

Figure 1

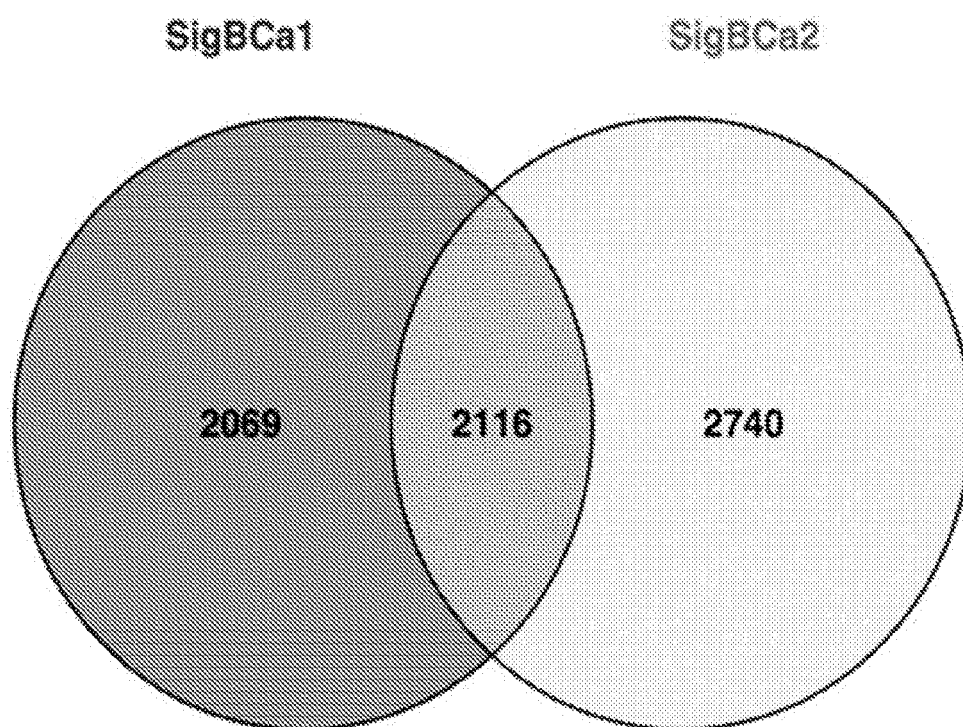


Figure 2

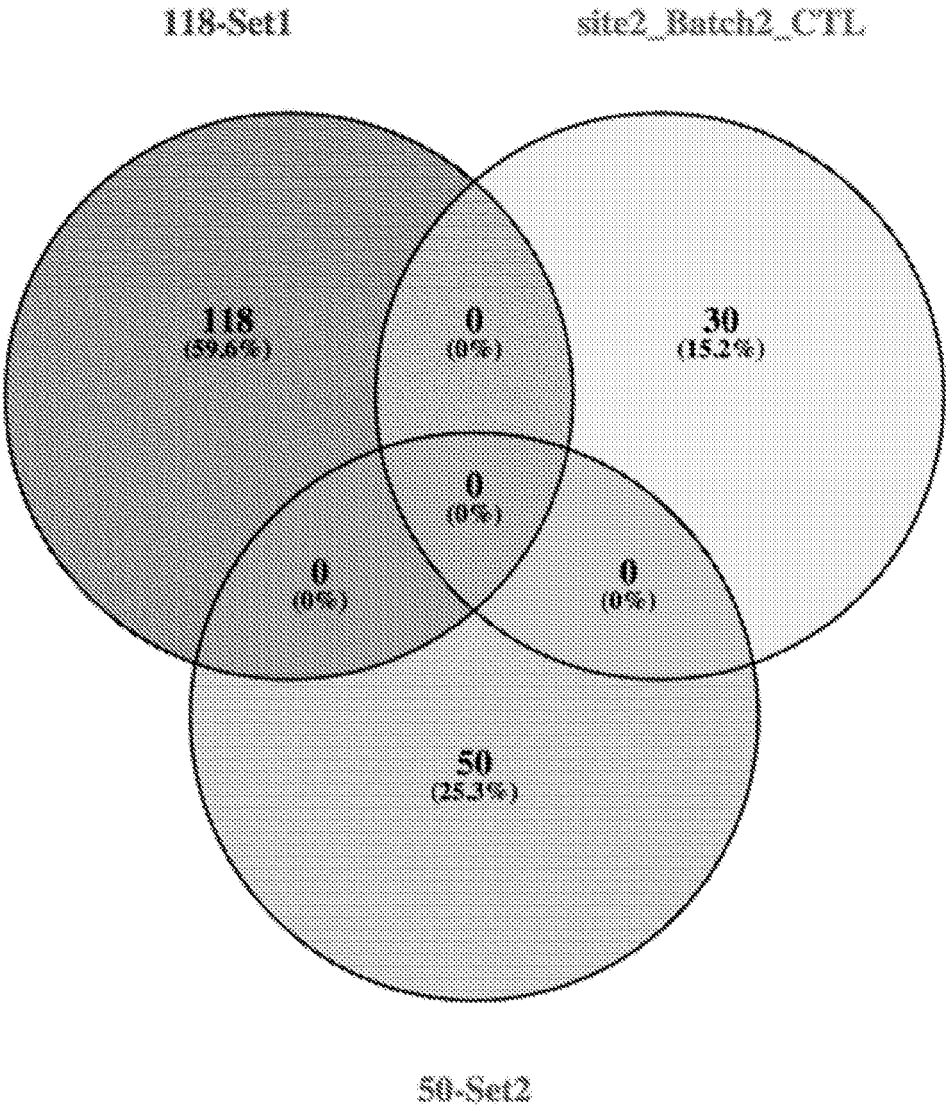


Figure 3

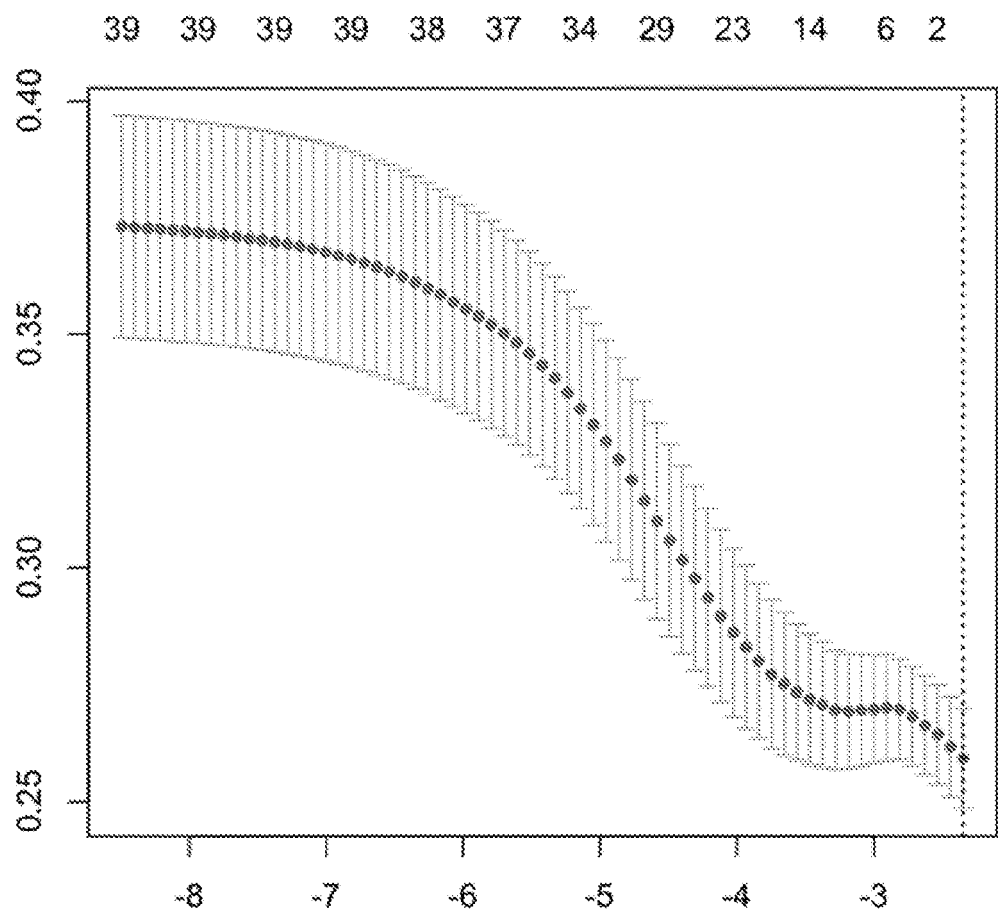


Figure 4

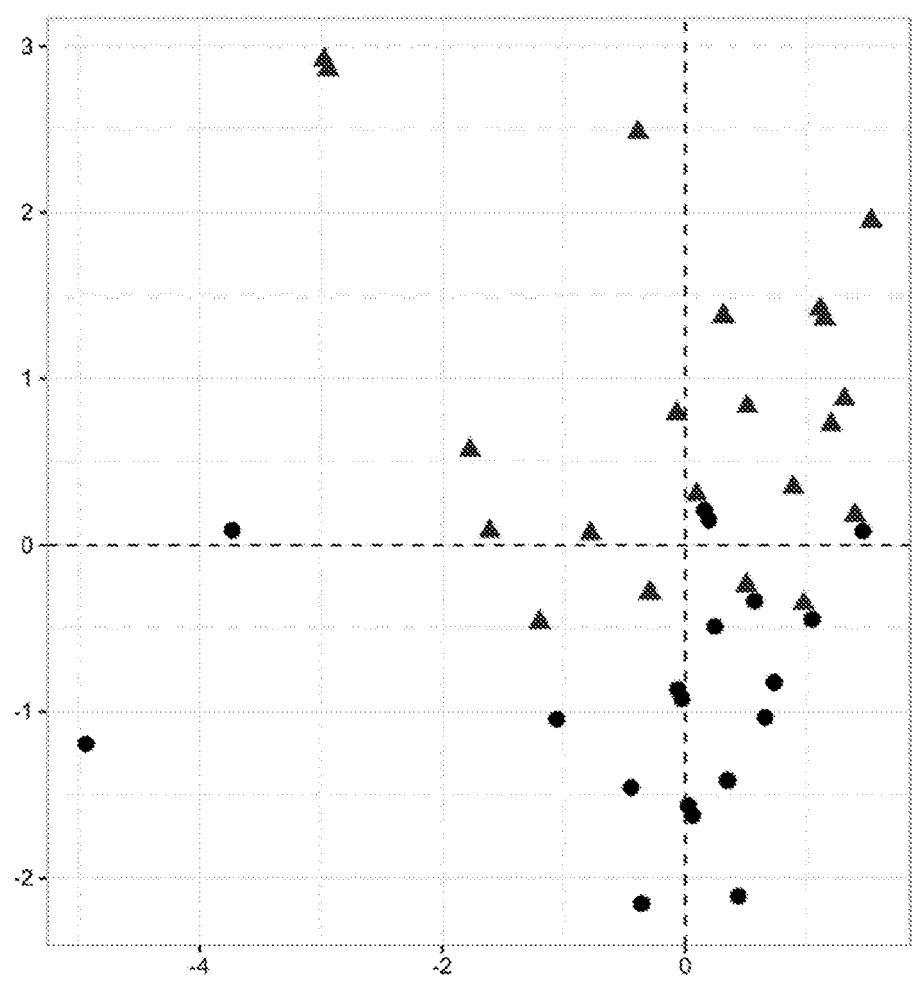


