

Table S1 Antibodies Information

Name	Vendor	Catalog
Oct-4 Antibody	Cell Signaling	2750
Sox2 (D6D9) XP® Rabbit mAb	Cell Signaling	3579
Nanog (D73G4) XP® Rabbit mAb	Cell Signaling	4903
FITC Mouse Anti-Human CD2	BD Biosciences	555326
FITC Mouse Anti-Human CD4	BD Biosciences	550628
FITC Mouse IgG1, κ Isotype Control	BD Biosciences	555748
CD133/1 Antibody, anti-human, APC	Miltenyi Biotec	130-113-668
Isotype control antibodies, mouse IgG1, APC	Miltenyi Biotec	130-113-196
Octamer-binding transcription factor-4 (Oct4) Antibody	Cell Signaling	2750
SRY-related high-mobility-group (HMG)-box protein-2 (Sox2) (D6D9) XP® Rabbit mAb	Cell Signaling	3579
Nanog (D73G4) XP® Rabbit mAb	Cell Signaling	4903
Signal transducer and activator of transcription protein 5 (Stat5) (D3N2B) Rabbit mAb	Cell Signaling	25656
Phospho-Stat5 (Tyr694) (D47E7) XP® Rabbit mAb	Cell Signaling	4322
Retinoic acid receptor-related orphan receptor gamma t (ROR γ t) Monoclonal Antibody	Invitrogen	14-6988-82
β -Actin	Cell Signaling	4970
Rabbit Anti-CD133 antibody	Abcam	ab19898
Mouse Anti-CD2 antibody	Abcam	ab193344
Mouse Anti-CD4 antibody	Abcam	ab25804
Alexa Fluor 488 Goat anti-Mouse IgG antibody	Invitrogen	A-21121
Alexa Fluor 594 Goat anti-Rabbit IgG antibody	Invitrogen	R37117

Table S2 Primers used for qRT-PCR

Gene	Forward primer (5' to 3')	Reverse primer (5' to 3')
ACTB	TGACCCAGATCATGTTTGAG	CGTACAGGGATAGCACAG
CD2	AGCCTGAGTGCAAAATTCAAGT	AAAACGAGCAGTGCCACAAAG
CD4	TGCCTCAGTATGCTGGCTCT	GAGACCTTTGCCTCCTTGTTT
CD8A	TCCTCCTATACCTCTCCCAAAAC	GGAAGACCGGCACGAAGTG
CD8B	TCAATCTCACAAGCGTGAAGC	GGTAACCGGCACACTCTCTT
ROR γ t	GTGGGGACAAGTCGTCTGG	AGTGCTGGCATCGGTTTCG
IRF4	AAAGGAAAGTTCCGAGAAGG	CGAAGGGTAAGGCGTTGT
IL-17A	AGATTACTACAACCGATCCACCT	GGGGACAGAGTTCATGTGGTA
IL-23	CTCAGGGACAACAGTCAGTTC	ACAGGGCTATCAGGGAGCA
CD3G	GGAATCTGGGAAGTAATGCCAA	TCAATGCAGTCTGACACATTCT
CD3D	ACTGGCTACCCTTCTCTCG	CCGTTCCCTCTACCCATGTGA
CD3E	CCTCTTATCAGTTGGCGTTTGG	TTCAGTGACAGGTGATCCTCA
CD3Z	GGCACAGTTGCCGATTACAGA	CTGCTGAACTTCACTCTCAGG
CD56	GGCATTTACAAGTGTGTGGTTAC	TTGGCGCATTCTTGAACATGA
CD19	CCAGAACCAGTACGGGAACG	CTCGGGTTTCCATAAGACGGG
CD14	GACCTAAAGATAACCGGCACC	GCAATGCTCAGTACCTTGAGG
CD31	CCAAGGTGGGATCGTGAGG	TCGGAAGGATAAAACGCGGTC
CD133 (homo)	AGTCGGAAACTGGCAGATAGC	GGTAGTGTTGACTGGGCCAAT
CD133 (mouse)	ACTGGGGCTGTGTGGAAAG	GCATTGAAGGTATCTTGGGTCTC
Nanog (homo)	TTTGTGGGCCTGAAGAAAAC	AGGGCTGTCTGAATAAGCAG
Nanog (mouse)	CACAGTTTGCCTAGTTCTGAGG	GCAAGAATAGTTCTCGGGATGAA
Sox2 (homo)	GCCGAGTGGAAACTTTTGTCC	GGCAGCGTGTACTTATCCTTCT
Sox2 (mouse)	GCGGAGTGGAAACTTTTGTCC	GGGAAGCGTGTACTTATCCTTCT
Oct4 (homo)	CTTGAATCCCGAATGAAAGGG	GTGTATATCCAGGGTGATCCTC
Oct4 (mouse)	AGAGGATCACCTTGGGGTACA	CGAAGCGACAGATGGTGGTC
IL-2R	CAGCGGTGAATGGCACTTC	GGCATGGACTTGGCAGGAA
IL-3R	ACGAAGGAAGATCCAAACCCA	GCATAGAATAGTCGGCGTCTTTA
IL-6R	CCCCTCAGCAATGTTGTTTGT	CTCCGGGACTGTAACTGG
TGF β R	GTAGCTCTGATGAGTGCAATGAC	CAGATATGGCAACTCCCAGTG
STAT5	GCAGAGTCCGTGACAGAGG	CCACAGGTAGGGACAGAGTCT

