

11 Appendix

11.1 Candidate genes selected from Affymetrix chip analysis

Table 11.1 Genes with differential expression in the SHHF/WKY comparion

No.	Probe Set ID	Individual comparison method			Mean_chip Method			Gene descriptions
		C_W	C_SP	SP_W	C (AC)	C_W (DC)	C_W (FC)	
1	rc AA925752 at	-15	-10	0	P	D	-21.1	Cd36 antigen
	rc AA946368 at	-15	-10	0	P	D	-8.3	Cd36 antigen
	rc AA799326 s at	-15	-10	0	A	D	-5.7	Cd36 antigen
	AF072411 g at	-15	-10	0	P	D	-3.4	Cd36 antigen
	AF072411 at	-15	-10	0	P	D	-2.8	Cd36 antigen
	AB005743 g at	-11	-8	0	P	D	-4.5	Cd36 antigen
	AB005743 at	-10.5	-9	1	P	D	-3	Cd36 antigen
2	M12822cds f at	-15	-8	-5.5	A	D	-9.1	Ig germline kappa-chain gene C-region,
	M18528cds f at	-15	-7	-5	A	D	-8.6	Ig germline kappa-chain C-region gene
	M18526cds f at	-14.5	-2	-3.5	A	D	-8.5	Ig germline kappa-chain C-region gene
	M12981cds f at	-14.5	-3.5	-2	P	D	-7.1	Ig germline kappa-chain gene C-region
	M18530cds f at	-12.5	-5	0	P	D	-3	Immunoglobulin kappa-chain
	M18529cds f at	-10	-2.5	-3	P	D	-8.6	Ig germline kappa-chain C-region gene
3	L22654 at	-15	-8	2.5	A	D	-5.0	Anti-acetylcholine receptor antibody gene
4	rc A1178971 at	-15	0	-6	A	D	-27	hemoglobin, alpha 1
5	X56596 at	-15	0	-6	P	D	-9.9	MHC class II antigen RT1.B-1 beta-chain
6	U39609 s at	-15	-4.5	-4	A	D	-9.8	Anti-NGF30 antibody light-chain mRNA
7	X59864mRNA g at	-15	0	-6	P	D	-5.3	ASM15 gene
	X59864mRNA at	-15	0	-5	A	D	-11.2	ASM15 gene
8	rc AA891439 s at	-15	-3	-5	P	D	-2.3	Unkown est
9	rc AI044657 at	-15	0	-6	A	D	-4.6	RIKEN cDNA C030033M19 gene
10	rc AI234828 g at	-15	-1.5	-4	A	D	-6.2	Ig germline alpha H-chain C-region gene
11	rc AA818593 at	-14.5	-1	-5.5	P	D	-4.6	hypothetical protein RMT-7
12	rc AI058733 at	-14.5	0	-6	A	D	-3.8	Unkown est
13	rc AI008131 s at	-14	0	-5	P	D	-2.4	S-adenosylmethionine decarboxylase 1 (Amd1)
14	rc AA964570 at	-13.5	0	-5	A	D	-8.7	Similar to Mus musculus endonuclease G
15	rc AA955151 at	-13.5	-1	-4	P	D	-3.6	Phosphatidate phosphohydrolase type 2a
16	rc AI237654 at	-13	-2	-3	P	D	-2.1	Upregulated by 1,25-dihydroxyvitamin D-3
	rc AI014169 at	-12	-3	0	P	D	-1.9	Upregulated by 1,25-dihydroxyvitamin D-3
17	rc AA955251 at	-12	-8	1	P	D	-2.5	Interferon-induced protein 6-16 precursor
18	rc AA945204 at	-12	8.5	-6	P	D	-2	Interferon, alpha-inducible protein 27-like
19	M20131cds s at	-11.5	-8	-2	A	D	-3.3	Cytochrome P450 2E1,Cyp2e1
	AF056333 s at	-11	-4	-1.5	A	D	-3.9	Cytochrome P450 2E1 (Cyp2e1)
	S48325 s at	-9	-0.5	-2	P	D	-2.3	cytochrome P450, Cyp2e1

