SuperArray
Bioscience Corporation

Product Specification Sheet

Oligo GEArray® DNA Microarray:

Human Cell Surface Markers

Catalog Number	Format:
OHS-055	HybTube (Standard protocol)

Description

This microarray uses cell surface markers as a means of characterizing the cell populations present in experimental samples. Biological specimens often contain mixed cell populations consisting of various leukocytes, endothelial and epithelial cells, as well as muscle cells, dendritic cells, adipocytes, and other cell types. The variation in cell populations among specimens poses a major obstacle to their comparative analysis. Traditionally these cell populations have been characterized by flow cytometry. Unfortunately, the number of markers available for flow cytometry limits this analysis to the characterization of only two to three cell types per specimen, often well below the number of cell populations truly present. This microarray provides researchers with the ability to identify the presence of over eleven different cell populations commonly found in biological specimens through a simple hybridization experiment. Cell population specific cell surface markers are represented as well as over fifty useful Cluster of Differentiation (CD) antigens for hematopathology studies. By normalizing gene expression levels of individual cell specific marker genes to that of a designated housekeeping gene, the relative amounts of each cell type in the specimen can be estimated and compared among specimens. This array has many applications including: 1) determination of the extent of leukocyte infiltration among cancer tissues; 2) characterization of cell populations isolated from patients with chronic inflammatory diseases such as atherosclerosis, asthma, inflammatory bowel disease, and arthritis; 3) determination of T and B cell lineage and clonality; 4) characterization of leukocyte populations for use in the prognosis of disease stage and progression; and 5) analysis of the composition of immune infiltrates and their association with organ rejection.

Functional Gene Groupings

B cell surface markers:
Activated B Cells: CD28, CD38, CD69, CD80, CD83, CD86, DPP4, FCER2, IL2RA, TNFRSF8, TNFSF7.

Mature B Cells: CD19, CD22, CD24, CD37, CD40, CD72, CD74, CD79A, CD79B, CR2, IL1R2, ITGA2, ITGA3, MS4A1, ST6GAL1.

Other B Cell Surface Markers: CD1C, CHST10, HLA-A, HLA-DRA, NT5E.

T cell surface markers:
Cytotoxic T Cells: CD8A, CD8B1.

Helper T Cells: CD4.

Activated T Cells: ALCAM, CD2, CD38, CD40LG, CD69, CD83, CD96, CTLA4, DPP4, HLA-DRA, IL12RB1, IL2RA, ITGA1, TNFRSF4, TNFRSF8, TNFSF7.

Other T Cell Surface Markers: CD160, CD28, CD37, CD3D, CD3G, CD3Z, CD5, CD6, CD7, FAS, KLRB1, KLRD1, NT5E, ST6GAL1.

Natural Killer (NK) Cell Surface Markers: CD2, CD244, CD3Z, CD7, CD96, CHST10, FCGR3B, IL12RB1, KLRB1, KLRC1, KLRD1, LAG3, NCAM1.

Monocyte and Macrophage Cell Surface Markers:
Activated Macrophages: CD69, ENG, FCER2, IL2RA.

Other Monocyte and Macrophage Surface Markers: ADAM8, C5R1, CD14, CD163, CD33, CD40, CD63, CD68, CD74, CD86, CHIT1, CHST10, CSF1R, DPP4, FABP4, FCGR1A, HLA-DRA, ICAM2, IL1R2, ITGA1, ITGA2, S100A8, TNFRSF8, TNFSF7.

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Endothelial Cell Surface Markers: ACE, CD14, CD34, CDH5, ENG, ICAM2, MCAM, NOS3, PECAM1, PROCR, SELE, SELP, TEK, THBD, VCAM1, VWF.

Smooth Muscle Cell Surface Markers: ACTA2, MYH10, MYH11, MYH9, MYOCD.

Dendritic Cell Surface Markers: CD1A, CD209, CD40, CD83, CD86, CR2, FCER2, FSCN1.

Mast Cell Surface Markers: C5R1, CMA1, FCER1A, FCER2, TPSAB1.

Fibroblast (Stromal) Surface Markers: ALCAM, CD34, COL1A1, COL1A2, COL3A1, PH-4.

Epithelial Cell Surface Markers: CD1D, K6IRS2, KRT10, KRT13, KRT17, KRT18, KRT19, KRT4, KRT5, KRT8, MUC1, TACSTD1.