Figure 5

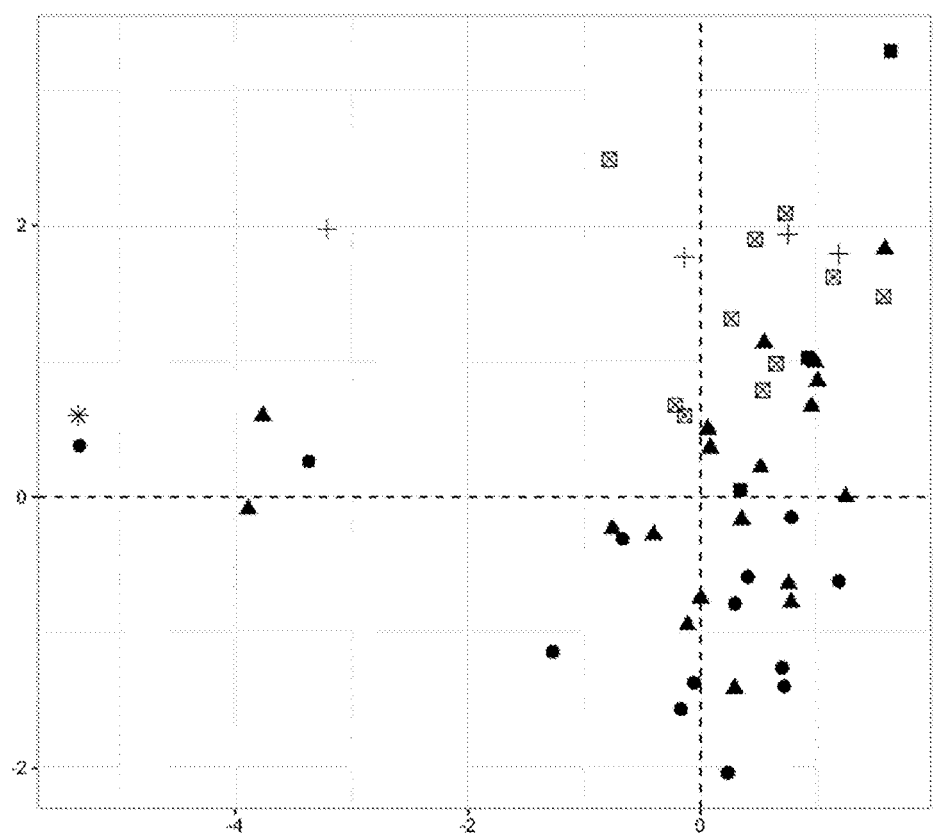


Figure 6

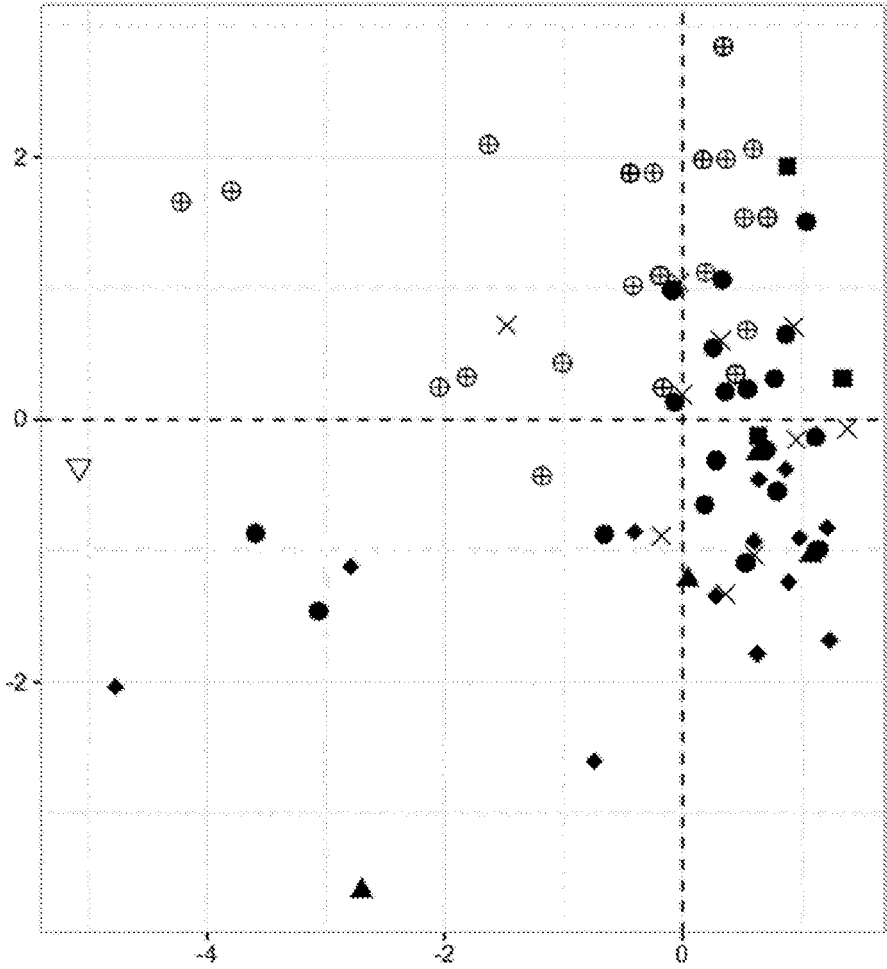


Figure 7

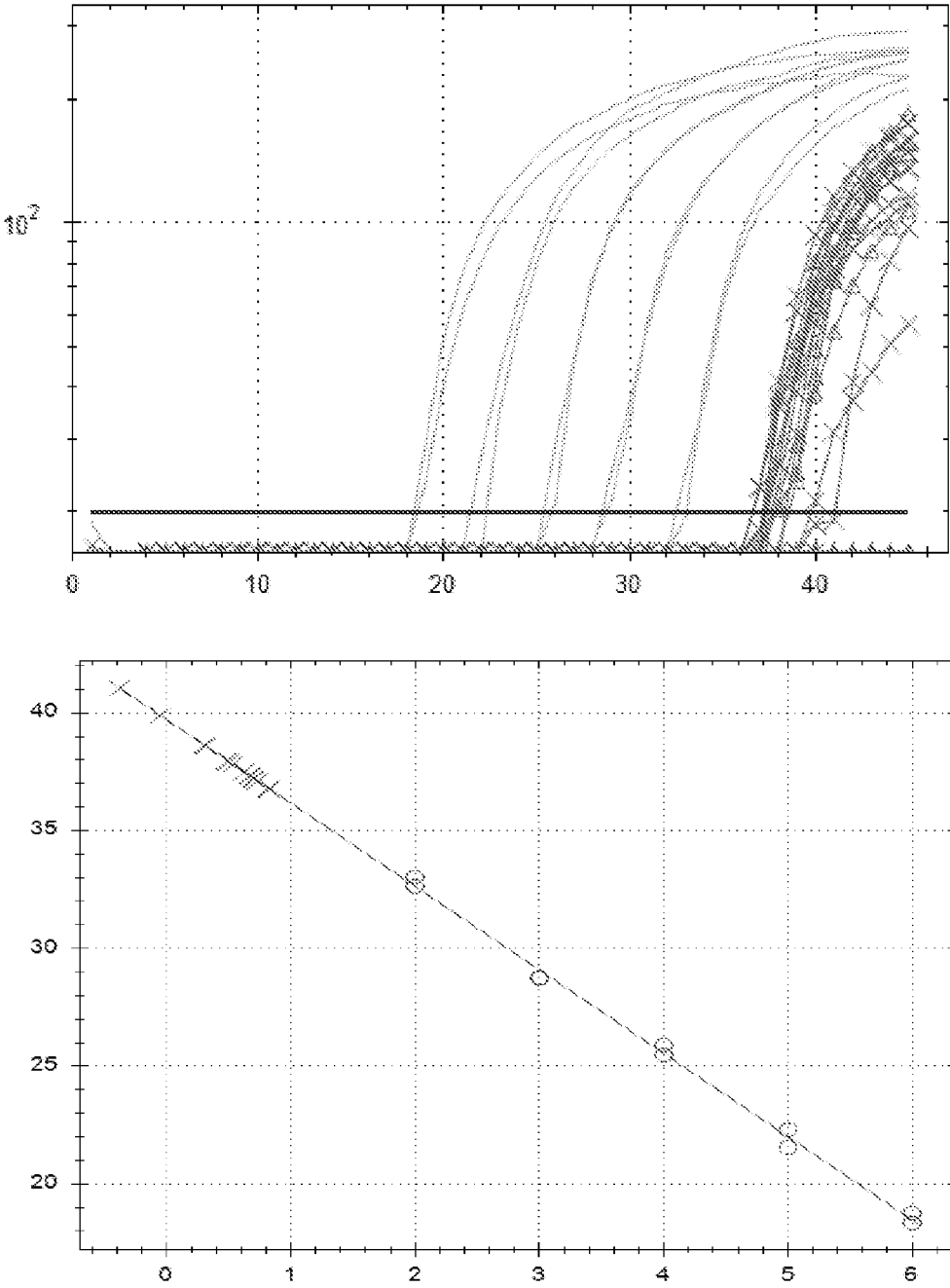


Figure 8

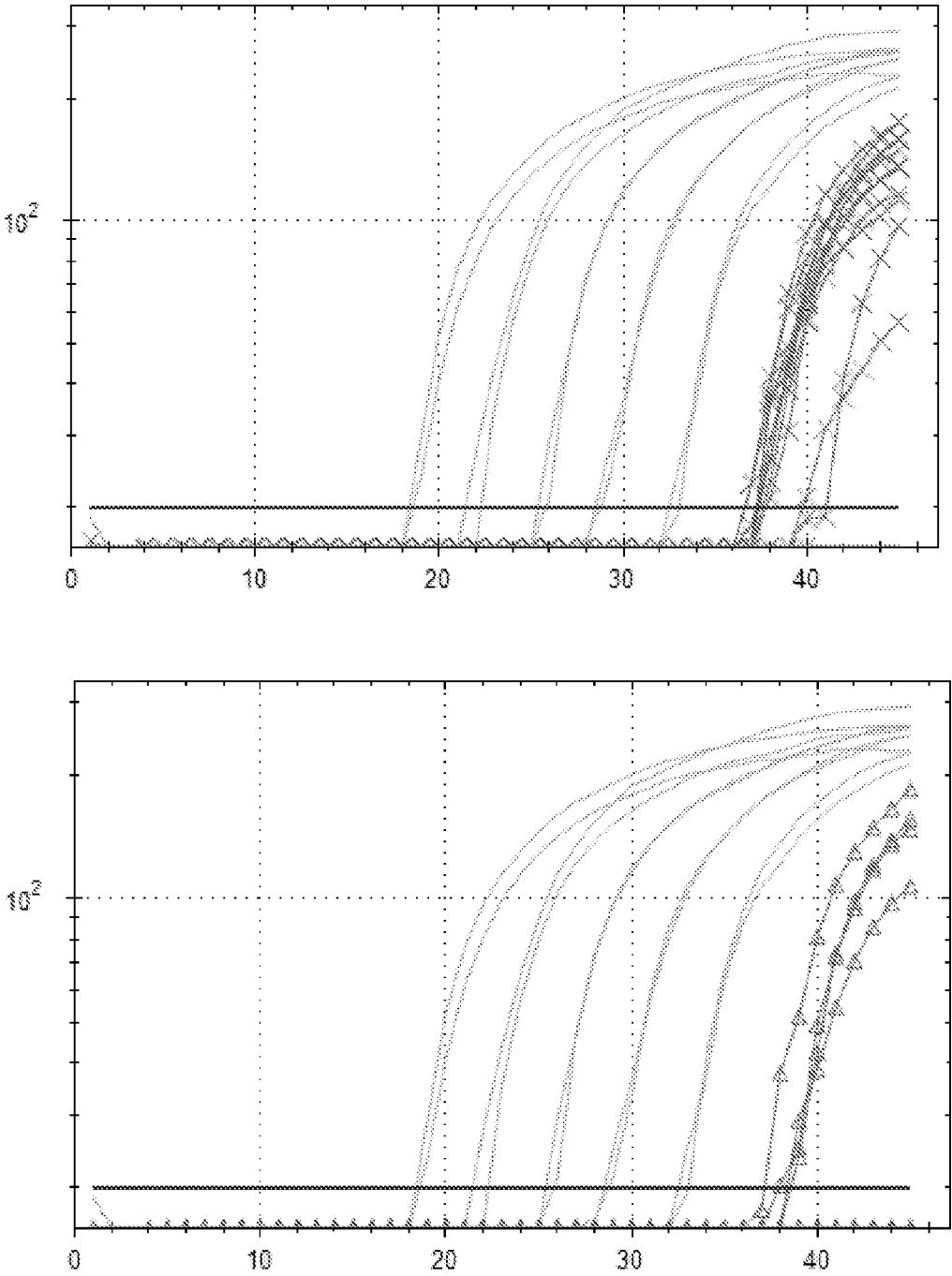


