catenins, PS1, Internalin								+			+	Adhesion, tumor suppression, cell growth and differentiation
CD325	N-Cadherin, Cadherin-2	Catenins, FGFR, PS1					+							Cell adhesion
CD326	Ep-CAM, Ly-74	LAIR-1, LAIR-2	+		+								+	Cell adhesion
CD329	siglec9	GD1a, LSTc	+	+	+	+		+	+					Regulator of immune response
CD331	FGFR1, FLT2, N-SAM	aFGF, bFGF, K-FGF, SHB, KLB, GRB10											+	Limb induction, carnioskeletal
CD332	FGFR2, KGFR, KSAM	aFGF, bFGF, K-FGF, FGF-6											+	Limb induction, carnioskeletal
CD333	FGFR3, ACH, CEK2	aFGF											+	Bone development and maintenance

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+ Positive* – Negative

*Positive refers to any expression of this CD marker either in all cells, a subset, or upon activation.

CD301a – CD333



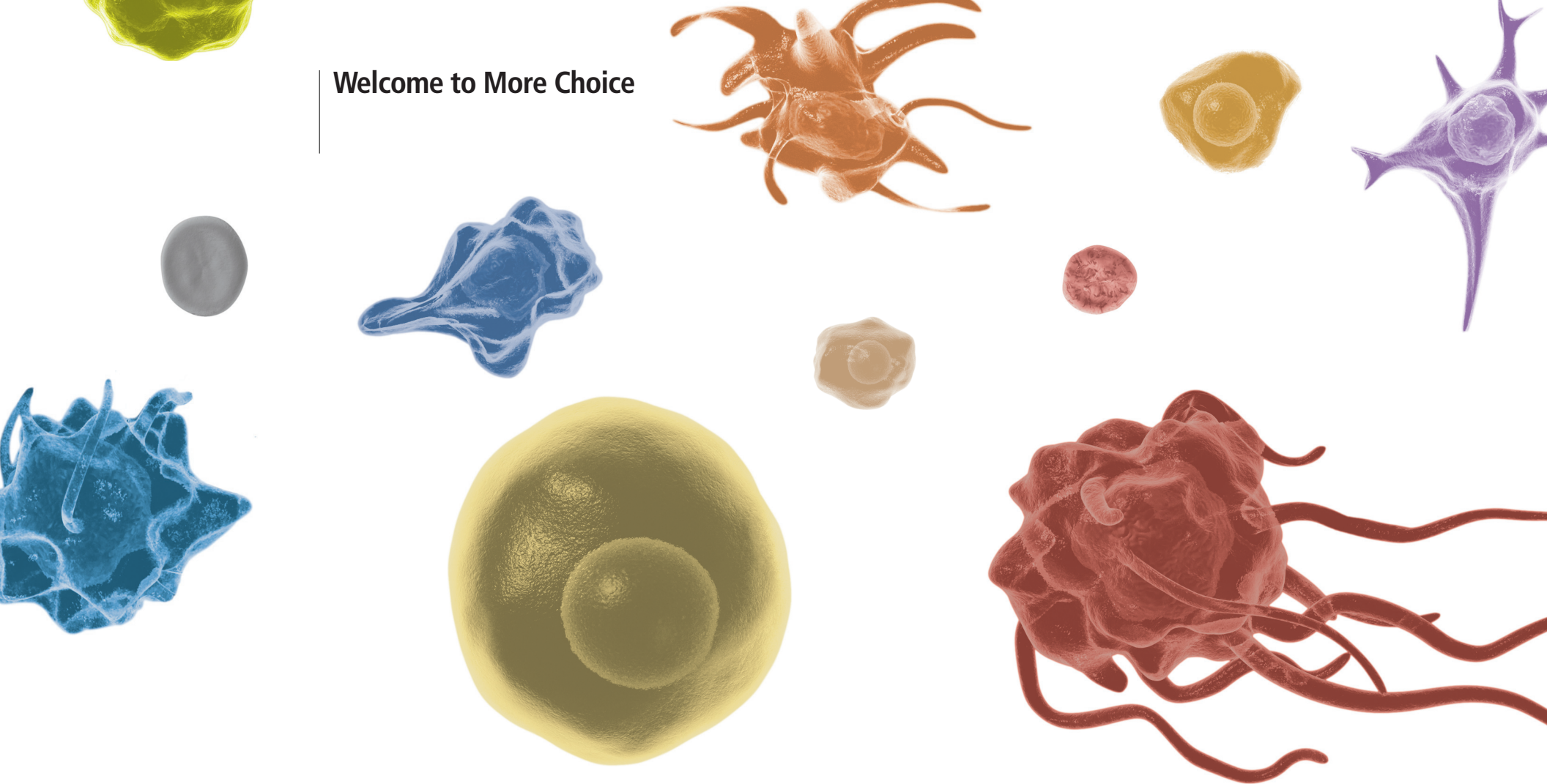
CD	Alternative Name	Ligands & Associated Molecules	T Cell	B Cell	Dendritic Cell	NK Cell	Stem Cell/Precursor	Macrophage/Monocyte	Granulocyte	Platelet	Erythrocyte	Endothelial Cell	Epithelial Cell	Function
CD334	FGFR4, TKF	aFGF, FGF20	+	+				+					+	Cancer, muscle development
CD335	NKp46, Ly-94	Viral hemagglutinins, Heparan sulfate proteoglycans				+								NK cell activation
CD338	ABCG2, Mxr, ABC15, BCRP1	Xenobiotics					+				+			Xenobiotic transporter, may play a role in multi-drug resistance
CD339	Jagged-1, Serrate1	Notch 1, 2, 3											+	Hematopoiesis, cardiovascular development
CD340	c-erbB2, HER2, Neu	PRKCABP, PLXNB1, EGFR, PIK3C2A, MUC1											+	Enhancing kinase-mediated activation of EGFR downstream signaling pathways.
CD344	FZD4, Frizzled homolog 4	MAGI3, NDP					+					+	+	Receptor for Wnt proteins
CD349	FZD9, Frizzled homolog 9						+							Receptor for Wnt proteins
CD350	FZD10, Frizzled homolog 10						+						+	Receptor for Wnt proteins
CD351	FCAMR, Fc receptor, IgA, IgM, high affinity			+	+									Potentially involved in suppression of humoral responses against T-independent antigens
CD352	Ly-108, SLAMF6	PTN6, PTN11, SH2D1A/SAP	+	+										Expansion and differentiation of NKT lineage