Adipocyte Surface Markers: ADIPOQ, FABP4, RETN.

Storage Conditions

Please check the kit components immediately after you receive this package. SuperArray is only responsible for missing items reported within two (2) business days of receipt.

GEArray microarrays are shipped at ambient temperature enclosed in either a HybTube or ExpressPak Storage Box. They should be stored at –20^{o}C upon receipt.

References

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Oligo GEArray® Human Cell Surface Markers Microarray

Array Layout:

RPS27A 1	ACE 2	ACTA2 3	ADAM8 4	ADIPOQ 5	ALCAM 6	C5R1 7	CD14 8
CD160 9	CD163 10	CD19 11	CD1A 12	CD1C 13	CD1D 14	CD2 15	CD209 16
CD22 17	CD24 18	CD244 19	CD28 20	CD33 21	CD34 22	CD37 23	CD38 24
CD3D 25	CD3G 26	CD3Z 27	CD4 28	CD40 29	CD40LG 30	CD5 31	CD6 32
CD63 33	CD68 34	CD69 35	CD7 36	CD72 37	CD74 38	CD79A 39	CD79B 40
CD80 41	CD83 42	CD86 43	CD8A 44	CD8B1 45	CD96 46	CDH5 47	CHIT1 48
CHST10 49	CMA1 50	COL1A1 51	COL1A2 52	COL3A1 53	CR2 54	CSF1R 55	CTLA4 56
DPP4 57	ENG 58	FABP4 59	FAS 60	FCER1A 61	FCER2 62	FCGR1A 63	FCGR3B 64
FSCN1 65	HLA-A 66	HLA-DRA 67	ICAM2 68	IL12RB1 69	IL1R2 70	IL2RA 71	ITGA1 72
ITGA2 73	ITGA3 74	K6IRS2 75	KLRB1 76	KLRC1 77	KLRD1 78	KRT10 79	KRT13 80
KRT17 81	KRT18 82	KRT19 83	KRT4 84	KRT5 85	KRT8 86	LAG3 87	MCAM 88
MS4A1 89	MUC1 90	MYH10 91	MYH11 92	MYH9 93	MYOCD 94	NCAM1 95	NOS3 96
NT5E 97	PECAM1 98	PH-4 99	PROCR 100	RETN 101	S100A8 102	SELE 103	SELP 104
ST6GAL1 105	TACSTD1 106	TEK 107	THBD 108	TNFRSF4 109	TNFRSF8 110	TNFSF7 111	TPSAB1 112
VCAM1 113	VWF 114	PUC18 115	Blank 116	Blank 117	AS1R2 118	AS1R1 119	AS1 120
GAPD 121	B2M 122	HSPCB 123	HSPCB 124	ACTB 125	ACTB 126	BAS2C 127	BAS2C 128