Figure 9

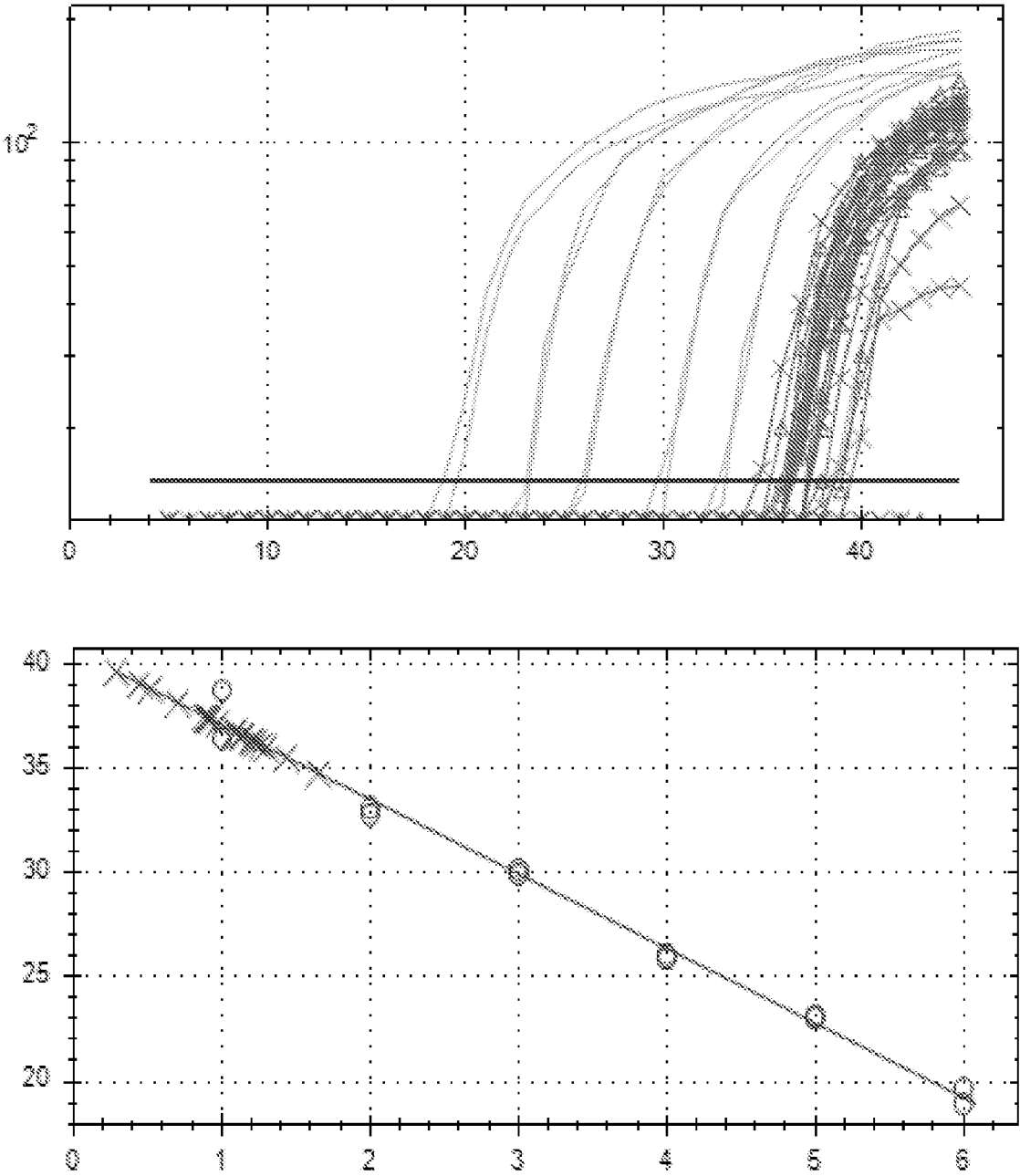


Figure 10

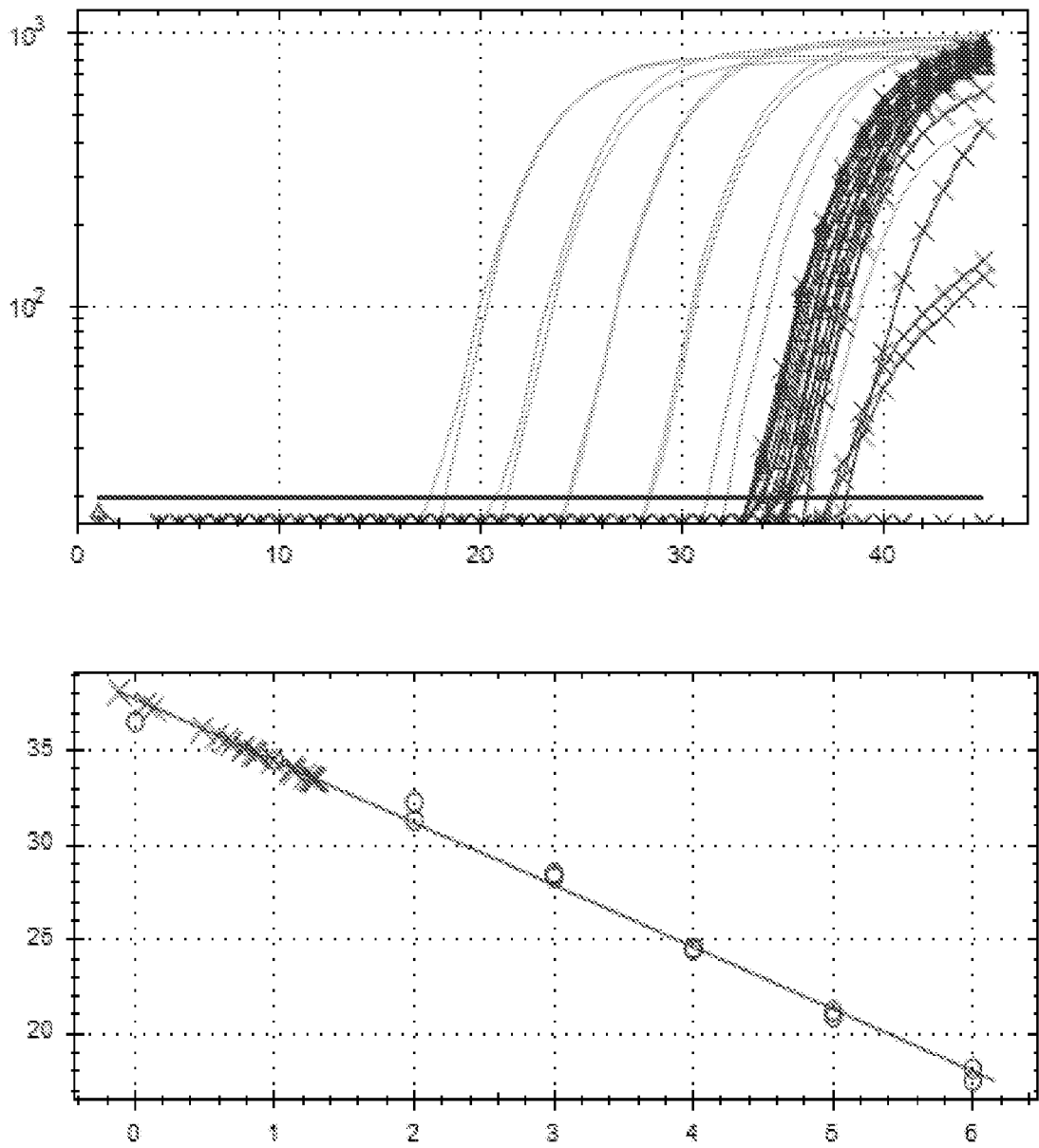


Figure 11

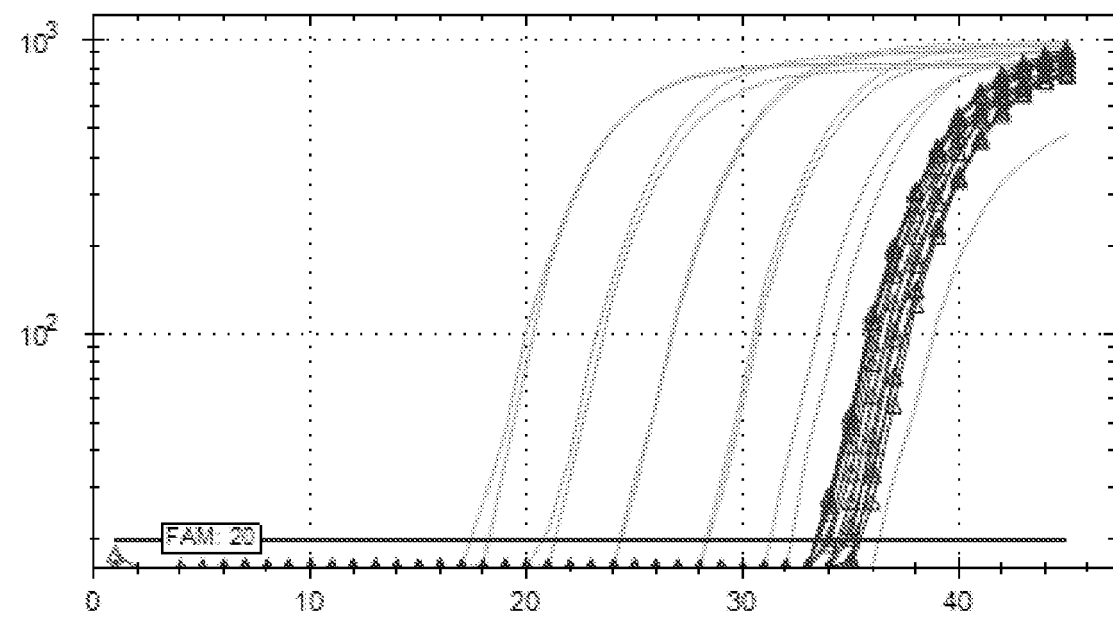
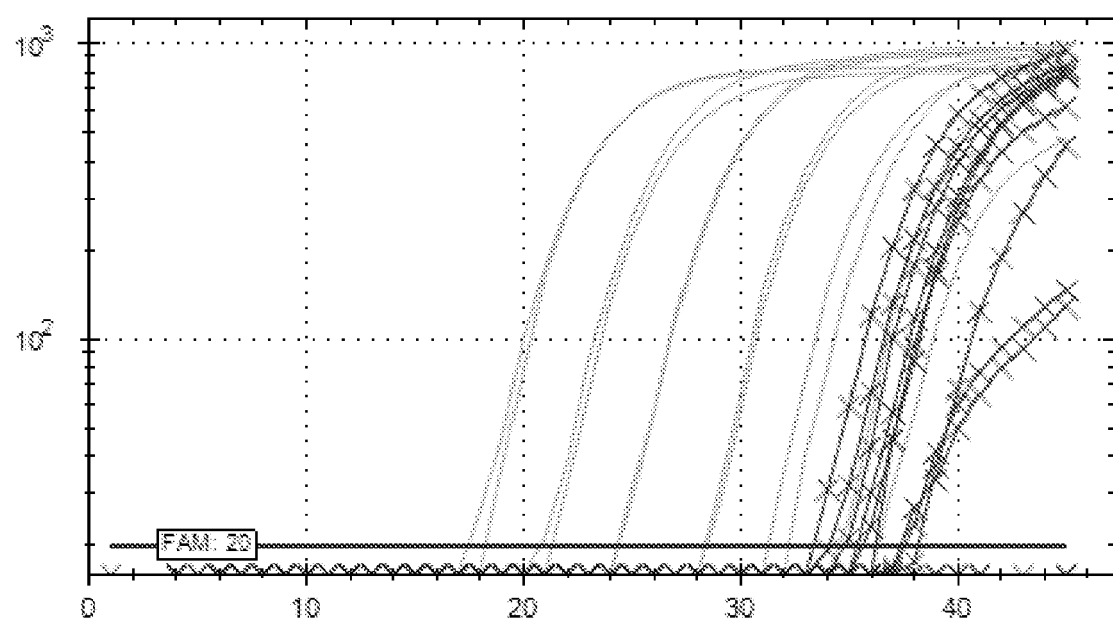