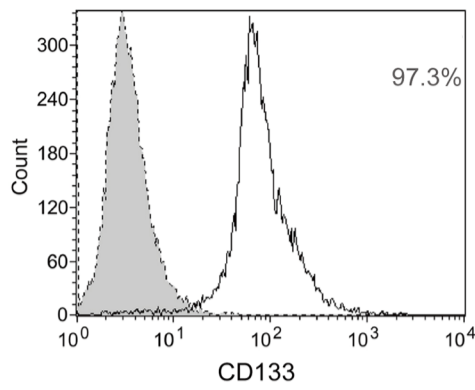


Figure S1 Representative detection of CD133⁺ cell purity after tumor tissues were sorted by FACS. FACS, fluorescence-activated cell sorting.

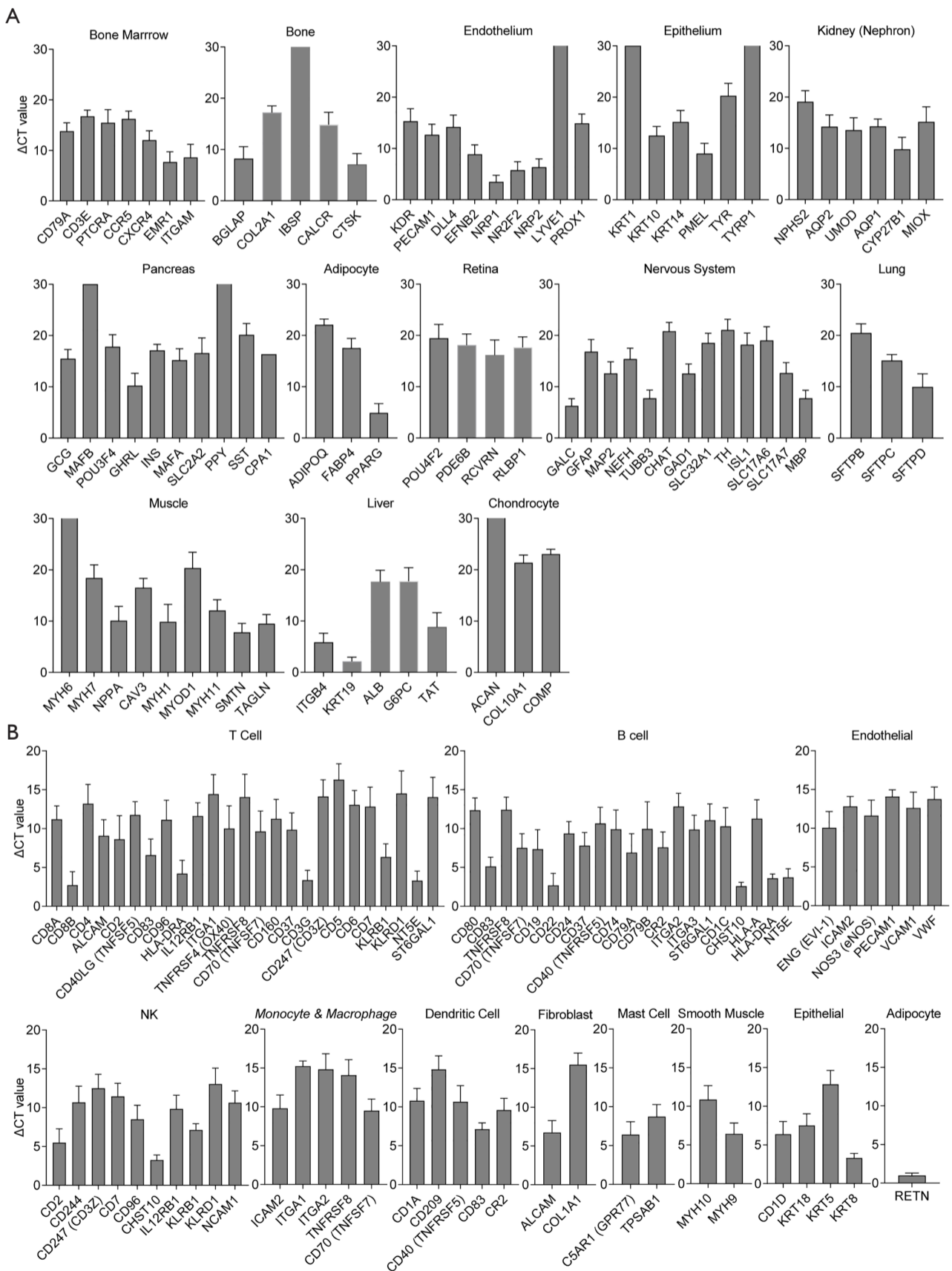


Figure S2 Gene expression profiles of the CD133⁺ cells from NSCLC tissue. (A) Gene expression profile of CD133⁺ CSCs by Human Terminal Differentiation Markers RT² Profiler PCR Array. (B) Gene expression profile of CD133⁺ cells by Human Cell Surface Markers RT² Profiler PCR Array. Data are shown as mean \pm SD. NSCLC, non-small cell lung carcinoma; CSCs, cancer stem cells; PCR, polymerase chain reaction.

Table S3 Terminal Differentiation Markers RT² Profiler PCR Array

Tissues type	Gene list
Adipocytes	ADIPOQ(ACRP30), FABP4, PPARG
Chondrocytes	ACAN, COL10A1, COMP
Endothelium	
General endothelium	CDH5, KDR (VEGFR3), PECAM1
Arterial endothelium	DLL4, EFNB2, NRP1
Lymphatic endothelium	LYVE1, PROX1
Venous endothelium	NR2F2, NRP2
Epithelium	
Keratinocyte epithelium	KRT1, KRT10, KRT14
Melanocyte epithelium	PMEL, TYR, TYRP1
Bone cells	