Table 11.1 continued

20	rc AA957564	at	-9.5	0	-3	P	D	-2.9	cytochrome P450 26A2
21	rc AI043713	at	-11.5	-1.5	-2	P	MD	-2.3	Similar to hypothetical protein
22	AF034577	at	-11	-10	3	P	D	-3.1	Pyruvate dehydrogenase, PDK4
23	J02962	at	-11	0	-5	P	D	-2.1	IgE binding protein mRNA
24	AF039583	s at	-11	-3.5	-2	A	D	~4.1	Decay accelerating factor GPI-form precursor (DAF)
25	M28671	at	-10	0	-4	A	D	-5.6	Rearranged IgG-2b gene
26	M15562	g at	-10	0	-5	P	D	-1.8	MHC class II RT1.u-D-alpha chain
27	U47312	s at	-10	0	-5	P	MD	-2.2	Similar to upstream regulatory element binding protein 1
28	AF014503	at	-10	-3	-1	A	D	-5.8	P8, nuclear protein 1
29	D50436	at	-10	-2	-1	P	D	-2	ferredoxin 1
30	L19998	at	-10	-6	-1	P	D	-2.3	Minoxidil sulfotransferase mRNA
31	U44948	at	-9.5	-6	2	P	D	-2.1	Smooth muscle cell LIM protein (SmLIM)
32	rc AA998152	at	-9.5	-6	-0.5	P	MD	-3.5	Insulin receptor tyrosine kinase substrate protein p53
33	rc AA945750	at	-9	-9	1	A	D	-15.3	Dimethylaniline monooxygenase(FMO 1)
34	rc AI030648	at	-9	0	-4.5	A	MD	-6.0	LOC317098
35	rc AI059352	at	-9	0	-2	A	D	-2.3	Unkown est
36	X05861	exon#1-6 s at	-9	-1	-2	A	D	-2.2	Fibrinogen gamma-chain gene
37	rc AA892568	at	-9	-2	-1.5	A	D	-3.1	IkBL, vacuolar ATPase NG38, Bat1, and MHC class I
38	rc AA942718	at	-8.5	-7	-2	P	D	-2.1	R.norvegicus bcl-x gene
39	M10094	g at	-8.5	2	-4	A	D	-2.2	RT1 class Ib gene(Aw2)
	M31038	at	12	4	1.5	P	I	2.5	RT1 class Ib gene(Aw2)
40	rc AI045148	at	-8.5	0	-4	A	D	-3.2	Unkown est
41	rc AA851938	g at	-8.5	-2	-2	P	D	-1.9	CDC42 effector protein (Rho GTPase binding) 4
42	rc AA799488	at	-8.5	-4	0	M	D	-2.9	Hypothetical protein
43	K02815	s at	-8	0	-2	P	D	-2.3	MHC RT1-B region class II (Ia antigen) A-alpha glycoprotein
44	M33648	g at	-8	-7	0	P	MD	-2.4	Mitochondrial 3-hydroxy-3-methylglutaryl-CoA synthase
45	rc AI639060	at	15	9.5	4.5	P	I	13.5	Rat mixed-tissue library Rattus norvegicus cDNA
46	AJ005046	g at	15	9	0	P	I	5.2	Fructose-1,6-bisphosphatase
47	AF037272	at	15	9	0	P	I	2.6	WAP four-disulfide core domain protein, PS20
48	X62951	mRNA s at	15	0	6	P	I	11.7	(pBUS19) with repetitive elements
49	rc AI071926	at	15	4	4	P	I	4	Unkown est
50	S45663	at	15	2	6	P	I	3.6	SC2=synaptic glycoprotein
	S45663	g at	15	4	5	P	I	3.1	SC2=synaptic glycoprotein
51	S45812	s at	15	0	6	P	I	3.3	monoamine oxidase A
	D00688	s at	15	0	6	P	I	2.6	Monoamine oxidase A gene
52	J00692	at	15	0	6	P	I	2.8	Skeletal muscle alpha-actin gene
53	A04674	cds s at	14	9	3	P	I	14.3	uncoupling protein 1
	X03894	at	11.5	6	2.5	P	I	10.5	uncoupling protein 1
54	rc AA859805	at	14	7.5	0	P	I	2.5	Similar to mus musculus lysyl oxidase-like 1
55	rc AA996620	at	14	1	5	P	I	15.7	Endogenous retroviral