Figure 12

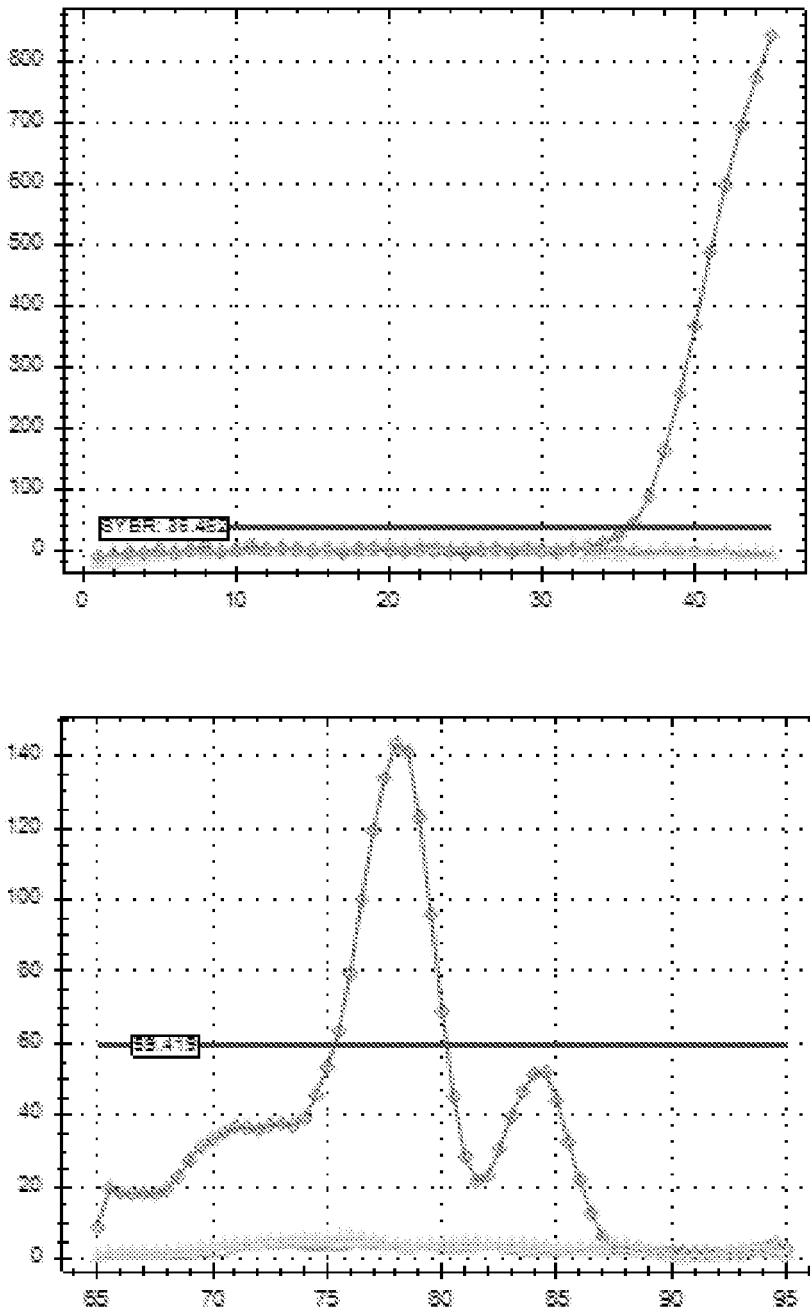


Figure 13

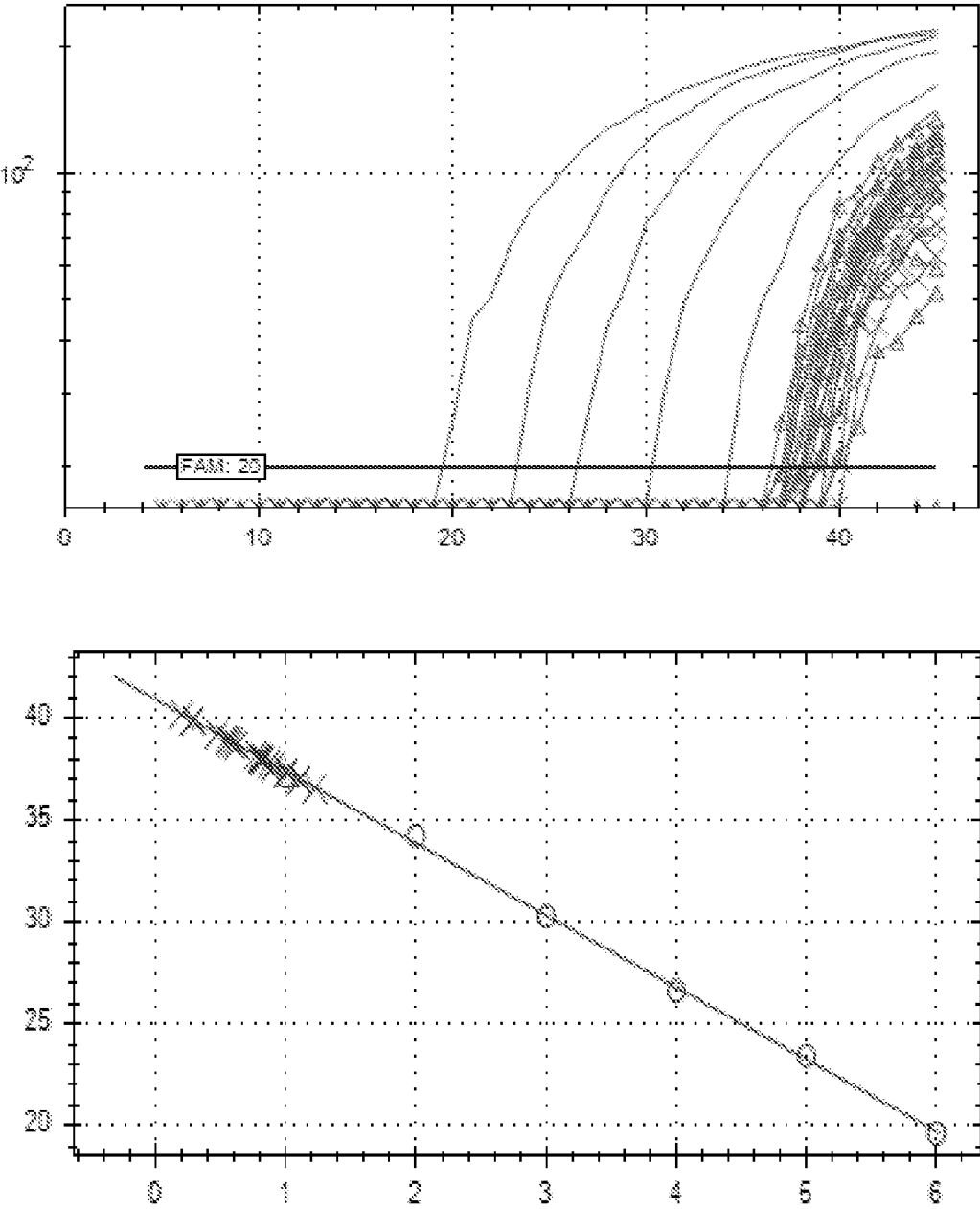


Figure 14

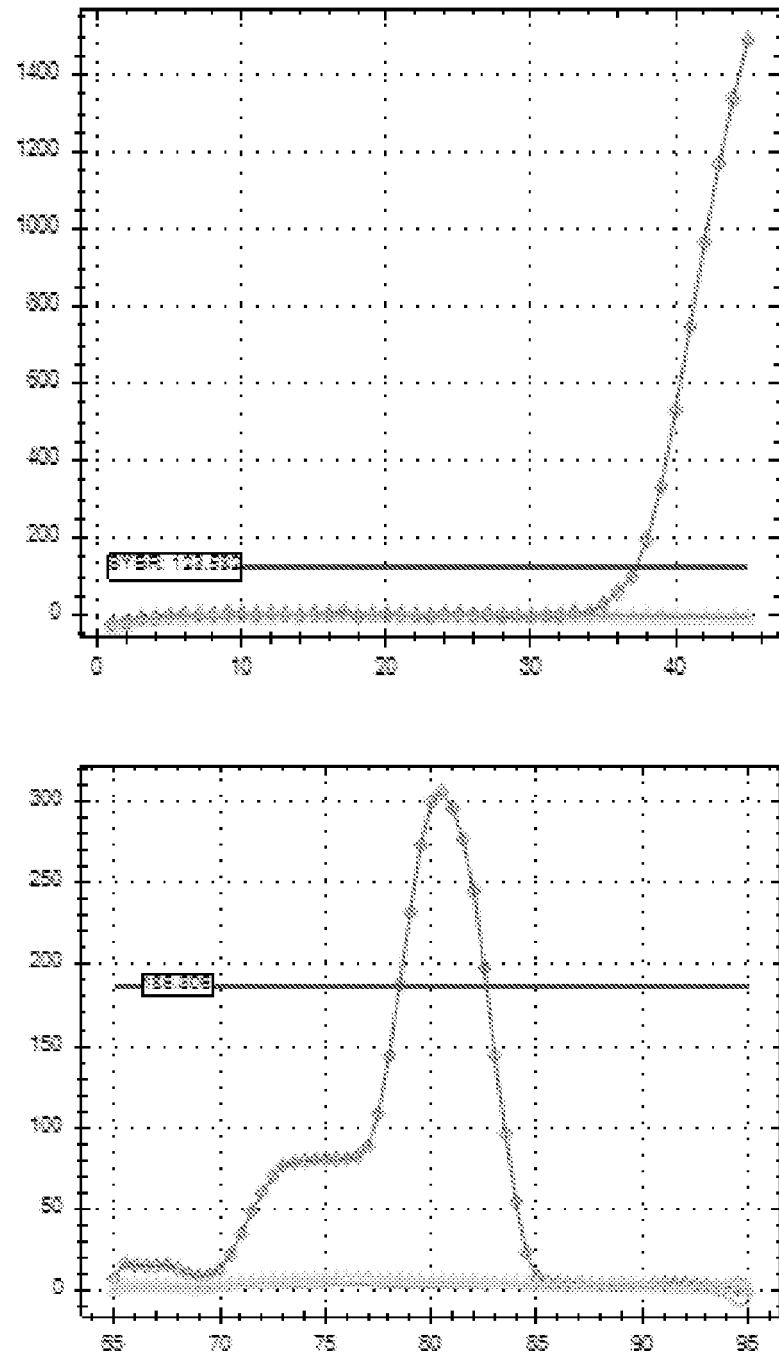


Figure 15

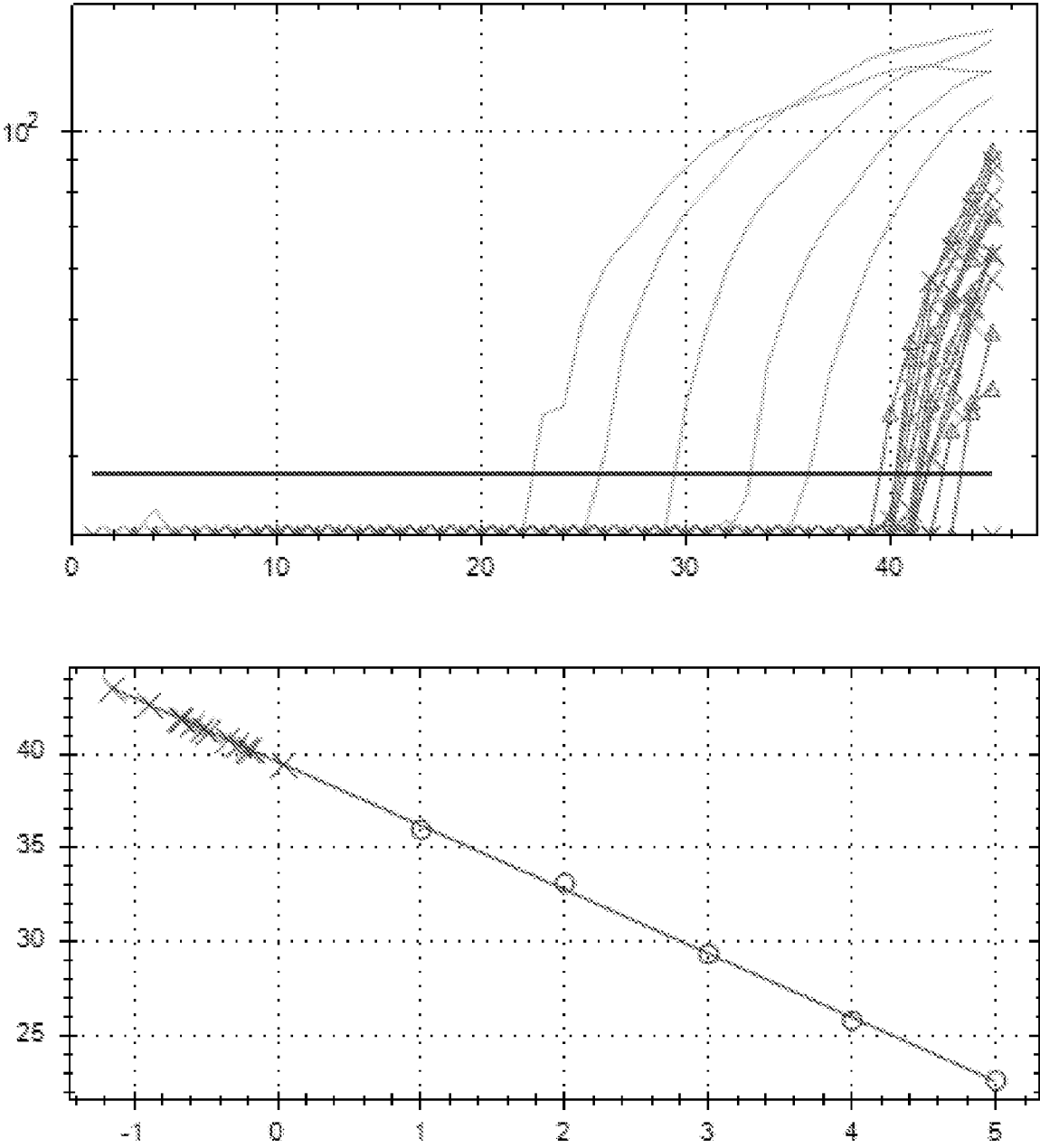


Figure 16

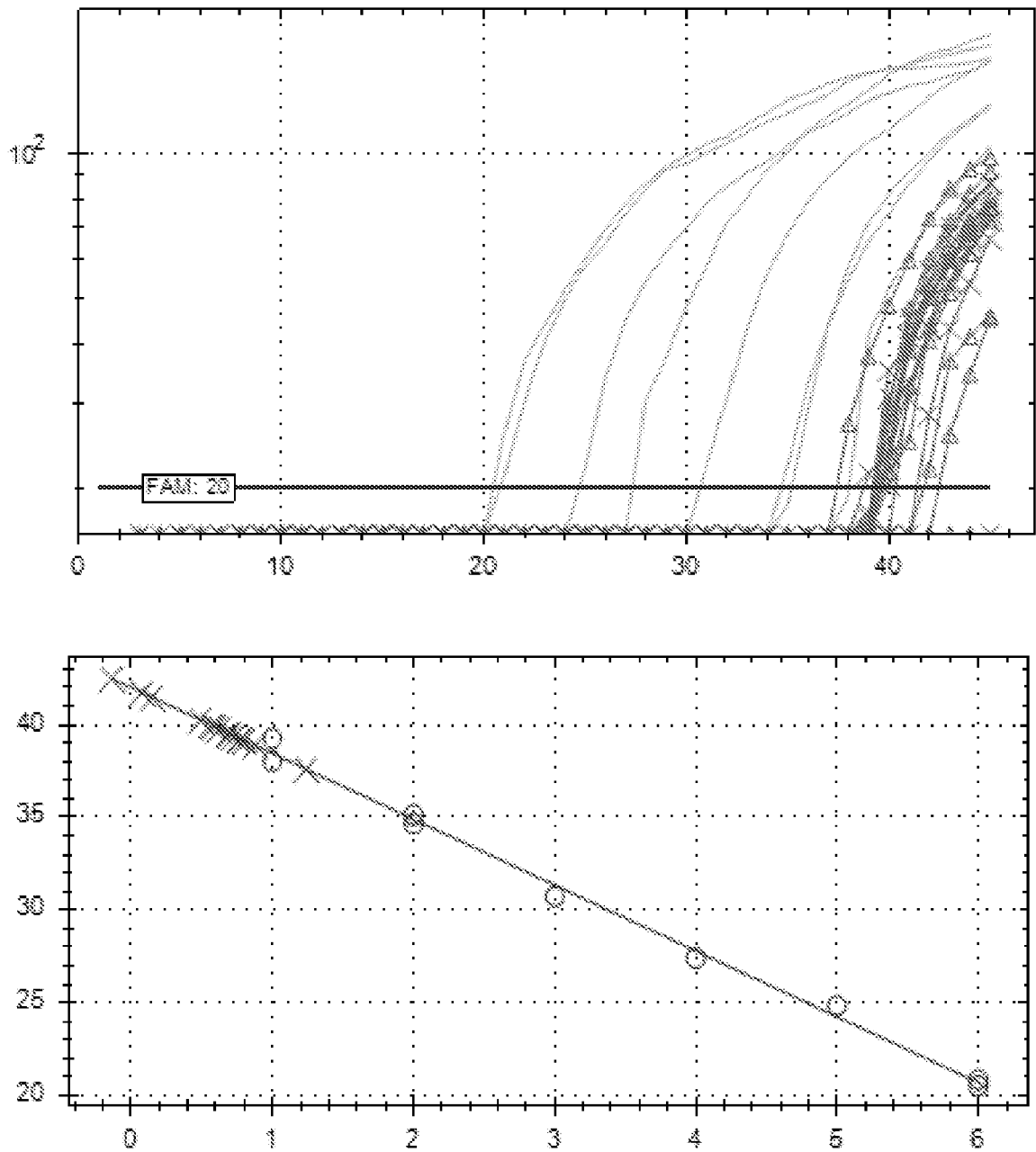


Figure 17

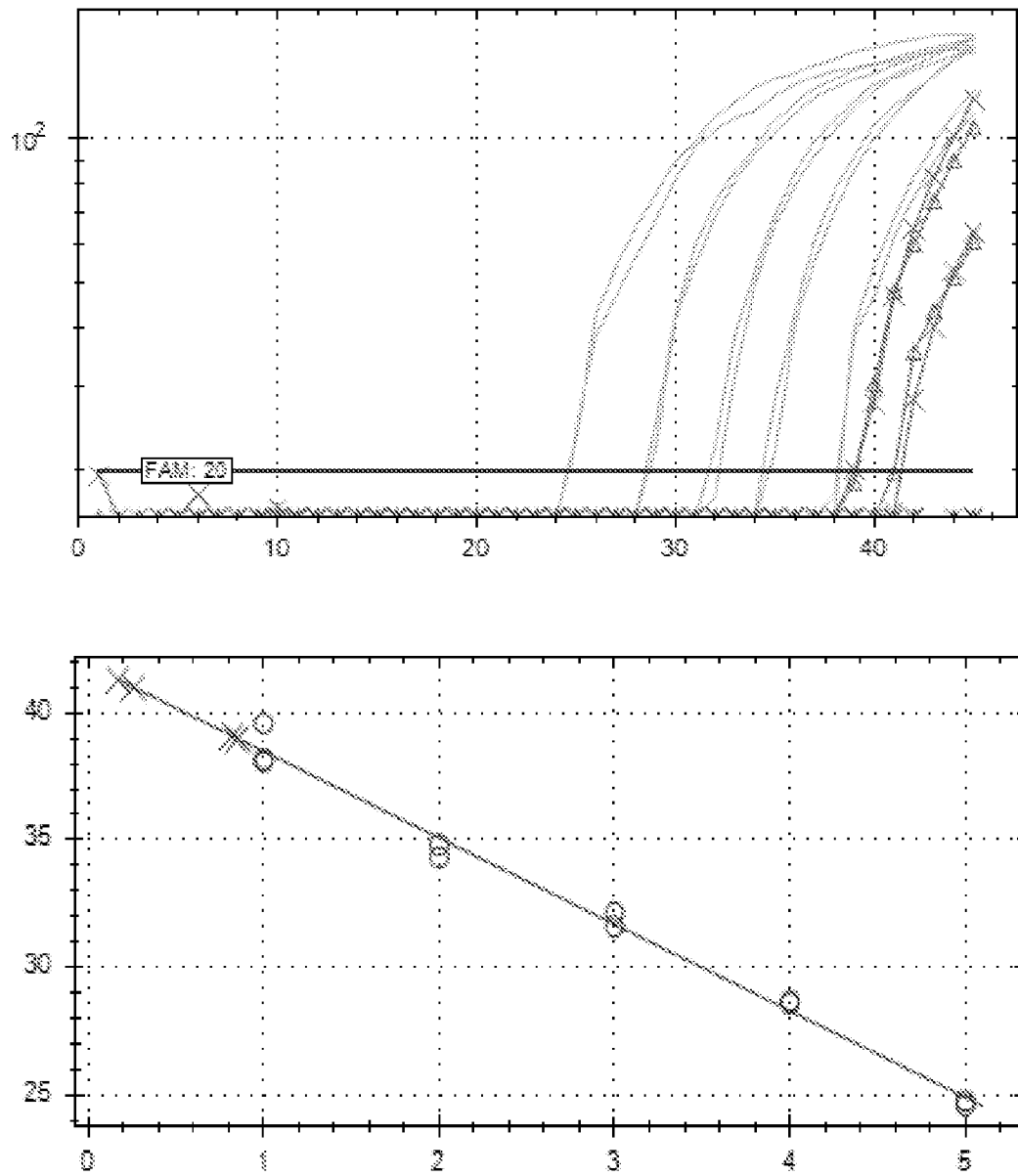


Figure 18

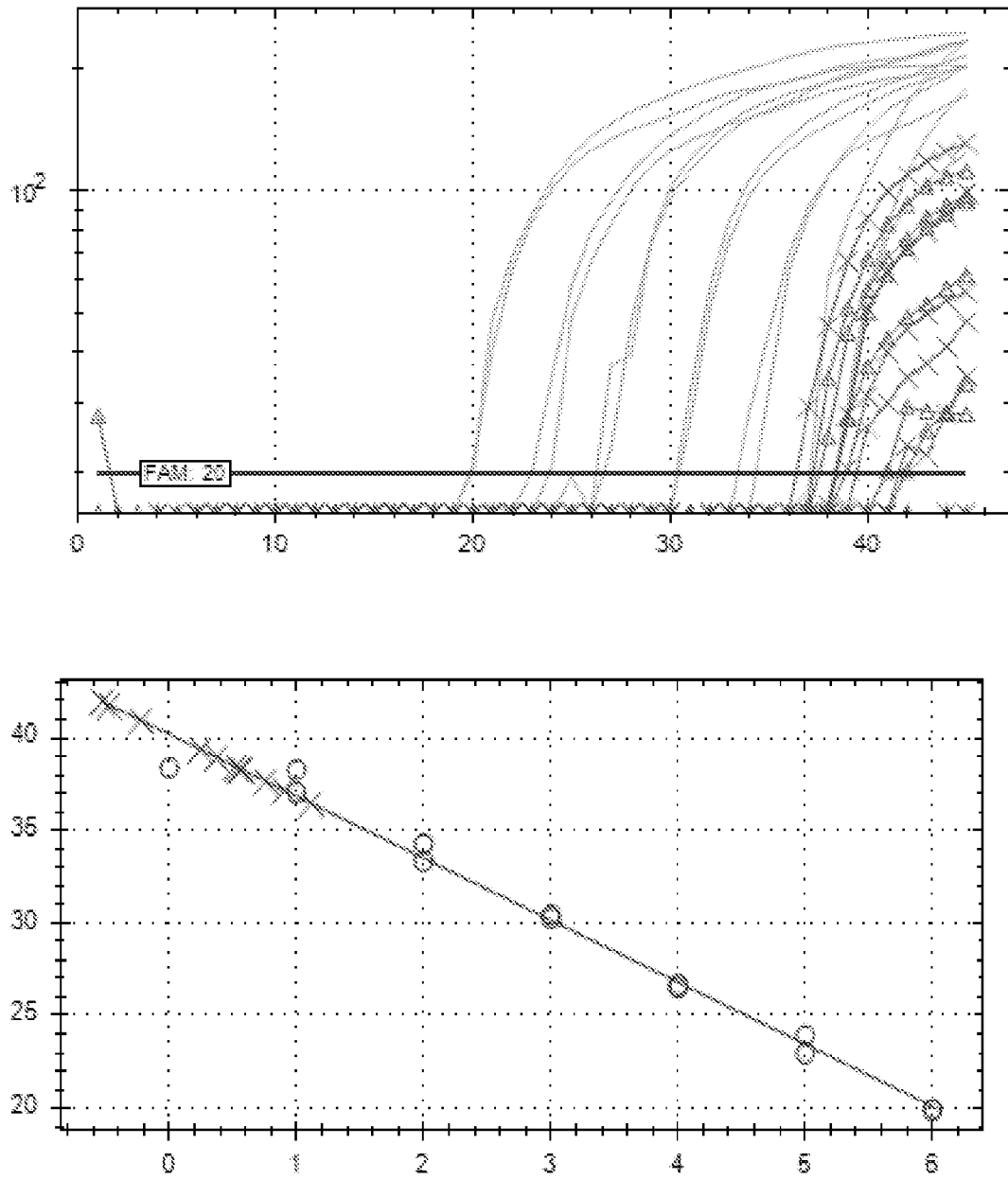


Figure 19

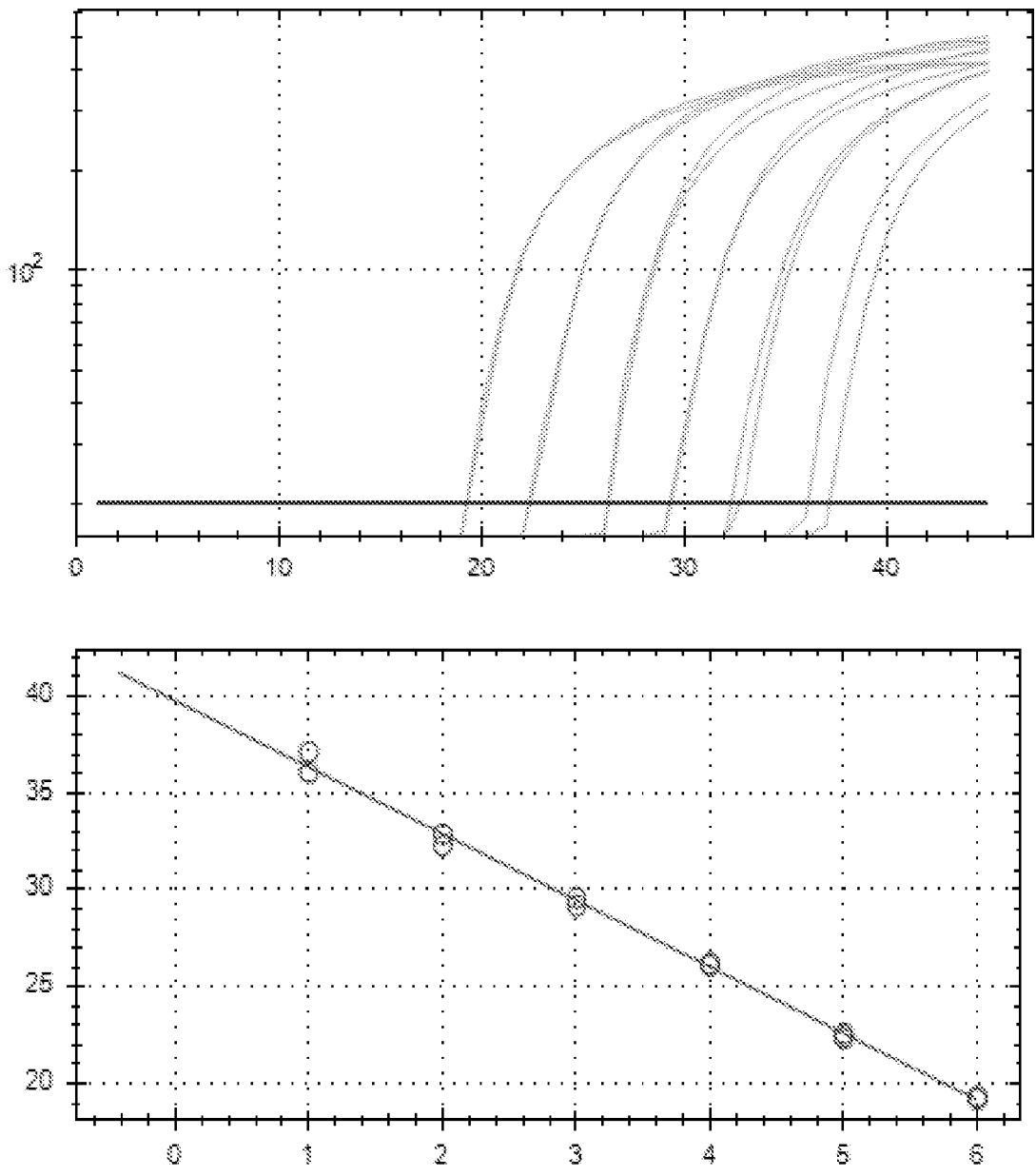
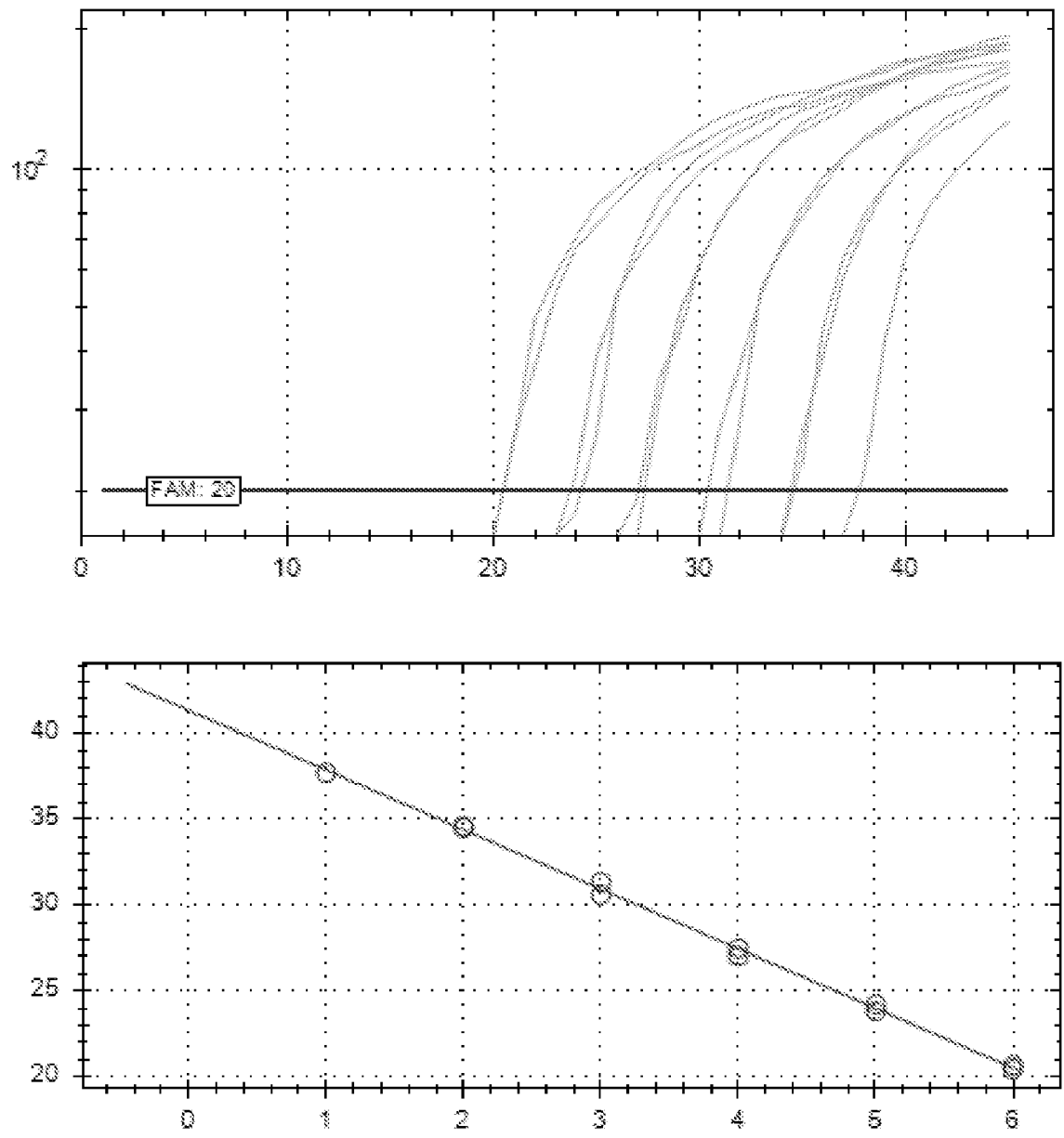


Figure 20



probe	GeneLocus	Probe_Count_ Total	Probe_Count_ Sig	HyperG_Stats	FDR_Hyper G	Percent_ Sig	logFC	AveExpr	t	P.Value	a.cj.P.Val	B	FC	FC.1	LS	loop detected
ATM_11_108118137_108126372_108155279_108156687_RF	ATM	54	11	0.010710258	0.319438	20.37	0.302259	0.302259	10.26887	9E-07	5E-05	6.228128	1.233073	1.233073	1	HC
