

Oligo GEMArray[®] DNA Microarray: Mouse Cardiovascular Disease Biomarkers

Catalog Number

OMM-037

Format:

HybTube (Standard protocol)

Description

The Oligo GEMArray[®] Mouse Cardiovascular Disease Biomarkers Microarray profiles the expression of 113 genes useful as molecular markers for cardiovascular disease progression. This array is designed with clinical researchers and research pathologists in mind. Genes that may serve as diagnosis and/or prognosis markers for the principal cardiovascular diseases, heart disease and stroke are represented. Genes involved in atherosclerosis and hypertension are represented including genes involved in the related processes of inflammation, apoptosis, and cell adhesion. Biomarkers for risk of cardiovascular disease and genes associated with a failing or infarcted heart are selected for this array based on published studies of *in vivo* and *in vitro* cardiovascular disease models. A complete expression profile of these genes should serve as an effective tool to unlock the molecular mechanisms that govern the onset and progression of cardiovascular diseases. Through a simple side-by-side hybridization experiment you can determine differential gene expression between your samples.

Functional Gene Groupings

Cell Adhesion:

Cell-cell Adhesion: Icam1, Vcam1.

Cell-matrix Adhesion: Itga10, Itga2, Itga2b, Itga3, Itga4, Itga5, Itga6, Itga7, Itga8, Itga9, Itgae, Itgal, Itgam, Itgav, Itgax, Itgb1, Itgb2, Itgb3, Itgb4, Itgb5, Itgb6, Itgb7, Itgb8.

Other Cell Adhesion Molecules: Eva1, Il18, Pecam1, Sele, Sell, Selp, Selpl, Tnfsf5.

Immune Response:

Cellular Defense Response: Ccr2, Il10, Il18.

Cytokine Biosynthesis: Apoa2, Ccl2, Ifng, Il10, Il18, Il1b, Il6, Nfkb1.

Humoral Immune Response: Ccr2, Tnfrsf5, Tnfsf5.

Immune Cell Activation: Apoa2, Ifng, Il10, Il18, Nos2, Tnfrsf5, Tnfsf5.

Inflammatory Response: Ccl2, Ccr2, Ifng, Il1b, Itgam, Itgb2, Nos2, Pla2g7, Pparg, Selp, Tnfrsf1a, Tnfrsf1b, Tnfsf5.

Other Genes Related to the Immune Response: Apoe, Crp, Fas, Fasl, Il1rn, Lta, Ltb, Pon1, Saa1, Tnf.

Apoptosis:

Anti-apoptosis: Il10, Tnfsf5.

Induction of Apoptosis: Apoe, Fas, Il18.

Other Genes Related to Apoptosis: Fasl, Ifng, Il6, Nfkb1, Tnfrsf1a, Tnfrsf5.

Extracellular Matrix (ECM) Molecules:

ECM Proteases: Ace, Apoc2, F7, Mmp13, Mmp1a, Mmp2, Mmp9, Pappa, Plat, Plau.

ECM Protease Inhibitors: Serpine1, Timp1.

Other ECM Molecules: Apoa1, Apoa2, Apoa4, Apoa5, Apoc1, Apoc3, Apoc4, Apod, Apoe, Apof, Apoh, Ccl2, Crlf1, Crp, Edn1, Edn2, Edn3, Eva1, F3, Fasl, Fga, Fgb, Fgg, Glg1, Grn, Ifng, Il10, Il18, Il1b, Il1rn, Il6, Il6st, Itga2, Itga2b, Itga5, Itga7, Itga9, Itgae, Itgal, Itgb1, Itgb2, Itgb5, Itgb7, Lcat, Msln, Nppb, Npy, Pecam1, Pla2g7, Plaur, Pltp, Pon1, Pon2, Saa1, Sele, Sell, Selp, Selpl, Thbd, Tnfrsf1a, Tnfrsf1b, Vcam1, Vwf.

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Cell Growth: Amh, Ccr2, Edn3, Glg1, Ifng, Il10, Il18, Il1b, Il1rn, Il6, Itga4, Itgb1, Itgb3, Pappa, Pecam1, Pparg, Tnfrsf1b.

Blood Coagulation: Cacna1b, F3, F7, Mmp13, Mmp2, Nos2, Thbd, Tnfsf5, Tnnc1, Tnni3, Vwf.