Table 11.1 continued

56	rc_AA892146	f	at	14	-0.5	5.5	P	I	4.3	Carboxypeptidase B gene	
57	X89963	at		13.5	-1	6	P	I	6.1	thrombospondin 4	
58	rc_AA925364	f	at	13.5	0	6	P	I	5.1	Rat retrovirus SC1	
59	D10709	exon	s	at	13.5	-1.5	6	P	I	3.4	Isk protein
60	rc_AA849518	at		13	9	0	P	I	3.4	Similar to group XII-1phospholipase A2/F14J9.24 protein	
61	rc_AA849841	at		13	8.5	0	P	I	2.5	Syncoilin	
62	rc_AI043601	at		13	6	3	P	I	2.4	Hypothetical WD-repeat protein alr3466	
63	rc_AA925101	at		13	1	4	P	I	2.5	Similar to Mus musculus mRNA for mKIAA1678 protein	
64	rc_AI009603	at		12	9	0	P	I	3.7	HRPAP20 short form	
65	X51531	cds	g	at	12	-1	5	P	I	2.5	Atrial myosin light chain 1
	X51531	cds	at	10	0	4	P	I	2.1	Atrial myosin light chain 1	
66	M21354	s	at	12	5	3	P	I	2.4	Collagen type III alpha-1	
	X70369	s	at	12	1	3	P	I	2	collagen type III, alpha 1	
67	rc_AA892332	at		12	0	0	P	I	1.7	cystatin C	
68	rc_AI010936	at		11.5	5	2.5	P	I	2.2	Protein tyrosine phosphatase	
	U02553	cds	s	at	8.5	7	-1	P	I	2.9	Protein tyrosine phosphatase
69	M27902	at		11.5	1	3	P	I	5.6	Cardiac specific sodium channel alpha-subunit	
70	rc_AA799992	g	at	11.5	2	3	P	I	3	Similar to predicted gene ICRFP703B1614Q5.6	
71	M25804	at		11.5	4.5	0	P	I	2.9	nuclear receptor subfamily 1	
	M25804	g	at	10	4.5	0	P	I	4	nuclear receptor subfamily 1	
72	M55050	at		11.5	4	2	P	I	2.4	Interleukin-2 receptor beta chain (p70/75)	
73	rc_AA946457	g	at	11	5.5	1	P	I	2.7	Hypothetical protein KIAA0846	
74	rc_AA893235	at		11	9	0	P	I	1.9	Rattus norvegicus similar to G0/G1 switch gene 2	
75	rc_AA851185	at		11	1.5	3	P	I	4.3	Similar to Mus musculus suppressor of cytokine signaling-2	
76	D26393	exon	s	at	11	6	1	P	I	4.4	HK2 gene for type II hexokinase
77	U65217	i	at	11	3	0	A	I	2.0	MHC class II antigen RT1.B beta chain	
78	rc_AA945996	at		11	2	1	P	I	3	Angiotensin receptor-like 1	
79	D16308	at		11	3.5	0	P	I	2.7	Cyclin D2	
80	rc_AA943099	at		11	0	4	P	I	2.3	Unkown est	
81	rc_AI010449	at		11	1	3	P	I	2.2	follistatin-like	
	rc_AA849769	at		8.5	3	1	P	I	5.7	follistatin-like	
82	rc_AA944442	at		11	0	3	P	I	1.9	Similar to hypothetical protein	
83	rc_AA901006	at		11	0	3	P	I	1.6	Membrane interacting protein of RGS16 (Mir16)	
84	K01934	mRNA#2	at	10.5	5	2	P	I	4.2	Thyroid hormone-inducible hepatic protein, Thrsp or S14	
85	rc_AA998963	at		10.5	2	0	P	I	4.6	Similar to Homo sapiens ephrin B3	
86	AF016387	at		10.5	1.5	2	P	I	6.9	Retinoid X receptor gamma (RXRgamma)	
87	rc_A1176460	s	at	10	6	0	P	I	1.9	32S pre-rRNA 5'-terminal part with 28S rRNA	
88	M36151	cds	i	at	10	2	0	A	I	3.3	Rat MHC class II A-beta and dibasic and neutral amino acids
89	rc_AI227608	s	at	10	1	3	P	I	4.6	Microtubule-associated protein tau (Mapt)	
90	rc_AI009372	at		10	1	3	P	I	4.2	Fibroblast growth factor 12	