CD353	SLAMF8, BLAME			+	+			+						May be important for B-cell lineage commitment and BCR signaling
CD354	TREM1	DAP12, TLR						+	+					Synergizes with effects of TLR ligands to amplify the synthesis of inflammatory cytokines
CD355	CRTAM	CADM1	+			+							+	Proposed to regulate retention of CD8 ⁺ T cells within the lymph node
CD357	TNFRSF18, Tumor necrosis factor receptor superfamily, member 18, GITR	GITRL	+	+	+			+						Important for regulatory T cell function
CD358	TNFRSF21, Tumor necrosis factor receptor superfamily, member 21, DR6	TRADD, N-APP	+	+				+						Regulation of T-cell mediated immune response
CD360	IL21R	Common γ -chain, IL-21, Jak-1, Jak-3, STAT1, STAT3, STAT5	+	+										NK cell expansion
CD361	EVI2B (ectopic viral integration site 2B)		+	+	+	+		+	+					
CD362	Syndecan-2, Hspg1, Synd2		+	+				+	+					Cell adhesion
CD363	S1PR1, Sphingosine-1-phosphate receptor 1, EDG-1	Sphingosine-1-phosphate	+	+								+	+	Regulation of cell migration and possible endothelial cell differentiation

+ Positive* – Negative

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Regional Offices bdbiosciences.com/contact

Asia Pacific Singapore

Tel 65.6861.0633
Fax 65.6860.1590

China

Tel 86.21.3210.4610
Fax 86.21.5292.5191

India

Tel 0091.124.2383566
Fax 0091.124.2383224/25/26
bd_india@bd.com

Australia/New Zealand

Australia

Toll Free: 1800 656 100
Tel 61.2.8875.7000
Fax 61.2.8875.7200
bd_anz@bd.com

New Zealand

Toll Free: 0800 572.468
Tel 64.9.574.2468
Fax 64.9.574.2469
bd_anz@bd.com

Europe

BD Biosciences

Tel 32.2.400.98.95
Fax 32.2.401.70.94
help.biosciences@europe.bd.com

Canada

BD Biosciences

Tel 800.268.5430
Fax 888.229.9918
canada@bd.com

Japan

Nippon Becton Dickinson

Toll Free 0120.8555.90
Tel 81.24.593.5405
Fax 81.24.593.5761

United States

BD Biosciences

Toll Free 877.232.8995
Fax 800.325.9637
answers@bd.com

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BD Biosciences
2350 Qume Drive
San Jose, CA 95131
bdbiosciences.com

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