Gene Table

Position	UniGene	GenBank	Symbol	Description	Gene Name
1	Hs.546292	NM_002954	RPS27A	Ribosomal protein S27a	RPS27A
2	Hs.298469	NM_152831	ACE	Angiotensin I converting enzyme (peptidyl-dipeptidase A) 1	CD143
3	Hs.500483	NM_001613	ACTA2	Actin, alpha 2, smooth muscle, aorta	ACTA2 (a-actin)
4	Hs.501574	NM_001109	ADAM8	A disintegrin and metalloproteinase domain 8	CD156a
5	Hs.80485	NM_004797	ADIPOQ	Adiponectin, C1Q and collagen domain containing	ACDC/APM1
6	Hs.150693	NM_001627	ALCAM	Activated leukocyte cell adhesion molecule	CD166
7	Hs.2161	NM_001736	C5R1	Complement component 5 receptor 1 (C5a ligand)	CD88
8	Hs.163867	NM_000591	CD14	CD14 antigen	CD14
9	Hs.488237	NM_007053	CD160	CD160 antigen	CD160
10	Hs.504641	NM_004244	CD163	CD163 antigen	KiM4
11	Hs.96023	NM_001770	CD19	CD19 antigen	CD19
12	Hs.1309	NM_001763	CD1A	CD1A antigen, a polypeptide	CD1A
13	Hs.1311	NM_001765	CD1C	CD1C antigen, c polypeptide	CD1C
14	Hs.1799	NM_001766	CD1D	CD1D antigen, d polypeptide	CD1D
15	Hs.523500	NM_001767	CD2	CD2 antigen (p50), sheep red blood cell receptor	CD2 (LFA-2)
16	Hs.278694	NM_021155	CD209	CD209 antigen	CD209
17	Hs.262150	NM_001771	CD22	CD22 antigen	CD22
18	Hs.375108	NM_013230	CD24	CD24 antigen (small cell lung carcinoma cluster 4 antigen)	CD24
19	Hs.157872	NM_016382	CD244	CD244 natural killer cell receptor 2B4	CD244
20	Hs.1987	NM_006139	CD28	CD28 antigen (Tp44)	CD28/TP44
21	Hs.83731	NM_001772	CD33	CD33 antigen (gp67)	CD33
22	Hs.374990	NM_001773	CD34	CD34 antigen	CD34
23	Hs.166556	NM_001774	CD37	CD37 antigen	CD37
24	Hs.479214	NM_001775	CD38	CD38 antigen (p45)	CD38
25	Hs.504048	NM_000732	CD3D	CD3D antigen, delta polypeptide (TiT3 complex)	CD3D
26	Hs.2259	NM_000073	CD3G	CD3G antigen, gamma polypeptide (TiT3 complex)	CD3-GAMMA
27	Hs.156445	NM_000734	CD3Z	CD3Z antigen, zeta polypeptide (TiT3 complex)	CD3-ZETA/CD247
28	Hs.17483	NM_000616	CD4	CD4 antigen (p55)	CD4
29	Hs.472860	NM_001250	CD40	CD40 antigen (TNF receptor superfamily member 5)	TNFRSF5
30	Hs.652	NM_000074	CD40LG	CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome)	TNFSF5/CD154/TRAP
31	Hs.58685	NM_014207	CD5	CD5 antigen (p56-62)	CD5
32	Hs.502710	NM_006725	CD6	CD6 antigen	CD6
33	Hs.445570	NM_001780	CD63	CD63 antigen (melanoma 1 antigen)	CD63
34	Hs.246381	NM_001251	CD68	CD68 antigen	CD68
35	Hs.208854	NM_001781	CD69	CD69 antigen (p60, early T-cell activation antigen)	CD69
36	Hs.36972	NM_006137	CD7	CD7 antigen (p41)	CD7
37	Hs.116481	NM_001782	CD72	CD72 antigen	CD72
38	Hs.436568	NM_004355	CD74	CD74 antigen (invariant polypeptide of major histocompatibility complex, class II	CD74
39	Hs.79630	NM_001783	CD79A	CD79A antigen (immunoglobulin-associated alpha)	IGA
40	Hs.89575	NM_000626	CD79B	CD79B antigen (immunoglobulin-associated beta)	IGB
41	Hs.838	NM_005191	CD80	CD80 antigen (CD28 antigen ligand 1, B7-1 antigen)	CD80