Table 11.1 continued

91	rc_AA955287	at	10	3	0	P	I	2.9	Related RAS viral (r-ras) oncogene homolog 2 (Rras2)
92	rc_AA799340	at	10	0	2.5	P	I	2.3	tissue inhibitor of metalloproteinase 2
93	rc_AA924763	at	10	5	2	P	I	2.2	Similar to Homo sapiens hypothetical protein
94	M83107	at	10	1	1	P	I	1.9	SM22 mRNA; transgelin
95	rc_AA799812	g_at	10	1	0	P	I	1.8	Hypothetical gene
96	rc_AA800844	s_at	10	4.5	0	P	MI	2.1	Lysyl oxidase-like
97	M64795	f_at	9.5	5	0	A	I	8.8	MHC class I antigen
98	rc_A1639294	at	9.5	2	5	P	I	5.1	Similar to Mus musculus mRNA for mKIAA0275 protein
99	M91234	f_at	9.5	1	1	P	I	3.7	VL30 element
100	U20796	at	9.5	4	0	P	I	2.8	Nuclear receptor Rev-Erba-beta
101	rc_A1012593	at	9.5	1	2	P	I	1.8	Hexokinase 1 (Hk1)
102	M80804	s_at	9	-1.5	4	P	I	2.8	Rat protein which stimulates transport of cystine
103	rc_A1059356	at	9	0	3	A	I	2.3	Amyotrophic lateral sclerosis 2 (juvenile), candidate 3 (Als2cr3)
104	AF077354	g_at	9	5	1	P	I	2.4	heat shock 70 kDa protein 4
	AF077354	at	7.5	4.5	0	P	I	3.3	heat shock 70 kDa protein 4
105	rc_A1009395	at	9	0	3	P	I	2.4	Unkown est
106	rc_A1009456	at	9	1	2	P	I	2.2	ATP-binding cassette, sub-family A, member 8
107	rc_A1231472	s_at	9	1.5	0.5	P	MI	1.9	Collagen I, alpha 1
	U75405UTR#1	f_at	8	4	2	P	I	1.9	collagen I, Alpha 1
	M27207mRNA	s_at	9	5	1	P	I	1.9	collagen I, Alpha 1
108	AF045564	at	9	0	6	P	I	1.7	Development-related protein
109	M69246	at	8.5	9	0	P	I	2.1	47 kDa heat shock protein, Serpinh1
110	rc_A1060197	at	8.5	8	1	P	I	2	Membrane protein C21
111	rc_AA899642	at	8.5	1.5	1	A	I	3.6	Simliar to human sex determining region Y)-box 12 (SOX12)
112	AF037072	at	8.5	2	0	P	I	1.8	Carbonic anhydrase III (CA3)
113	rc_A1639282	s_at	8.5	2	1	P	I	1.6	Polymerase II
114	rc_AA800701	at	8	9	-1	P	I	1.9	Mus musculus 10 day old male pancreas cDNA
115	rc_A1008140	at	8	3	0	P	I	3.4	Unkown est
116	rc_A1009142	at	8	4	1	P	I	2.6	Unkown est
117	D17445	at	8	0	0	P	I	2.5	14-3-3 protein eta-subtype
118	S77900	g_at	8	0	0	P	I	1.8	Myosin regulatory light chain isoform C
119	rc_AA943099	g_at	8	0	5	P	I	1.6	Unkown est
120	rc_AA924865	at	8	3.5	1.5	P	I	1.6	Hypothetical protein
121	rc_AA850060	s_at	8	0	1	P	I	1.4	BN/SsNHsdMCW mitochondrion
122	rc_A1008578	at	8	3	0	P	I	1.3	Angiotensin receptor-like 1
123	rc_AA900593	at	8	-2	6	A	MI	5.2	RIKEN cDNA 2700010L10 gene
124	D86039	at	8	2	0	P	MI	2.1	ATP-sensitive inwardly rectifying K+ channel, BIR(Kir6.2)
125	rc_AA946530	at	7.5	2	3	P	I	3.2	Unkown est
126	rc_AA944935	g_at	7.5	3	0	P	I	1.7	Similar to Homo sapiens hypothetical protein

Genes that tested on Affymetrix chip with more than one probe set marked in bold C, SHHF; W, WKY; SP, SHRSP; AC, Absolute call; DC, Difference Call; FC, Fold change; ID, Index number.

Table 11.2 Genes with differential expression in the SHHF/SHRSP comparison

No.	Probe set ID	Individual Comparison Method			Mean-chip Method			Gene descriptions
		C_W	C_SP	W	C (AC)	C_SP (DC)	C_SP (FC)	
1	AF072411 at	-15	-10	0	P	D	-2.8	Cd36 antigen
	AF072411 g at	-15	-10	0	P	D	-3.2	Cd36 antigen
	rc AA799326 s at	-15	-10	0	A	D	-7.5	Cd36 antigen
	rc AA925752 at	-15	-10	0	P	D	-22	Cd36 antigen
	rc AA946368 at	-15	-10	0	P	D	-9.1	Cd36 antigen
	AB005743 at	-10.5	-9	1	P	D	-3	Cd36 antigen
	AB005743 g at	-11	-8	0	P	MD	-4.1	Cd36 antigen
2	AF034577 at	-11	-10	3	P	D	-4.6	Pyruvate dehydrogenase, PDK4
3	rc AI102562 at	-5	-10	4	P	D	-3.4	Metallothionein (Mt1a)
4	rc AI176456 at	-5	-10	4	P	D	-5.5	Metallothionein-2 and metallothionein-1 genes
5	rc AA957696 at	-0.5	-10	6	A	D	-9.9	Similar to Mus musculus RIKEN cDNA 3010027A04 gene
	rc AA900400 at	0	-10	6	A	D	-6.6	Similar to Mus musculus Wilms' tumour 1-associating protein (Wtap)
7	X60212 i at	0	-10	6	P	D	-1.4	Rat amino acid starvation-induced protein mRNA, 3' end
8	rc AA944481 at	-6	-9.5	3	P	D	-4.1	angiopoietin-like protein 4
9	rc AA848829 at	2.5	-9.5	5	A	D	-4.5	ATP-binding cassette 1, sub-family A, member 1 (Abca1) gene
10	rc AA945750 at	-9	-9	1	A	D	-23.1	Dimethylaniline monooxygenase(FMO 1)
11	rc AA925267 g at	-6	-9	3	P	D	-2.2	Similar to Rho-related BTB domain-containing protein 1 (LOC309722)
	rc AI010848 at	-5.5	-9	2	P	D	-3	Similar to Mus musculus Cytokine-like protein C17 precursor
13	L22654 at	-15	-8	2.5	A	D	-6	Anti-acetylcholine receptor antibody gene
14	M12822cds f at	-15	-8	-5.5	A	MD	-4.9	Ig germline kappa-chain gene C-region,
	M18528cds f at	-15	-7	-5	A	MD	-4.7	Ig germline kappa-chain C-region gene
	M18530cds f at	-12.5	-5	0	P	MD	-2.2	Immunoglobulin kappa-chain
15	rc AA955251 at	-12	-8	1	P	D	-3.1	Interferon-induced protein 6-16 precursor (Ifi-6-16)
16	M20131cds s at	-11.5	-8	-2	A	D	-2.4	Cytochrome P450 2E1,CYP2E1
17	rc AI231292 g at	-8	-8	0	P	D	-2.2	Cystatin C (Cst3)
18	rc AI012635 at	-2	-8	1	P	D	-2.1	Flavin-containing monooxygenase 3 (Fmo3)
19	rc AA849763 at	-0.5	-8	4	P	D	-1.8	Similar to Mus musculus lipin 1, transcript variant 2
	AF048687 s at	0	-8	3	P	D	-2.3	UDP-Gal:glucosylceramide beta-1,4-galactosyltransferase
21	rc AA946469 at	1	-8	4	P	D	-1.8	Similar to Mus musculus RIKEN cDNA 1810010A06 gene
22	M14656 at	2.5	-8	6	P	D	-4.2	secreted phosphoprotein 1
23	rc AI169327 g at	-5	-7.5	3	P	D	-2.5	Tissue inhibitor of metalloproteinase-1 (TIMP1)
	rc AI169327 at	-0.5	-6.5	2.5	P	D	-2.1	tissue inhibitor of metalloproteinase 1
24	rc AA945604 at	2.5	-7.5	6	A	D	-8.1	Similar to Mus musculus dimethylarginine dimethylaminohydrolase 1
25	rc AA942718 at	-8.5	-7	-2	P	D	-1.9	Bcl2-like 1
26	rc AA946532 at	-7	-7	0.5	P	D	-2.3	ATP-binding cassette, sub-family D, member 3, (Abcd3)
27	S85184 at	-7	-7	2	P	D	-2.8	Cyclic Protein-2=cathepsin L proenzyme
28	rc AI007872 at	-0.5	-7	3.5	P	MD	-2.1	Interferon (alpha and beta) receptor 1 (Ifnar1)