CDC6_17_38421089_38423079_38451196_38457050_FF	CDC6	18	5	0.022213308	0.344891	27.78	-0.33066	-0.33066	-13.3908	8E-07	0.00028	6.590187	0.795173	-1.25759	-1	BrCa
TSPYL5_8_98276431_98282736_98316421_98318770_FF	TSPYL5	23	6	0.017130777	0.320337	26.09	-0.38273	-0.38273	-12.2759	2E-06	0.000361	5.940348	0.766984	-1.30381	-1	BrCa
ME3_11_86300063_86304401_86420537_86426200_FF	ME3	144	14	0.491902034	1	9.72	-0.40222	-0.40222	-3.89629	0.004417	0.017168	-2.28251	0.756691	-1.32154	-1	BrCa
SHD5A1_5_6634973_6639023_6657775_6669711_RF	SHD5A1	13	2	0.350038364	1	15.38	-0.32108	-0.32108	-6.71927	0.000138	0.002522	1.36779	0.80047	-1.24927	-1	BrCa
VAV3_1_108148303_108158073_108222020_108227533RF	VAV3	170	7	0.997311958	1	4.12	-0.46122	-0.46122	-7.26115	8E-05	0.002061	1.943909	0.726373	-1.3767	-1	BrCa
FOXCI_6_1577253_1581989_1604206_1605973_FF	FOXCI	28	15	4E-09	1E-06	53.57	-0.47676	-0.47676	-7.51826	6E-05	0.00183	2.205023	0.718589	-1.39162	-1	BrCa
MSH3_5_80021913_80025030_80153948_80159012_RF	MSH3	151	12	0.772883797	1	7.95	0.338581	0.338581	7.438085	7E-05	0.001887	2.124415	1.264512	1.264512	1	HC

Probe sequence			Probe Location				4 kb Sequence Location					
60 mer	Chr		Start1	End1	Start2	End2	Chr		Start1	End1	Start2	End2
TTGGAGGGGAAAAGTAATTAGCTTCAACTTCGACTGATTCTACAAAAGTCTGGGATTACA	11		1.08E+08	1.08E+08	1.08E+08	1.08E+08	11		1.08E+08	1.08E+08	1.08E+08	1.08E+08
GGAGGAGGCCAGAGAAAAGAGAAATGTGATCGATTCTAAATACTGTGTGTATGTA	17		38423048	38423077	38457019	38457048	17		38419078	38423077	38453049	38457048