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Position	UniGene	GenBank	Symbol	Description	Gene Name
42	Hs.484703	NM_004233	CD83	CD83 antigen (activated B lymphocytes, immunoglobulin superfamily)	CD83
43	Hs.171182	NM_006889	CD86	CD86 antigen (CD28 antigen ligand 2, B7-2 antigen)	B7-2
44	Hs.85258	NM_001768	CD8A	CD8 antigen, alpha polypeptide (p32)	CD8
45	Hs.405667	NM_004931	CD8B1	CD8 antigen, beta polypeptide 1 (p37)	CD8B
46	Hs.142023	NM_005816	CD96	CD96 antigen	CD96
47	Hs.76206	NM_001795	CDH5	Cadherin 5, type 2, VE-cadherin (vascular epithelium)	Cd144
48	Hs.201688	NM_003465	CHIT1	Chitinase 1 (chitotriosidase)	CHIT1
49	Hs.516370	NM_004854	CHST10	Carbohydrate sulfotransferase 10	CD57/HNK-1ST
50	Hs.135626	NM_001836	CMA1	Chymase 1, mast cell	CMA1
51	Hs.172928	NM_000088	COL1A1	Collagen, type I, alpha 1	COL1A1
52	Hs.489142	NM_000089	COL1A2	Collagen, type I, alpha 2	COL1A2
53	Hs.443625	NM_000090	COL3A1	Collagen, type III, alpha 1 (Ehlers-Danlos syndrome type IV, autosomal dominant)	COL3A1
54	Hs.445757	NM_001877	CR2	Complement component (3d/Epstein Barr virus) receptor 2	CD21
55	Hs.483829	NM_005211	CSF1R	Colony stimulating factor 1 receptor, formerly McDonough feline sarcoma viral (v-fms)	FMS/CD115
56	Hs.247824	NM_005214	CTLA4	Cytotoxic T-lymphocyte-associated protein 4	CTLA-4/CD152
57	Hs.368912	NM_001935	DPP4	Dipeptidylpeptidase 4 (CD26, adenosine deaminase complexing protein 2)	CD26
58	Hs.76753	NM_000118	ENG	Endoglin (Osler-Rendu-Weber syndrome 1)	Cd105
59	Hs.391561	NM_001442	FABP4	Fatty acid binding protein 4, adipocyte	FABP4
60	Hs.244139	NM_152877	FAS	Fas (TNF receptor superfamily, member 6)	Fas/Apo-1/CD95
61	Hs.897	NM_002001	FCER1A	Fc fragment of IgE, high affinity I, receptor for; alpha polypeptide	FcER1
62	Hs.465778	NM_002002	FCER2	Fc fragment of IgE, low affinity II, receptor for (CD23A)	CD23/CD23A
63	Hs.77424	NM_000566	FCGR1A	Fc fragment of IgG, high affinity Ia, receptor (CD64)	FcGR1/CD64
64	Hs.372679	NM_000569	FCGR3B	Fc fragment of IgG, low affinity IIIb, receptor (CD16b)	CD16
65	Hs.118400	NM_003088	FSCN1	Fascin homolog 1, actin-bundling protein (Strongylocentrotus purpuratus)	FSCN1
66	Hs.549038	NM_002116	HLA-A	Major histocompatibility complex, class I, A	HLA-A
67	Hs.520048	NM_019111	HLA-DRA	Major histocompatibility complex, class II, DR alpha	HLA-DRA1
68	Hs.431460	NM_000873	ICAM2	Intercellular adhesion molecule 2	CD102/ICAM-2
69	Hs.223894	NM_005535	IL12RB1	Interleukin 12 receptor, beta 1	IL-12Rb1
70	Hs.25333	NM_004633	IL1R2	Interleukin 1 receptor, type II	CDw121b/IL-1R2
71	Hs.231367	NM_000417	IL2RA	Interleukin 2 receptor, alpha	CD25
72	Hs.519304	NM_181501	ITGA1	Integrin, alpha 1	CD49a
73	Hs.482077	NM_002203	ITGA2	Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)	LFA1b/CD49B
74	Hs.265829	NM_002204	ITGA3	Integrin, alpha 3 (antigen CD49C, alpha 3 subunit of VLA-3 receptor)	CD49C
75	Hs.147040	NM_080747	K6IRS2	Keratin protein K6irs	KRT6
76	Hs.169824	NM_002258	KLRB1	Killer cell lectin-like receptor subfamily B, member 1	NKR-P1A/CD161
77	Hs.512576	NM_002259	KLRC1	Killer cell lectin-like receptor subfamily C, member 1	CD159a
78	Hs.524251	NM_002262	KLRD1	Killer cell lectin-like receptor subfamily D, member 1	CD94
79	Hs.99936	NM_000421	KRT10	Keratin 10 (epidermolytic hyperkeratosis; keratosis palmaris et plantaris)	KRT10
80	Hs.463032	NM_002274	KRT13	Keratin 13	KRT13