Table 11.2 continued

29	M33648 at	-6	-6.5	1.5	A	D	-3.7	Mitochondrial 3-hydroxy-3-methylglutaryl-CoA synthase
30	rc_AA957811 at	-1	-6.5	1.5	P	D	-2.7	Similar to Mus musculus RIKEN cDNA A230108G15 gene
31	rc_AA998152 at	-9.5	-6	-0.5	P	MD	-2.4	Insulin receptor tyrosine kinase substrate protein p53.
32	U44948 at	-9.5	-6	2	P	D	-2.5	Smooth muscle cell LIM protein (SmLIM)
33	U38376 s at	-2.5	-6	0.5	P	MD	-2.1	Cytosolic phospholipase A2 mRNA
34	rc_AA848977 at	-1	-5.5	2	A	D	-1.7	RIKEN cDNA 2310014B11 gene (2310014B11Rik)
35	rc_AA955831 at	0	-5.5	2	A	D	-2.9	Similar to protease [Sus scrofa] (LOC309040)
36	rc_AA996880 at	0	-5.5	2	P	MD	-2.6	Similar to splicing factor, arginine/serine-rich 1
37	L19998 g at	-8	-5	0	P	D	-1.8	Minoxidil sulfotransferase
38	rc_A1172247 at	-6	-5	0	P	D	-1.9	Xanthine dehydrogenase (Xdh)
39	rc_AA957139 at	-5	-5	1	P	D	-1.8	Similar to Mus musculus mannose receptor, C type 1 (Mrc1)
40	X89225cids s at	-4.5	-5	2	P	D	-2.2	solute carrier family 3, member 2
41	rc_A1011598 at	-3	-5	0	P	D	-2	Similar to Laminin alpha-5 chain precursor,(LOC296460)
42	L18948 at	-2	-5	2	P	MD	-3.9	S100 calcium-binding protein A9 (calgranulin B)
43	rc_A1059010 at	-1.5	-5	2	P	D	-2.2	Musculus Jun proto-oncogene related gene d1
44	rc_AA946439 at	0	-5	4	A	D	-3.1	H4 gene for somatic histone H4
45	rc_A1059153 at	0	-5	2	A	MD	-3	Hypothetical protein LOC270153
46	Y00404 s at	0	-5	2.5	P	D	-1.6	superoxide dismutase 1
47	X60328 g at	-0.5	10	-6	P	I	4.5	Cytosolic epoxide hydrolase
	X60328 at	1	9	-6	P	I	6.7	cytosolic epoxide hydrolase
48	X02610 g at	2	10	-6	P	I	2.6	enolase 1, alpha
	X02610 at	3	10	-6	P	I	2.8	enolase 1, alpha
49	Z49858 at	3.5	9.5	0	P	I	2.8	Plasmolipin
50	rc_A1639060 at	15	9.5	4.5	P	I	3.4	Rat mixed-tissue library Rattus norvegicus cDNA
51	rc_A1012340 s at	0	9	-2	P	I	4.5	Proteasome (prosome, macropain) subunit, beta type 9 (Psbm9)
52	rc_AA901318 at	1	9	-3.5	P	I	8.3	Nuclear receptor subfamily 3, group C, member 1(Nr3c1)
53	rc_A1045441 at	4.5	9	-3	P	I	2.4	Similar to Mus musculus RIKEN cDNA 2900024P20 gene (2900024P20Rik)
54	rc_AA852046 s at	5	9	-2	P	I	2.1	Hypothetical gene supported by M91235 (LOC300875)
55	rc_AA800701 at	8	9	-1	P	I	2.6	Mus musculus 10 day old male pancreas cDNA
56	M69246 at	8.5	9	0	P	I	4.3	47 kDa heat shock protein,Serpin1
57	rc_AA893235 at	11	9	0	P	I	2.1	Rattus norvegicus similar to G0/G1 switch gene 2
58	rc_A1009603 at	12	9	0	P	I	3.5	HRPAP20 short form
59	rc_AA849518 at	13	9	0	P	I	2.7	Similar to group XII-1-phospholipase A2/F14J9.24 protein
60	A04674cids s at	14	9	3	P	I	7.2	uncoupling protein 1
	X03894 at	11.5	6	2.5	P	I	5.8	uncoupling protein 1, UCP1
61	AF037272 at	15	9	0	P	I	3.1	WAP four-disulfide core domain protein, PS20
62	AJ005046 g at	15	9	0	P	I	3.5	Fructose-1,6-bisphosphatase
63	rc_AA945204 at	-12	8.5	-6	P	I	2.2	Interferon, alpha-inducible protein 27-like (Ifi271)
64	rc_AA799438 at	6	8.5	-3	P	I	2.2	Similar to Mus musculus ankyrin repeat and SOCS box-containing protein 2
65	rc_A1059109 at	7	8.5	-0.5	P	I	2.3	Similar to Mus musculus leucine-rich containing 10 (Lrrc10)
66	rc_AA849841 at	13	8.5	0	P	I	2.5	Syncoilin