Osteoblasts	BGLAP, COL2A1, IBSP
Osteoclasts	CALCR, CTSK
Liver cells	
Cholangiocytes	ITGB4, KRT19
Hepatocytes	ALB, G6PC, TAT
Bone marrow cells	
Early B-Cell development	CD79A
Early T-Cell development	CD3E, PTCRA
Macrophages	ADGRE1 (EMR1), CCR5, CXCR4
Monocytes	ITGAM
Nervous system cells	
Glial cells	GALC, GFAP
Mature neurons	MAP2, NEFH, TUBB3
Cholinergic neurons	CHAT
Dopaminergic neurons	TH
GABA neurons	GAD1, SLC32A1
Glutamatergic neurons	SLC17A6, SLC17A7
Motor neurons	ISL1
Oligodendrocytes	MBP
Retinal cells	
Ganglion cells	POU4F2
Muller cells	RLBP1
Photoreceptor cells	PDE6B, RCVRN
Nephrons	
Podocytes	NPHS2
Proximal tubule cells	AQP1, CYP27B1, MIOX
Collecting duct cells	AQP2
Distal tubule cells	UMOD
Lung cells	SFTPB, SFTPC, SFTPD
Muscle cells	
Cardiomyocytes	MYH6, MYH7, NPPA
Skeletal muscle Cells	CAV3, MYH1, MYOD1
Smooth muscle Cells	MYH11, SMTN, TAGLN
Pancreatic cells	
Alpha cells	GCG, MAFB, POU3F4
Beta cells	INS, MAFA, SLC2A2
Delta cells	SST
Epsilon cells	GHRL (Ghrelin, Obestatin)
Pancreatic polypeptide-producing (PP) cells	PPY
Exocrine cells	CPA1