Circulation:

Regulation of Blood Pressure: Cacna1b, Edn1, Edn2, Edn3, Npy.

Regulation of Heart Contraction Rate: Cacna1b, Gnao1, Tnni3.

Regulation of Vasoconstriction: Edn1, Edn2, Edn3.

Other Genes Related to Circulation: Apoe, Dbp, Mthfr, Pon1.

Lipid Metabolism:

Cholesterol Metabolism: Apoa1, Apoa2, Apoa4, Apob, Apoe, Lcat, Pon1.

Lipoprotein Metabolism: Apoa1, Apoa2, Apoa4, Apoa5, Apoc1, Apoc3, Apoe, Olr1, Pon1.

Other Genes Related to Lipid Metabolism: Apoc2, Apoc4, Apod, Hsd11b1, Il1rn, Pecam1, Pla2g7, Pltp, Saa1.

Genes Associated with a Failing or Infarcted Heart: Ckm, Crp, Ctf1, F3, Il6st, Mb, Nppa, Nppb, Tnnc1, Tnni3, Tnnt2.

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°C upon receipt.

References

1. Blake GJ, Ridker PM. Inflammatory bio-markers and cardiovascular risk prediction. *J Intern Med.* 2002 Oct; **252** (4): 283-94.
2. Shin WS, Szuba A, Rockson SG. The role of chemokines in human cardiovascular pathology: enhanced biological insights. *Atherosclerosis.* 2002 Jan; **160** (1): 91-102.
3. Pai JK, Curhan GC, Cannuscio CC, Rifai N, Ridker PM, Rimm EB. Stability of novel plasma markers associated with cardiovascular disease: processing within 36 hours of specimen collection. *Clin Chem.* 2002 Oct; **48** (10): 1781-4.
4. Schumacher A, Seljeflot I, Sommervoll L, Christensen B, Otterstad JE, Arnesen H. Increased levels of endothelial haemostatic markers in patients with coronary heart disease. *Thromb Res.* 2002 Jan 1; **105**(1): 25-31.
5. May AE, Schmidt R, Kanse SM, Chavakis T, Stephens RW, Schomig A, Preissner KT, Neumann FJ. Urokinase receptor surface expression regulates monocyte adhesion in acute myocardial infarction. *Blood.* 2002 Nov 15; **100** (10): 3611-7.
6. Frijns CJ, Kappelle LJ. Inflammatory cell adhesion molecules in ischemic cerebrovascular disease. *Stroke.* 2002 Aug; **33** (8): 2115-22.

Product Specification Sheet

Oligo GEArray® Mouse Cardiovascular Disease Biomarkers Microarray

Array Layout:

Gapd 1	Ace 2	Amh 3	Apoa1 4	Apoa2 5	Apoa4 6	Apoa5 7	Apob 8
Apoc1 9	Apoc2 10	Apoc3 11	Apoc4 12	Apod 13	Apoe 14	Apof 15	Apoh 16
Cacna1b 17	Ccl2 18	Ccr2 19	Ckm 20	Crlf1 21	Crp 22	Ctf1 23	Dbp 24
Edn1 25	Edn2 26	Edn3 27	Eva1 28	F3 29	F7 30	Fas 31	Fga 32
Fgb 33	Fgg 34	Glg1 35	Gnao1 36	Grn 37	Hsd11b1 38	Icam1 39	Ifnγ 40
Il10 41	Il18 42	Il1b 43	Il1m 44	Il6 45	Il6st 46	Itga10 47	Itga2 48
Itga2b 49	Itga3 50	Itga4 51	Itga5 52	Itga6 53	Itga7 54	Itga8 55	Itga9 56
Itgae 57	Itgal 58	Itgam 59	Itgab 60	Itgax 61	Itgb1 62	Itgb2 63	Itgb3 64
Itgb4 65	Itgb5 66	Itgb6 67	Itgb7 68	Itgb8 69	Lcat 70	Lta 71	Ltb 72
Mb 73	Mmp13 74	Mmp1a 75	Mmp2 76	Mmp9 77	Msln 78	Mthfr 79	Nfkb1 80
Nos2 81	Nppa 82	Nppb 83	Npy 84	Olr1 85	Pappa 86	Pecam1 87	Pla2g7 88
Plat 89	Plau 90	Plaur 91	Pltp 92	Pon1 93	Pon2 94	Pparg 95	Saa1 96
Sele 97	Sell 98	Selp 99	Selp 100	Serpine1 101	Thbd 102	Timp1 103	Tnf 104
Tnfrsf1a 105	Tnfrsf1b 106	Tnfrsf5 107	Tnfrsf5 108	Fasl 109	Tnnc1 110	Tnni3 111	Tnnt2 112
Vcam1 113	Vwf 114	PUC18 115	Blank 116	Blank 117	AS1R2 118	AS1R1 119	AS1 120
Rps27a 121	B2m 122	Hspcb 123	Hspcb 124	Ppia 125	Ppia 126	BAS2C 127	BAS2C 128