Table 11.2 continued

67	rc_AA799861_g_at	1.5	8	-2	P	I	3.1	Similar to interferon regulatory factor 7(mus musculus LOC293624
68	rc_AI230406_at	2	8	-2	P	I	1.9	ras-related protein rab10
69	rc_AA799498_at	8	8	0	P	I	1.9	Natriuretic peptide precursor type B (Nppb)
	rc_AA799448_g_at	4	7	0	P	I	1.8	Natriuretic peptide precursor type B (Nppb)
70	rc_AI060197_at	8.5	8	1	P	I	2.2	Membrane protein C21orf4
71	rc_AA893618_s_at	4	7.5	0	P	I	1.7	Nuclear receptor subfamily 3, group C, member 1
72	rc_AA997412_at	5	7.5	-1	P	I	1.6	Similar to Homo sapiens ubiquinone oxidoreductase MLRQ subunit homolog
73	S81478_s_at	5.5	7.5	-4	P	I	2.8	protein tyrosine phosphatase
	U02553cnds_s_at	8.5	7	-1	P	I	5.8	Protein tyrosine phosphatase
	S74351_s_at	5	6	-2	P	I	3.2	Protein tyrosine phosphatase
	rc_AI010936_at	11.5	5	2.5	P	I	1.9	Protein tyrosine phosphatase
74	rc_AI008074_s_at	6	7.5	0	P	I	2	Similar to heat shock protein 84 - mouse (LOC301252)
75	rc_AA859805_at	14	7.5	0	P	I	2	Similar to mus musculus lysyl oxidase-like 1
76	AJ012603UTR#1_g_at	3	7	-2	P	I	3.9	TNF-alpha converting enzyme (TACE)
77	S49491_s_at	3	7	-2	P	I	1.6	Proenkephalin
78	M59980_s_at	6.5	7	0	P	I	3.5	Voltage-gated K+ channel protein (RK5)
79	rc_AI029058_s_at	8	7	0	P	I	5.5	Cyclin D1
80	rc_AI058890_at	7	6.5	0	P	I	4.5	Rattus norvegicus LOC306670
81	rc_AI070252_at	0.5	6	-2.5	A	I	4.6	Similar to hypothetical protein
82	rc_AI010725_g_at	2	6	-4	P	I	2	calnexin
83	V01217_at	2	6	0	P	I	1.6	Encoding cytoplasmic beta-actin
84	rc_AI043768_at	2.5	6	-1.5	A	I	1.6	Unknow EST
85	rc_AA799861_at	3.5	6	0	P	I	2.8	Similar to interferon regulatory factor 7(mus musculus LOC293624
86	rc_AI009666_at	4	6	0	P	I	2.4	aminopeptidase A short variant mRNA
87	L16764_s_at	6.5	6	-2	P	I	3	Heat shock protein 70 (HSP70)
88	rc_AI007744_at	7.5	6	0	P	I	1.7	Similar to NAG14 protein [Homo sapiens] (LOC272381)
89	rc_AII176460_s_at	10	6	0	P	I	1.8	32S pre-rRNA 5'-terminal part with 28S rRNA
90	rc_AI043601_at	13	6	3	P	MI	1.8	Hypothetical WD-repeat protein alr3466
91	rc_AA925373_at	2	5.5	-2	P	I	2.3	Similar to Mus musculus cytochrome c oxidase, subunit VIIa 1 (Cox7a1)
92	AJ223083_at	5	5.5	-1	A	MI	3.3	Retinoic acid X receptor gamma-1
93	rc_AI045475_at	5	5.5	-0.5	P	I	2.9	Unknow EST
94	J03179_g_at	7	5.5	0	P	I	4.9	D site albumin promoter binding protein
95	rc_AA946457_g_at	11	5.5	1	P	I	2.6	Hypothetical protein KIAA0846
96	rc_AI058762_at	0	5	-2	P	I	1.8	Hypothetical protein
97	rc_AA996943_at	1	5	-3	P	I	3.2	Similar to Mus musculus hypothetical protein LOC218195
98	U40999_at	1.5	5	0	P	I	7.6	Retinal protein (RRG4)
99	AA684963_at	3	5	-2	P	I	2.5	similar to binding protein
100	AF080468_g_at	4.5	5	0	P	I	1.6	glucose-6-phosphatase, transport protein 1
101	L20913_s_at	5	5	0	P	I	5.3	Vascular endothelial growth factor form 3
102	rc_AA924013_s_at	5.5	5	0	P	MI	2.4	Unknow EST
103	M64795_f_at	9.5	5	0	A	MI	5.1	MHC class I antigen
104	K01934mRNA#2_at	10.5	5	2	P	I	2.8	Thyroid hormone-inducible hepatic protein