Gene Description

GenBank	Symbol	Description
NM_001135	ACAN	Aggrecan
NM_004797	ADIPOQ	Adiponectin, C1Q and collagen domain containing
NM_000477	ALB	Albumin
NM_198098	AQP1	Aquaporin 1 (Colton blood group)
NM_000486	AQP2	Aquaporin 2 (collecting duct)
NM_199173	BGLAP	Bone gamma-carboxyglutamate (gla) protein
NM_001742	CALCR	Calcitonin receptor
NM_001234	CAV3	Caveolin 3
NM_000579	CCR5	Chemokine (C-C motif) receptor 5
NM_000733	CD3E	CD3e molecule, epsilon (CD3-TCR complex)
NM_001783	CD79A	CD79a molecule, immunoglobulin-associated alpha
NM_001795	CDH5	Cadherin 5, type 2 (vascular endothelium)
NM_020985	CHAT	Choline O-acetyltransferase
NM_000493	COL10A1	Collagen, type X, alpha 1
NM_001844	COL2A1	Collagen, type II, alpha 1
NM_000095	COMP	Cartilage oligomeric matrix protein
NM_001868	CPA1	Carboxypeptidase A1 (pancreatic)
NM_000396	CTSK	Cathepsin K
NM_003467	CXCR4	Chemokine (C-X-C motif) receptor 4
NM_000785	CYP27B1	Cytochrome P450, family 27, subfamily B, polypeptide 1
NM_019074	DLL4	Delta-like 4 (Drosophila)
NM_004093	EFNB2	Ephrin-B2
NM_001974	EMR1	Egf-like module containing, mucin-like, hormone receptor-like 1
NM_001442	FABP4	Fatty acid-binding protein 4, adipocyte
NM_000151	G6PC	Glucose-6-phosphatase, catalytic subunit
NM_000817	GAD1	Glutamate decarboxylase 1 (brain, 67kDa)
NM_000153	GALC	Galactosylceramidase
NM_002054	GCG	Glucagon
NM_002055	GFAP	Glial fibrillary acidic protein
NM_016362	GHRL	Ghrelin/obestatin prepropeptide
NM_004967	IBSP	Integrin-binding sialoprotein
NM_000207	INS	Insulin
NM_002202	ISL1	ISL LIM homeobox 1
NM_000632	ITGAM	Integrin, alpha M (complement component 3 receptor 3 subunit)
NM_000213	ITGB4	Integrin, beta 4
NM_002253	KDR	Kinase insert domain receptor (a type III receptor tyrosine kinase)
NM_006121	KRT1	Keratin 1
NM_000421	KRT10	Keratin 10
NM_000526	KRT14	Keratin 14
NM_002276	KRT19	Keratin 19
NM_006691	LYVE1	Lymphatic vessel endothelial hyaluronan receptor 1
NM_201589	MAFA	V-maf musculoaponeurotic fibrosarcoma oncogene homolog A (avian)
NM_005461	MAFB	V-maf musculoaponeurotic fibrosarcoma oncogene homolog B (avian)
NM_002374	MAP2	Microtubule-associated protein 2
NM_002385	MBP	Myelin basic protein
NM_017584	MIOX	Myo-inositol oxygenase
NM_005963	MYH1	Myosin, heavy chain 1, skeletal muscle, adult
NM_022844	MYH11	Myosin, heavy chain 11, smooth muscle
NM_002471	MYH6	Myosin, heavy chain 6, cardiac muscle, alpha
NM_000257	MYH7	Myosin, heavy chain 7, cardiac muscle, beta
NM_002478	MYOD1	Myogenic differentiation 1
NM_021076	NEFH	Neurofilament, heavy polypeptide
NM_014625	NPHS2	Nephrosis 2, idiopathic, steroid-resistant (podocin)
NM_006172	NPPA	Natriuretic peptide A
NM_021005	NR2F2	Nuclear receptor subfamily 2, group F, member 2
NM_003873	NRP1	Neuropilin 1
NM_003872	NRP2	Neuropilin 2
NM_000283	PDE6B	Phosphodiesterase 6B, cGMP-specific, rod, beta
NM_000442	PECAM1	Platelet/endothelial cell adhesion molecule
NM_006928	PMEL	Premelanosome protein
NM_000307	POU3F4	POU class 3 homeobox 4
NM_004575	POU4F2	POU class 4 homeobox 2
NM_015869	PPARG	Peroxisome proliferator-activated receptor gamma
NM_002722	PPY	Pancreatic polypeptide
NM_002763	PROX1	Prospero homeobox 1
NM_138296	PTCRA	Pre T-cell antigen receptor alpha
NM_002903	RCVRN	Recoverin
NM_000326	RLBP1	Retinaldehyde-binding protein 1
NM_000542	SFTPB	Surfactant protein B
NM_003018	SFTPC	Surfactant protein C
NM_003019	SFTPD	Surfactant protein D
NM_020346	SLC17A6	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6
NM_020309	SLC17A7	Solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 7
NM_000340	SLC2A2	Solute carrier family 2 (facilitated glucose transporter), member 2
NM_080552	SLC32A1	Solute carrier family 32 (GABA vesicular transporter), member 1
NM_006932	SMTN	Smoothelin
NM_001048	SST	Somatostatin
NM_003186	TAGLN	Transgelin
NM_000353	TAT	Tyrosine aminotransferase
NM_000360	TH	Tyrosine hydroxylase
NM_006086	TUBB3	Tubulin, beta 3
NM_000372	TYR	Tyrosinase (oculocutaneous albinism IA)
NM_000550	TYRP1	Tyrosinase-related protein 1
NM_003361	UMOD	Uromodulin
NM_001101	ACTB	Actin, beta
NM_004048	B2M	Beta-2-microglobulin
NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1
NM_001002	RPLP0	Ribosomal protein, large, P0