GGATGGAGGAAGAGGAGGAATTCAGACTCGAACTAAACAAAAGGAGATGATCCTGGGT	8		98282705	98282734	98318689	98318718	8		98278735	98282734	98314719	98318718
AGGATCTCATGATGCTTTGAATACCTTTCTCGATACCTTATATAAAATCAGCTTTGTGTT	11		86304370	86304399	86420539	86420568	11		86300400	86304399	86420539	86424538
AGCTCAAAATCTTTTACTAATGTTTACATCGAAAAGTTCAAAATTTAAACGTTTT	5		6634975	6635004	6669680	6669709	5		6634975	6638974	6665710	6669709
AATTTAGAGGAACCTATATAAACAACATCGAAACTTTGCTTCATGCACAAATTTAAAA	1		1.08E+08	1.08E+08	1.08E+08	1.08E+08	1		1.08E+08	1.08E+08	1.08E+08	1.08E+08
CAGAAATGCACGCACAGGCACACAGCATCGAAACCGGTTCTTTGGAGGCTCAGTTTTTG	6		1581958	1581987	1604208	1604237	6		1577988	1581987	1604208	1608207
CCTACATATACATGGAATATTCCTGGTATCGAAATATTTAGGTAATCATATTGTCTCA	5		80021915	80021944	80158981	80159010	5		80021915	80025914	80155011	80159010