Genes that tested on Affymetrix chip with more than one probe set marked in bold. C, SHHF; W, WKY; SP, SHRSP; AC, Absolute call; DC, Difference Call; FC, Fold change; ID, Index number.

Table 11.3 Genes with similar expression change in SHHF/WKY and SHRSP/WKY

No.	Probe set ID	C		C_W SP_W		C_W		SP_W		Chromosomal location			Gene descriptions
		AC	DC	FC	FC	Rat	Mouse	Human					
1	M12822cds f at	A	D	-9.1	-2.9	4	6	2				Ig kappa chain C region:	
	M18528cds f at	A	D	-8.6	-6.5	4	6	2				Ig kappa chain C region.	
	M18526cds f at	A	D	-8.5	-6.8	4	6	2				Ig germline kappa-chain C-region	
	M18529cds f at	A	D	-8.6	-10.2	4	6	2				Ig germline kappa-chain C-region	
2	X59864mRNA at	A	D	-11.2	-8.3	1	7	11				Rat ASM15 gene	
	X59864mRNA g at	P	D	-5.3	-4.3	1	7	11				Rat ASM15 gene	
3	rc AI178971 at	A	D	-27	-14.7	10	15	16				Hemoglobin, alpha 1 (Hba1)	
4	X56596 at	P	D	-9.9	-8.9	20	17	6				MHC class II antigen RT1.B-1 beta-chain	
5	U39609 s at	A	D	-9.8	-1.8	4	6	2				Anti-NGF30 antibody light-chain	
6	rc AA964570 at	A	D	-8.7	-9.0	3	2	9				Endonuclease G, mitochondrial precursor	
7	M28671 at	A	D	-5.6	-4.9	6	12	14				Rat rearranged IgG-2b gene	
8	rc AI058733 at	A	D	-3.8	-3.8	2	13	No				SCE50 Streptomyces coelicolor cosmid E50	
9	rc AA955151 at	P	D	-3.6	-2.5	4	6	2				Hypothetical protein RMT-7 (Rmt7)	
10	rc AI008131 s at	P	D	-2.4	-2.6	3	18	5				S-adenosylmethionine decarboxylase	
11	M10094 g at	A	D	-2.2	-4.2	20	17	6				MHC class I truncated cell surface antigen	
12	J02962 at	P	D	-2.1	-1.8	15	14	14				lectin, galactose binding, soluble 3	
13	rc AA945204 at¹	P	D	-2	-4.4	6	12	14				Interferon-induced protein (Ifi-6-16)	
14	M15562 g at	P	D	-1.8	-1.9	20	17	10,6				MHC class II RT1.u-D-alpha chain	
15	S45663 g at	P	I	3.1	2	1	17	4				SC2=synaptic glycoprotein	
	S45663 at	P	I	3.6	2.3	1	17	4				SC2=synaptic glycoprotein	
16	X51531cds at	P	I	2.1	2	12	12	17				Atrial myosin light chain 1	
	X51531cds g at	P	I	2.5	2.2	12	12	17				Atrial myosin light chain 1	
17	D00688 s at	P	I	2.6	2.6	X	X	X				Monoamine oxidase A gene	
	S45812 s at	P	I	3.3	3.4	X	X	X				Monoamine oxidase A	
18	D10709exon s at	P	I	3.4	6.5	11	16	5				Isk protein, 3 terminus of exon 2	
19	J00692 at	P	I	2.8	2.5	19	--	--				Skeletal muscle alpha-actin gene	
20	M27902 at	P	I	5.6	3.7	8	9	17				Cardiac specific sodium channel alpha-subunit	
21	M80804 s at	P	I	2.8	2.8	6	17	6				solute carrier family 3, member 1	
22	rc AA799992 g at	P	I	3	2.4	15	7	11				Similar to Mus musculus predicted gene	
23	rc AI639294 at	P	I	5.1	2.6	20	10	22				Testican-2 precursor	
24	X62951mRNA s at	P	I	11.7	13.2	13	6,13	No				(pBUS19) with repetitive elements	
25	X89963 at	P	I	6.1	5.7	2	13	5				thrombospondin 4	
26	rc AA925101 at	P	I	2.5	2.1	9	1	2				Similar to Homo sapiens KIAA1678 protein	
27	rc AA946530 at	P	I	3.2	2.9	1	19	11				Unkown EST	
28	rc AI030648 at	A	MD	-6.0	-6.7	4	12	X				AF091216 Mus musculus Wrn protein	