Table S4 Cell Surface Markers RT² Profiler PCR Array

Cells type	Surface markers gene list
B-Cell	
Activated B activated B cells	CD28, CD38, CD69, CD70, CD80, CD83, CD86, DPP4, FCER2, IL2RA (CD25), TNFRSF8
Mature B-cells	CD19, CD22, CD24, CD37, CD40 (TNFRSF5), CD72, CD74, CD79A, CD79B, CR2, IL1R2, ITGA2, ITGA3, MS4A1, ST6GAL1
Other B-cell	CD1C, CHST10, HLA-A, HLA-DRA, NT5E
T-cell	
Cytotoxic T-cells	CD8A, CD8B
Helper T-cells	CD4
Activated T-cells	ALCAM, CD2, CD38, CD40LG, CD69, CD70, CD83, CD96, CTLA4, DPP4, HLA-DRA, IL12RB1, IL2RA (CD25), ITGA1, TNFRSF4 (OX40), TNFRSF8
Other T-cell	CD160, CD247, CD28, CD37, CD3D, CD3G, CD5, CD6, CD7, FAS, KLRB1, KLRD1, NT5E, ST6GAL1
Natural killer (NK) cell	CD2, CD244, CD247, CD7, CD96, CHST10, IL12RB1, KLRB1, KLRC1, KLRD1, NCAM1
Monocyte & macrophage cell	
Activated macrophages	CD69, ENG (EVI-1), FCER2, IL2RA (CD25)
Other monocyte & macrophage cell	C5AR1 (GPR77), CD163, CD40 (TNFRSF5), CD63, CD70, CD74, CD86, CHST10, CSF1R, DPP4, FCGR1A, HLA-DRA, ICAM2, IL1R2, ITGA1, ITGA2, S100A8, TNFRSF8
Endothelial cell	ENG (EVI-1), ICAM2, NOS3 (eNOS), PECAM1, SELP, TEK (TIE-2, TIE2), VCAM1, VWF
Smooth muscle cell	MYH10, MYH9, MYOCD
Dendritic cell	CD1A, CD209, CD40 (TNFRSF5), CD83, CD86, CR2, FCER2
Mast cell	C5AR1 (GPR77), FCER1A, FCER2, TPSAB1
Fibroblast (stromal cell)	ALCAM, COL1A1, COL1A2
Epithelial cell	CD1D, EPCAM, KRT18, KRT5, KRT8
Adipocyte	RETN