Gene Table

Position	UniGene	GenBank	Symbol	Description	Gene Name
1	Mm.333399	NM_008084	Gapd	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH
2	Mm.754	NM_009598	Ace	Angiotensin converting enzyme	Ace
3	Mm.376094	NM_007445	Amh	Anti-Mullerian hormone	AMH
4	Mm.26743	NM_009692	Apoa1	Apolipoprotein A-I	Apoa1
5	Mm.43677	NM_013474	Apoa2	Apolipoprotein A-II	Apoa2
6	Mm.4533	NM_007468	Apoa4	Apolipoprotein A-IV	Apoa4
7	Mm.29738	NM_080434	Apoa5	Apolipoprotein A-V	Apoa5
8	Mm.221239	XM_137955	Apob	Apolipoprotein B	Apob
9	Mm.182440	NM_007469	Apoc1	Apolipoprotein C-I	Apoc1
10	Mm.358572	NM_009695	Apoc2	Apolipoprotein C-II	Apoc2
11	Mm.178973	NM_023114	Apoc3	Apolipoprotein C-III	Apoc3
12	Mm.344270	NM_007385	Apoc4	Apolipoprotein C-IV	Apoc4
13	Mm.2082	NM_007470	Apod	Apolipoprotein D	Apod
14	Mm.305152	NM_009696	Apoe	Apolipoprotein E	APOE
15	Mm.26513	NM_133997	Apof	Apolipoprotein F	APOF
16	Mm.2266	NM_013475	ApoH	Apolipoprotein H	ApoH
17	Mm.4424	NM_007579	Cacna1b	Calcium channel, voltage-dependent, N type, alpha 1B subunit	CACNA1B
18	Mm.290320	NM_011333	Ccl2	Chemokine (C-C motif) ligand 2	Scya2
19	Mm.6272	NM_009915	Ccr2	Chemokine (C-C motif) receptor 2	Cmkbr2/MIP-1a
20	Mm.2375	NM_007710	Ckm	Creatine kinase, muscle	Ckm
21	Mm.358583	NM_018827	Crlf1	Cytokine receptor-like factor 1	Crlf1
22	Mm.28767	NM_007768	Crp	C-reactive protein, petaxin related	Crp
23	Mm.249829	NM_007795	Ctf1	Cardiotrophin 1	Ctf1
24	Mm.3459	NM_016974	Dbp	D site albumin promoter binding protein	Dbp
25	Mm.14543	NM_010104	Edn1	Endothelin 1	Edn1
26	Mm.284855	NM_007902	Edn2	Endothelin 2	Edn2
27	Mm.9478	NM_007903	Edn3	Endothelin 3	Edn3
28	Mm.33240	NM_007962	Eva1	Epithelial V-Jike antigen 1	Eva
29	Mm.273188	NM_010171	F3	Coagulation factor III	TF
30	Mm.4827	NM_010172	F7	Coagulation factor VII	F7
31	Mm.1626	NM_007987	Fas	Fas (TNF receptor superfamily member)	Fas
32	Mm.88793	NM_010196	Fga	Fibrinogen, alpha polypeptide	Fga
33	Mm.30063	NM_181849	Fgb	Fibrinogen, B beta polypeptide	Fgb
34	Mm.16422	NM_133862	Fgg	Fibrinogen, gamma polypeptide	FGG
35	Mm.276271	NM_009149	Glg1	Golgi apparatus protein 1	Selel
36	Mm.354720	NM_010308	Gnao1	Guanine nucleotide binding protein, alpha o	Gnao
37	Mm.1568	NM_008175	Grn	Granulin	Grn
38	Mm.28328	NM_008288	Hsd11b1	Hydroxysteroid 11-beta dehydrogenase 1	Hsd11b1
39	Mm.90364	NM_010493	Icam1	I1 histone family, member 0	ICAM-1
40	Mm.240327	NM_008337	Ifnγ	Interferon gamma	IFN r
41	Mm.874	NM_010548	Il10	Interleukin 10	IL-10