Genes tested with more than one probe set are marked in bold. AC, Absolute Call; DC, difference call; FC, fold change; C, SHHF; W, WKY. SP, SHRSP; ID, Index number. --, No hit on the chromosome.

11.2 Formula and default values for Affymetrix chip analysis

Table 11.4 Formula and default values for Absolute Analysis

Mathematical formula	Default Values	
<i>A probe pair is Positive if:</i> $PM - MM \geq SDT$ and $PM / MM \geq SRT$	<i>Absolute analysis parameters</i> SDT_{mult} 2 SRT 1.5 $SDT = (Q) \times (SDT_{mult})$	
<i>A probe pair is Negative if:</i> $MM - PM \geq SDT$ and $MM / PM \geq SRT$		
$Avg\ Diff = \Sigma (PM - MM) / (Pairs\ in\ Avg)$		
Positive Fraction = # positive probe pairs / # probe pairs used		
Pos / Neg Ratio = # Positive probe pairs / # Negative pairs	<i>Absolute Call Decision Matrix Thresholds</i>	
$Log\ Avg\ Ratio = 10 \times [\Sigma \log (PM / MM) / (Pairs\ in\ Avg)]$		<u>Min</u> <u>Max</u>
		Pos fraction 0.33 0.43 Pos/Neg Ratio 3 4 Log Avg Ratio 0.9 1.3

SDT, Statistical Difference Threshold; SRT, Statistical Ratio Threshold; Pos, Positive; Neg, Negative; mult, multiplier; PM, Perfect Match; MM, Mismatch; Min, Minimum; Max, Maximum.

Table 11.5 Formula and default values for Comparison Analysis

Mathematical Formula	Default values	
<i>A probe pair to show a significant Increase:</i> $(PM - MM)_{exp} - (PM - MM)_{base} \geq CT$ and $[(PM - MM)_{exp} - (PM - MM)_{base}] / (PM - MM)_{base} \geq PCT/100$	<i>Comparison Analysis Parameters</i> CT_{mult} Computed PCT 80 Q_{mult} 2 $CT = (Q) \times (CT_{mult})$	
<i>A probe pair to show a significant Decrease:</i> $(PM - MM)_{base} - (PM - MM)_{exp} \geq CT$ and $[(PM - MM)_{base} - (PM - MM)_{exp}] / (PM - MM)_{base} \geq PCT/100$		
Increase / PP used = # Increased Probe Pairs / # PP used		
Decrease / PP used = # Decrease Probe Pairs / # PP used		
Increase/Decrease Ratio = # Increased PP / # Decreased PP	<i>Difference Call Decision Matrix Thresholds</i>	
Log Avg Ratio Change = $Log\ Avg_{exp} - Log\ Avg_{base}$		<u>Min</u> <u>Max</u>
Dpos-Dneg Ratio = (Positive Change) – (Negative Change) / # of PP used		Inc/Dec Ratio 3 4 Inc/Total Ratio 0.33 0.43 Dpos-DnegRatio 0.2 0.3 Log Avg Ratio Change 0.9 1.3
Positive Change = # Positive Probe Pairs _{exp} - # Positive PP _{base}		
Negative Change = # Negative Probe Pairs _{exp} - # Negative PP _{base}		

CT, Change Threshold; PCT, Percent Change Threshold; PP, probe pairs; mult, multiplier; Ava, Average; Dpos, Difference Positive; Dneg, Difference Negative; PM, Perfect Match; MM, Mismatch; Min, Minimum; Max, Maximum.