Gene Description

GenBank	Symbol	Description
NM_001627	ALCAM	Activated leukocyte cell adhesion molecule
NM_001736	C5AR1	Complement component 5a receptor 1
NM_007053	CD160	CD160 molecule
NM_004244	CD163	CD163 molecule
NM_001770	CD19	CD19 molecule
NM_001763	CD1A	CD1a molecule
NM_001765	CD1C	CD1c molecule
NM_001766	CD1D	CD1d molecule
NM_001767	CD2	CD2 molecule
NM_021155	CD209	CD209 molecule
NM_001771	CD22	CD22 molecule
NM_013230	CD24	CD24 molecule
NM_016382	CD244	CD244 molecule, natural killer cell receptor 2B4
NM_000734	CD247	CD247 molecule
NM_006139	CD28	CD28 molecule
NM_001774	CD37	CD37 molecule
NM_001775	CD38	CD38 molecule
NM_000732	CD3D	CD3d molecule, delta (CD3-TCR complex)
NM_000073	CD3G	CD3g molecule, gamma (CD3-TCR complex)
NM_000616	CD4	CD4 molecule
NM_001250	CD40	CD40 molecule, TNF receptor superfamily member 5
NM_000074	CD40LG	CD40 ligand
NM_014207	CD5	CD5 molecule
NM_006725	CD6	CD6 molecule
NM_001780	CD63	CD63 molecule
NM_001781	CD69	CD69 molecule
NM_006137	CD7	CD7 molecule
NM_001252	CD70	CD70 molecule
NM_001782	CD72	CD72 molecule
NM_004355	CD74	CD74 molecule, major histocompatibility complex, class II invariant chain
NM_001783	CD79A	CD79a molecule, immunoglobulin-associated alpha
NM_000626	CD79B	CD79b molecule, immunoglobulin-associated beta
NM_005191	CD80	CD80 molecule
NM_004233	CD83	CD83 molecule
NM_006889	CD86	CD86 molecule
NM_001768	CD8A	CD8a molecule
NM_004931	CD8B	CD8b molecule
NM_005816	CD96	CD96 molecule
NM_004854	CHST10	Carbohydrate sulfotransferase 10
NM_000088	COL1A1	Collagen, type I, alpha 1
NM_000089	COL1A2	Collagen, type I, alpha 2
NM_001877	CR2	Complement component (3d/Epstein Barr virus) receptor 2
NM_005211	CSF1R	Colony stimulating factor 1 receptor
NM_005214	CTLA4	Cytotoxic T-lymphocyte-associated protein 4
NM_001935	DPP4	Dipeptidyl-peptidase 4
NM_000118	ENG	Endoglin
NM_002354	EPCAM	Epithelial cell adhesion molecule
NM_000043	FAS	Fas (TNF receptor superfamily, member 6)
NM_002001	FCER1A	Fc fragment of IgE, high affinity I, receptor for; alpha polypeptide
NM_002002	FCER2	Fc fragment of IgE, low affinity II, receptor for (CD23)
NM_000566	FCGR1A	Fc fragment of IgG, high affinity Ia, receptor (CD64)
NM_002116	HLA-A	Major histocompatibility complex, class I, A
NM_019111	HLA-DRA	Major histocompatibility complex, class II, DR alpha