Figure 21

probe	PCR-Primer1_ID	PCR-Primer1	PCR-Primer2_ID	PCR-Primer2	GLMNET
ATM_11_108118137_108126372_108155279_108156687_RF	OBD116.53	TCAGAGGTTATGGAATTTGAG	OBD116.55	AAGAAACAGACTGGGCTTG	0.1394873
CDC6_17_38421089_38423079_38451196_38457050_FF	OBD116.89	GCATGAACCTTAGGAGAGAGG	OBD116.103	TTGCCACCATGTGACTATAC	0.0081371
TSPYL5_8_98276431_98282736_98316421_98318720_FF	OBD116.129	GTGCTTTGTAACCATGAAGTG	OBD116.131	TCGTGGGCATATGACTGAG	0
ME3_11_86300063_86304401_86420537_86426200_FR	OBD116.173	ACCTCCTTCACTCACATAG	OBD116.175	GCACCTAATCTACCTAATCACC	0.0080034
SRD5A1_5_6634973_6639025_6667775_6669711_RF	OBD116.177	GGCATTGCTTTGCCTTATC	OBD116.179	CAACTTCCTTGGGTGTAGAG	0
VAV3_1_108148303_108158073_108220200_108227533_RF	OBD116.185	TGTTGAGCAAGATGGATAGC	OBD116.187	ATATTCAGGATGGAACCCCAAG	-0.032431
FOXCl_6_1577253_1581989_1604206_1605973_FR	OBD116.197	GGAGTGACATCGTTGGTAATG	OBD116.199	GCAAATAAAGACTGCTGGTTTC	0.1215176
MSH3_5_80021913_80025030_80153948_80159012_RF	OBD116.301	AGGACCCATCACTACATATAC	OBD116.303	AGCCAAGTTTATGCCAAGAG	-0.266166

Gene	Marker	GLMNET
ATM_11	OBD116.53.55_8	0.1394873
CDC6_17	OBD116.89.103_8	0.0081371
TSPYL5_8	OBD116.129.131_4	0
ME3_11	OBD116.173.175_2	0.0080034
SRD5A1_5	OBD116.177.179_8	0
VAV3_1	OBD116.185.187_16	-0.032431
FOXCl_6	OBD116.197.199_8	0.1215176
MSH3_5	OBD116.301.303_2	-0.266166

Figure 21

Markers showing good GLMNET scores

Marker	Estimate	Std. Error	z_value	Pr(> z)	Gimnet_0.5
OBD116.301.303_2	3.592231	1.494287	2.404	0.0162	-0.266166
OBD116.185.187_16	2.135415	1.532293	1.394	0.1634	-0.032431
OBD116.59.59_8	-1.78499	1.341226	-1.331	0.1832	0.1394873
OBD116.161.163_6	3.616204	2.872291	1.259	0.208	-0.267241
OBD116.197.199_8	-1.87868	1.491999	-1.259	0.208	0.1215176
OBD116.173.175_2	1.560365	1.479932	1.054	0.2917	0
OBD116.173.175_2	-1.39826	1.491721	-0.937	0.3486	0.0080034
OBD116.89.103_8	-1.24015	1.35114	-0.918	0.3587	0.0081371
OBD116.177.179_8	-1.20884	1.323655	-0.913	0.3611	0
OBD116.113.87_4	1.615246	2.000497	0.807	0.4194	-0.051646

The final 8 markers were produced using GLMNET

Marker	Estimate	Std. Error	z_value	Pr(> z)	Gimnet_0.5
OBD116.301.303_2	3.592231	1.494287	2.404	0.0162	-0.266166
OBD116.185.187_16	2.135415	1.532293	1.394	0.1634	-0.032431
OBD116.59.59_8	-1.78499	1.341226	-1.331	0.1832	0.1394873
OBD116.197.199_8	-1.87868	1.491999	-1.259	0.208	0.1215176
OBD116.129.131_4	1.560365	1.479932	1.054	0.2917	0
OBD116.173.175_2	-1.39826	1.491721	-0.937	0.3486	0.0080034
OBD116.89.103_8	-1.24015	1.35114	-0.918	0.3587	0.0081371
OBD116.177.179_8	-1.20884	1.323655	-0.913	0.3611	0

Figure 21

probe	Genelocus	Probe_Count_ Total	Probe_Count_ Sig	HyperG_Stats	FDR_HyperG	Percent_Sig	logFC
ATM_11_108118137_108126372_108155279_108156687_RF	ATM	54	11	0.010710258	0.31943808	20.37	0.454214
CDC6_17_38421089_38423079_38451196_38457050_FF	CDC6	18	5	0.022213308	0.344890835	27.78	-0.33066
CDC6_17_38421089_38423079_38467677_38474960_FR	CDC6	18	5	0.022213308	0.344890835	27.78	-0.37233
FOXC1_6_1577253_1581989_1604206_1605973_FR	FOXC1	28	15	4.24E-09	1.25E-06	53.57	-0.47676
MAP3K1_5_56102259_56110500_56140227_56144076_FF	MAP3K1	43	9	0.01691209	0.320337199	20.93	-0.34444
ME3_11_86300063_86304401_86420537_86426200_FR	ME3	144	14	0.491902034	1	9.72	-0.40222
MELK_9_36577630_36579243_36637050_36643005_RF	MELK	13	1	0.723819061	1	7.69	0.434674
MSH3_5_80021913_80025030_80153948_80159012_RF	MSH3	151	12	0.772883797	1	7.95	0.338581
NF1_17_29477103_29483764_29651799_29657368_FF	NF1	139	8	0.957207644	1	5.76	0.239382
SLC16A10_6_111441989_111447305_111492951_111498421_FR	SLC16A10	58	9	0.091353207	0.768704111	15.52	0.436205
SRD5A1_5_6634973_6639025_6667775_6669711_RF	SRD5A1	13	2	0.350038364	1	15.38	-0.32108
TSPYL5_8_98276431_98282736_98316421_98318720_FF	TSPYL5	23	6	0.017130277	0.320337199	26.09	-0.38273
VAV3_1_108148303_108158073_108220200_108227533_RF	VAV3	170	7	0.997311958	1	4.12	-0.46122

AveExpr	t	P.Value	adj.P.Val	B	FC	FC_1	LS	Loop detected
0.454213671	20.03629461	3.24E-08	0.000245686	9.4061079	1.3700359	1.3700359	1	Healthy Control
-0.330659264	-13.39075625	7.88E-07	0.00028018	6.5901872	0.795173	-1.2575879	-1	Breast Cancer
-0.372331446	-14.3873663	4.49E-07	0.000245686	7.11834238	0.772533	-1.294443	-1	Breast Cancer
-0.476760626	-7.518259334	6.21E-05	0.001829905	2.20502335	0.7185893	-1.3916155	-1	Breast Cancer
-0.344442158	-9.949728159	7.79E-06	0.000845895	4.3410834	0.7876125	-1.26966	-1	Breast Cancer
-0.402224564	-3.896290267	0.004417342	0.017168026	-2.2825092	0.7566906	-1.3215441	-1	Breast Cancer
0.434674411	8.417027975	2.72E-05	0.001398089	3.06083302	1.3516058	1.3516058	1	Healthy Control
0.338580663	7.438084892	6.71E-05	0.001887016	2.12441463	1.2645119	1.2645119	1	Healthy Control
0.239381986	5.889898408	0.000342343	0.003905502	0.41306097	1.1804869	1.1804869	1	Healthy Control
0.436205134	12.70357791	1.19E-06	0.000328931	6.19754645	1.3530406	1.3530406	1	Healthy Control
-0.32107987	-6.719266175	0.000138259	0.002521703	1.36779039	0.8004705	-1.2492653	-1	Breast Cancer
-0.382732158	-12.27585147	1.55E-06	0.000361291	5.94034849	0.7669837	-1.3038087	-1	Breast Cancer
-0.4612178	-7.26115356	7.98E-05	0.002061466	1.94390864	0.7263729	-1.3767034	-1	Breast Cancer

Figure 22

Probe sequence		Probe location				
60 mer		Chr	Start1	End1	Start2	End2
TTGAGGGAAAGTAAATTACGTTCAACTTCGACTGTATTCTACAAAGTCTGGGATTACA		11	108118139	108118168	108156656	108156685
GGAGGAGCCAGAGAAAAGAGAATGTGATCGATTTCTAAAATACTGTGTGTGTA		17	38423048	38423077	38457019	38457048
GGAGGAGCCAGAGAAAAGAGAATGTGATCGATGACCTTAATGTCA	GTGTCAC	17	38423048	38423077	38467679	38467708
CAGAAATGCACGACAGGCACACAGATCGAAACGGTTCTTTGGAGGCTCAGTTTTTG		6	1581958	1581987	1604208	1604237
CCAAAGACAGCCAGGAAAAACCTAAAGATCGAAAGTTTTTATCTCCAAATTAGTAAA		5	56110469	56110498	56144045	56144074
AGGATCTCATGATGCTTTGAATACTTTCTCGATACCTTATTAATAATCAGCTTTGTGTT		11	86304370	86304399	86420539	86420568
CATAATTTTTTTGTAGTTTATTCACCTCGACTAGATTTTAAATTTTAAATTTTATTTA		9	36577632	36577661	36642974	36643003
CCTACATATACATGGAATATTCCTGGTATCGAAATATTTTAGGTAATCATTTATTTGCTCA		5	80021915	80021944	80158981	80159010
ATTTCTTTCTCTCCATTTTCTAAAAATCGATTTTTTAAATTAAGGTACAAGTTAAGGC		17	29483733	29483762	29657337	29657366
ATACTCATATAAATGTCAGATTTTAAATCGAGATCACAGTGAGCTGAGATTGCACCACT		6	111447274	111447303	111492953	111492982
AGCTCAAAATCTTTTACTAATGTTACATCGAAAGTTCAAAATTAATTTTAAACGTTTTT		5	6634975	6635004	6669680	6669709
GGATGGAGGAAGAGGAGGAATTCAGACTCGAACTCAACAAAAGGAGATGATCCTGGGT		8	98282705	98282734	98318689	98318718
AATTTAGAGGAACTCTATAAACAAACATCGAAACCTTTGCTTCATGCACAAAATTTAAAA		1	108148305	108148334	108227502	108227531

4 kb Sequence Location				
Chr	Start1	End1	Start2	End2
11	108118139	108122138	108152686	108156685
17	38419078	38423077	38453049	38457048
17	38419078	38423077	38467679	38471678
6	1577988	1581987	1604208	1608207
5	56106499	56110498	56140075	56144074
11	86300400	86304399	86420539	86424538
9	36577632	36581631	36639004	36643003
5	80021915	80025914	80155011	80159010
17	29479763	29483762	29653367	29657366
6	111443304	111447303	111492953	111496952
5	6634975	6638974	6665710	6669709
8	98278735	98282734	98314719	98318718
1	108148305	108152304	108223532	108227531

Figure 22