81	Hs.2785	NM_000422	KRT17	Keratin 17	Keratin 17
82	Hs.406013	NM_000224	KRT18	Keratin 18	KRT18
83	Hs.514167	NM_002276	KRT19	Keratin 19	Keratin 19
84	Hs.371139	NM_002272	KRT4	Keratin 4	KRT4
85	Hs.433845	NM_000424	KRT5	Keratin 5 (epidermolysis bullosa simplex, Dowling-Meara/Kobner/Weber-Cockayne	KRT5
86	Hs.533782	NM_002273	KRT8	Keratin 8	KRT8
87	Hs.409523	NM_002286	LAG3	Lymphocyte-activation gene 3	LAG3
88	Hs.511397	NM_006500	MCAM	Melanoma cell adhesion molecule	CD146
89	Hs.438040	NM_021950	MS4A1	Membrane-spanning 4-domains, subfamily A, member 1	CD20
90	Hs.89603	NM_182741	MUC1	Mucin 1, transmembrane	CD227/EMA
91	Hs.16355	NM_005964	MYH10	Myosin, heavy polypeptide 10, non-muscle	MYH10
92	Hs.460109	NM_022844	MYH11	Myosin, heavy polypeptide 11, smooth muscle	MYH11
93	Hs.474751	NM_002473	MYH9	Myosin, heavy polypeptide 9, non-muscle	NMMHCA
94	Hs.462257	NM_153604	MYOCD	Myocardin	MYCD
95	Hs.503878	NM_000615	NCAM1	Neural cell adhesion molecule 1	CD56
96	Hs.511603	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)	eNOS
97	Hs.153952	NM_002526	NT5E	5'-nucleotidase, ecto (CD73)	CD73
98	Hs.514412	NM_000442	PECAM1	Platelet/endothelial cell adhesion molecule (CD31 antigen)	CD31
99	Hs.271224	NM_017732	PH-4	Hypoxia-inducible factor prolyl 4-hydroxylase	PH-4
100	Hs.82353	NM_006404	PROCR	Protein C receptor, endothelial (EPCR)	CD201
101	Hs.283091	NM_020415	RETN	Resistin	FIZZ3
102	Hs.416073	NM_002964	S100A8	S100 calcium binding protein A8 (calgranulin A)	S100A8
103	Hs.89546	NM_000450	SELE	Selectin E (endothelial adhesion molecule 1)	ELAM-1/CD62E
104	Hs.73800	NM_003005	SELP	Selectin P (granule membrane protein 140kDa, antigen CD62)	CD62/CD62P
105	Hs.207459	NM_003032	ST6GAL1	ST6 beta-galactosamide alpha-2,6-sialyltranferase 1	SIAT1/CD75
106	Hs.692	NM_002354	TACSTD1	Tumor-associated calcium signal transducer 1	GA733-2
107	Hs.89640	NM_000459	TEK	TEK tyrosine kinase, endothelial (venous malformations, multiple cutaneous and	Tie-2/CD202b
108	Hs.2030	NM_000361	THBD	Thrombomodulin	CD141
109	Hs.129780	NM_003327	TNFRSF4	Tumor necrosis factor receptor superfamily, member 4	CD134/OX40
110	Hs.1314	NM_001243	TNFRSF8	Tumor necrosis factor receptor superfamily, member 8	CD30
111	Hs.501497	NM_001252	TNFSF7	Tumor necrosis factor (ligand) superfamily, member 7	CD27L/CD70
112	Hs.405479	NM_003293	TPSAB1	Tryptase alpha/beta 1	TPS1
113	Hs.109225	NM_001078	VCAM1	Vascular cell adhesion molecule 1	VCAM-1/CD106
114	Hs.440848	NM_000552	VWF	Von Willebrand factor	VWF
115	N/A	L08752	PUC18	PUC18 Plasmid DNA	pUC18
116	Blank	Blank	Blank	Blank	0
117	Blank	Blank	Blank	Blank	0
118	N/A	N/A	AS1R2	Artificial Sequence 1 Related 2 (80% identity)(48/60)	N/A
119	N/A	N/A	AS1R1	Artificial Sequence 1 Related 1 (90% identity)(56/60)	N/A
120	N/A	N/A	AS1	Artificial Sequence 1	N/A
121	Hs.544577	NM_002046	GAPD	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH
122	Hs.534255	NM_004048	B2M	Beta-2-microglobulin	B2M
123	Hs.509736	NM_007355	HSPCB	Heat shock 90kDa protein 1, beta	HSP90 b
124	Hs.509736	NM_007355	HSPCB	Heat shock 90kDa protein 1, beta	HSP90 b
125	Hs.520640	NM_001101	ACTB	Actin, beta	b-Actin
126	Hs.520640	NM_001101	ACTB	Actin, beta	b-Actin
127	N/A	N/A	BAS2C	Biotinylated Artificial Sequence 2 Complementary sequence	N/A
128	N/A	N/A	BAS2C	Biotinylated Artificial Sequence 2 Complementary sequence	N/A

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