NM_000873	ICAM2	Intercellular adhesion molecule 2
NM_005535	IL12RB1	Interleukin 12 receptor, beta 1
NM_004633	IL1R2	Interleukin 1 receptor, type II
NM_000417	IL2RA	Interleukin 2 receptor, alpha
NM_181501	ITGA1	Integrin, alpha 1
NM_002203	ITGA2	Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)
NM_002204	ITGA3	Integrin, alpha 3 (antigen CD49C, alpha 3 subunit of VLA-3 receptor)
NM_002258	KLRB1	Killer cell lectin-like receptor subfamily B, member 1
NM_002259	KLRC1	Killer cell lectin-like receptor subfamily C, member 1
NM_002262	KLRD1	Killer cell lectin-like receptor subfamily D, member 1
NM_000224	KRT18	Keratin 18
NM_000424	KRT5	Keratin 5
NM_002273	KRT8	Keratin 8
NM_021950	MS4A1	Membrane-spanning 4-domains, subfamily A, member 1
NM_005964	MYH10	Myosin, heavy chain 10, non-muscle
NM_002473	MYH9	Myosin, heavy chain 9, non-muscle
NM_153604	MYOCD	Myocardin
NM_000615	NCAM1	Neural cell adhesion molecule 1
NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
NM_002526	NT5E	5'-nucleotidase, ecto (CD73)
NM_000442	PECAM1	Platelet/endothelial cell adhesion molecule
NM_020415	RETN	Resistin
NM_002964	S100A8	S100 calcium binding protein A8
NM_003005	SELP	Selectin P (granule membrane protein 140 kDa, antigen CD62)
NM_003032	ST6GAL1	ST6 beta-galactosamide alpha-2,6-sialyltransferase 1
NM_000459	TEK	TEK tyrosine kinase, endothelial
NM_003327	TNFRSF4	Tumor necrosis factor receptor superfamily, member 4
NM_001243	TNFRSF8	Tumor necrosis factor receptor superfamily, member 8
NM_003294	TPSAB1	Tryptase alpha/beta 1
NM_001078	VCAM1	Vascular cell adhesion molecule 1
NM_000552	VWF	Von Willebrand factor
NM_001101	ACTB	Actin, beta
NM_004048	B2M	Beta-2-microglobulin
NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1
NM_001002	RPLP0	Ribosomal protein, large, P0

Table S5 Characteristics of patients with colorectal carcinoma

Characteristic		Number	%
Age (years)	<60	19	43.2
	≥60	25	56.8
Sex	Female	26	59.1
	Male	18	40.9
Tumor size	≤3	21	47.7
	>3	23	52.3
Lymph node metastasis	Yes	28	63.6
	No	16	36.4
Distant metastasis	Yes	3	6.8
	No	41	93.2
TNM stage	I	12	27.3
	II	21	47.7
	III	8	18.2
	IV	3	6.8

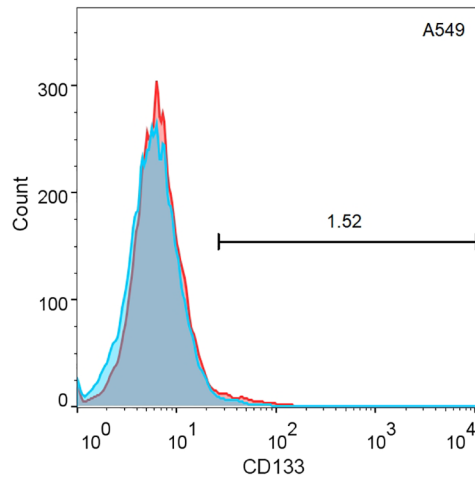


Figure S3 Representative expression of CD133⁺ cells in A549 detected by flow cytometry.