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Position	UniGene	GenBank	Symbol	Description	Gene Name
42	Mm.357587	NM_008360	Il18	Interleukin 18	IL-18
43	Mm.222830	NM_008361	Il1b	Interleukin 1 beta	IL-1b
44	Mm.882	NM_031167	Il1rn	Interleukin 1 receptor antagonist	IL1RN
45	Mm.1019	NM_031168	Il6	Interleukin 6	IL-6
46	Mm.4364	NM_010560	Il6st	Interleukin 6 signal transducer	Gp130
47	Mm.32741	XM_112192	Itga10	Integrin, alpha 10	Itga10
48	Mm.5007	NM_008396	Itga2	Integrin alpha 2	LFA1b/Cd49b
49	Mm.26646	NM_010575	Itga2b	Integrin alpha 2b	Cd41b
50	Mm.57035	NM_013565	Itga3	Integrin alpha 3	Cd49c
51	Mm.33596	NM_010576	Itga4	Integrin alpha 4	VLA-4
52	Mm.16234	NM_010577	Itga5	Integrin alpha 5 (fibronectin receptor alpha)	Integrin a5
53	Mm.225096	NM_008397	Itga6	Integrin alpha 6	Integrin a6
54	Mm.179747	NM_008398	Itga7	Integrin alpha 7	Integrin a7
55	Mm.329997	NM_001001309	Itga8	Integrin alpha 8	Integrin a8
56	Mm.335520	NM_133721	Itga9	Integrin alpha 9	Itga9
57	Mm.96	NM_008399	Itgae	Integrin, alpha E, epithelial-associated	Itgae
58	Mm.1618	NM_008400	Itgal	Integrin alpha L	LFA1a/CD11A
59	Mm.262106	NM_008401	Itgam	Integrin alpha M	Cd11b
60	Mm.227	NM_008402	Itgav	Integrin alpha V	Cd51
61	Mm.22378	NM_021334	Itgax	Integrin alpha X	Cd11c
62	Mm.263396	NM_010578	Itgb1	Integrin beta 1 (fibronectin receptor beta)	CD29
63	Mm.1137	NM_008404	Itgb2	Integrin beta 2	Cd18
64	Mm.87150	NM_016780	Itgb3	Integrin beta 3	CD61
65	Mm.213873	L04678	Itgb4	Integrin beta 4	Integrin b4
66	Mm.6424	NM_010580	Itgb5	Integrin beta 5	Integrin b5
67	Mm.98193	NM_021359	Itgb6	Integrin beta 6	Integrin b6
68	Mm.352620	NM_013566	Itgb7	Integrin beta 7	Integrin b7
69	Mm.217000	NM_177290	Itgb8	Integrin beta 8	Itgb8
70	Mm.1593	NM_008490	Lcat	Lecithin cholesterol acyltransferase	Lcat
71	Mm.87787	NM_010735	Lta	Lymphotoxin A	TNFB
72	Mm.1715	NM_008518	Ltb	Lymphotoxin B	LT-b
73	Mm.201606	NM_013593	Mb	Myoglobin	Mb
74	Mm.5022	NM_008607	Mmp13	Matrix metalloproteinase 13	Ctg/Mmp1
75	Mm.156952	NM_032006	Mmp1a	Matrix metalloproteinase 1a (interstitial collagenase)	Mcola-pending
76	Mm.29564	NM_008610	Mmp2	Matrix metalloproteinase 2	Gelatinase A
77	Mm.4406	NM_013599	Mmp9	Matrix metalloproteinase 9	Gelatinase B
78	Mm.17510	NM_018857	Msln	Mesothelin	Msln
79	Mm.89959	NM_010840	Mthfr	5,10-methylenetetrahydrofolate reductase	Mthfr
80	Mm.256765	NM_008689	Nfk1	Ubiquitin-conjugating enzyme E2D 3 (UBC4/5 homolog, yeast)	NFKB1
81	Mm.2893	NM_010927	Nos2	Nitric oxide synthase 2, inducible, macrophage	iNOS
82	Mm.19961	NM_008725	Nppa	Natriuretic peptide precursor type A	ANF
83	Mm.2740	NM_008726	Nppb	Natriuretic peptide precursor type B	BNP