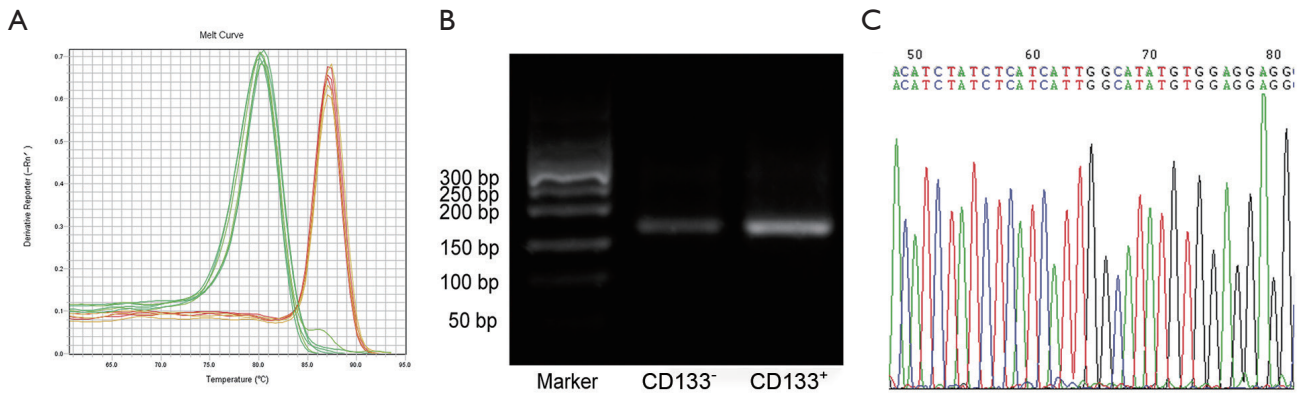


Figure S4 Verification of CD2. (A) Representative melting curves of CD2 in 2 clones. (B, C) Agarose gel analysis and representative Sanger sequencing result of real-time PCR amplified products (CD2). PCR, polymerase chain reaction.

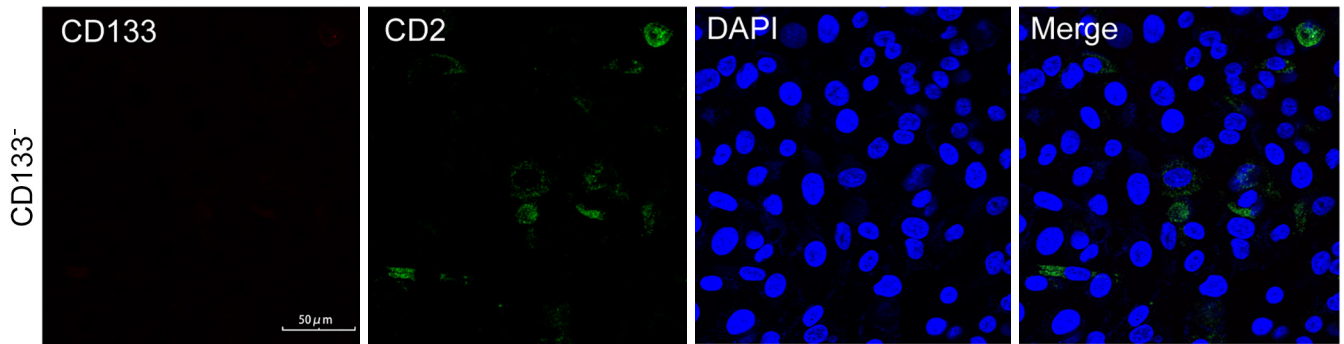


Figure S5 Immunofluorescence staining of CD2 (green) and CD133 (red) of CD133⁻ cells. Blue: nucleus. Scale bar: 50 μm.