84	Mm.154796	NM_023456	Npy	Neuropeptide Y	Neuropeptide Y
85	Mm.293626	NM_138648	Olr1	Oxidized low density lipoprotein (lectin-like) receptor 1	LOX-1
86	Mm.317854	NM_021362	Pappa	Pregnancy-associated plasma protein A	Pappa
87	Mm.343951	NM_008816	Pecam1	Platelet/endothelial cell adhesion molecule	PECAM1
88	Mm.9277	NM_013737	Pla2g7	Phospholipase A2, group VII (platelet-activating factor acetylhydrolase, plasma)	Pla2g7
89	Mm.154660	NM_008872	Plat	Plasminogen activator, tissue	tPA
90	Mm.4183	NM_008873	Plau	Plasminogen activator, urokinase	PLAU
91	Mm.1359	BC010309	Plaur	Urokinase plasminogen activator receptor	PLAUR
92	Mm.6105	NM_011125	Pltp	Phospholipid transfer protein	PLTP
93	Mm.237657	NM_011134	Pon1	Paraoxonase 1	Pon1
94	Mm.126984	NM_183308	Pon2	Paraoxonase 2	Pon2
95	Mm.3020	NM_011146	Pparg	Peroxisome proliferator activated receptor gamma	Pparg
96	Mm.148800	NM_009117	Saa1	Serum amyloid A 1	Saa1
97	Mm.5245	NM_011345	Sele	Selectin, endothelial cell	E-selectin
98	Mm.1461	NM_011346	Sell	Selectin, lymphocyte	L-selectin
99	Mm.3337	NM_011347	Selp	Selectin, platelet	P-selectin
100	Mm.332590	NM_009151	Selpl	Selectin, platelet (p-selectin) ligand	Psgl1
101	Mm.250422	NM_008871	Serpine1	Serine (or cysteine) proteinase inhibitor, clade E, member 1	PAI-1
102	Mm.24096	NM_009378	Thbd	Thrombomodulin	Thbd
103	Mm.8245	NM_011593	Timp1	Tissue inhibitor of metalloproteinase 1	Timp
104	Mm.1293	NM_013693	Tnf	Tumor necrosis factor	TNFA
105	Mm.1258	NM_011609	Tnfrsf1a	Tumor necrosis factor receptor superfamily, member 1a	TNFR2
106	Mm.235328	NM_011610	Tnfrsf1b	Tumor necrosis factor receptor superfamily, member 1b	TNFR1
107	Mm.271833	NM_011611	Tnfrsf5	Tumor necrosis factor receptor superfamily, member 5	Cd40
108	Mm.4861	NM_011616	Tnfrsf5	Tumor necrosis factor (ligand) superfamily, member 5	CD40L
109	Mm.3355	NM_010177	Fasf	Fas ligand (TNF superfamily, member 6)	Tnfsf6/FasL
110	Mm.712	NM_009393	Tnnc1	Troponin C, cardiac/slow skeletal	Tnnc
111	Mm.358642	NM_009406	Tnni3	Troponin I, cardiac	Tnni3
112	Mm.247470	NM_011619	Tnni2	Troponin T2, cardiac	Tnni2
113	Mm.76849	NM_011693	Vcam1	Vascular cell adhesion molecule 1	VCAM-1
114	Mm.22339	NM_011708	Vwf	Von Willebrand factor homolog	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	Mm.180003	NM_024277	Rps27a	Ribosomal protein S27a	Rps27a
122	Mm.163	NM_009735	B2m	Beta-2 microglobulin	B2m
123	Mm.2180	NM_008302	Hspcb	Heat shock protein 1, beta	Hsp84
124	Mm.2180	NM_008302	Hspcb	Heat shock protein 1, beta	Hsp84
125	Mm.5246	NM_008907	Fpia	Peptidylprolyl isomerase A	CyclophilinA
126	Mm.5246	NM_008907	Fpia	Peptidylprolyl isomerase A	CyclophilinA
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