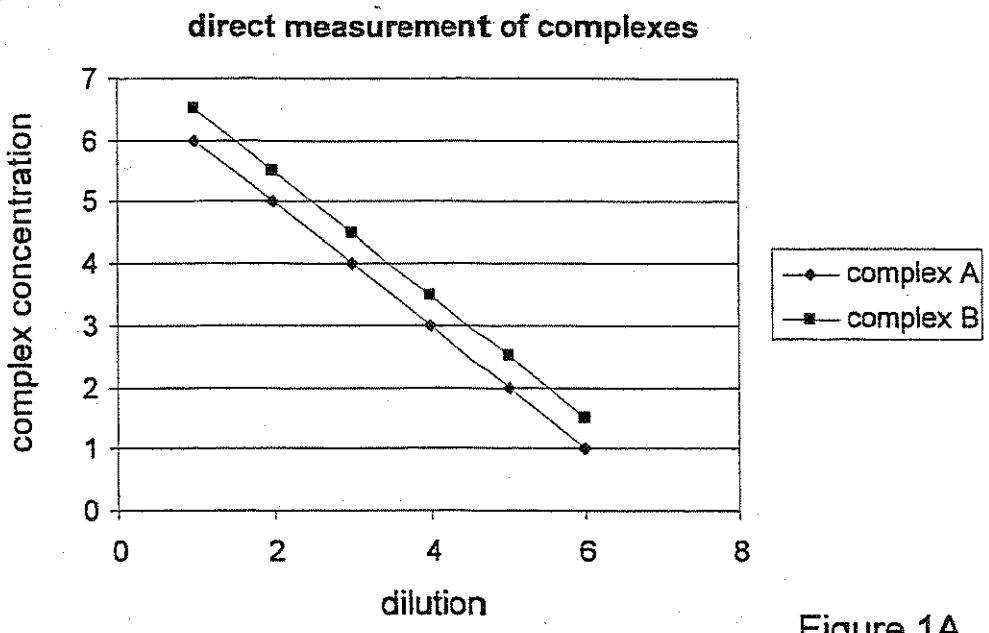

Figure 1A

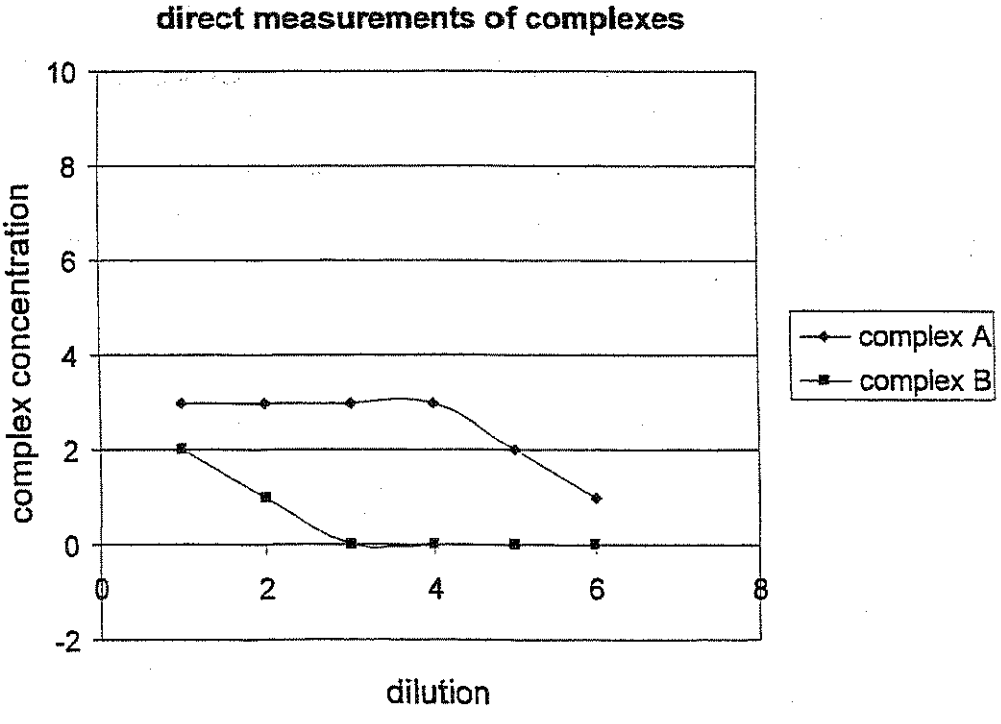

Figure 1B

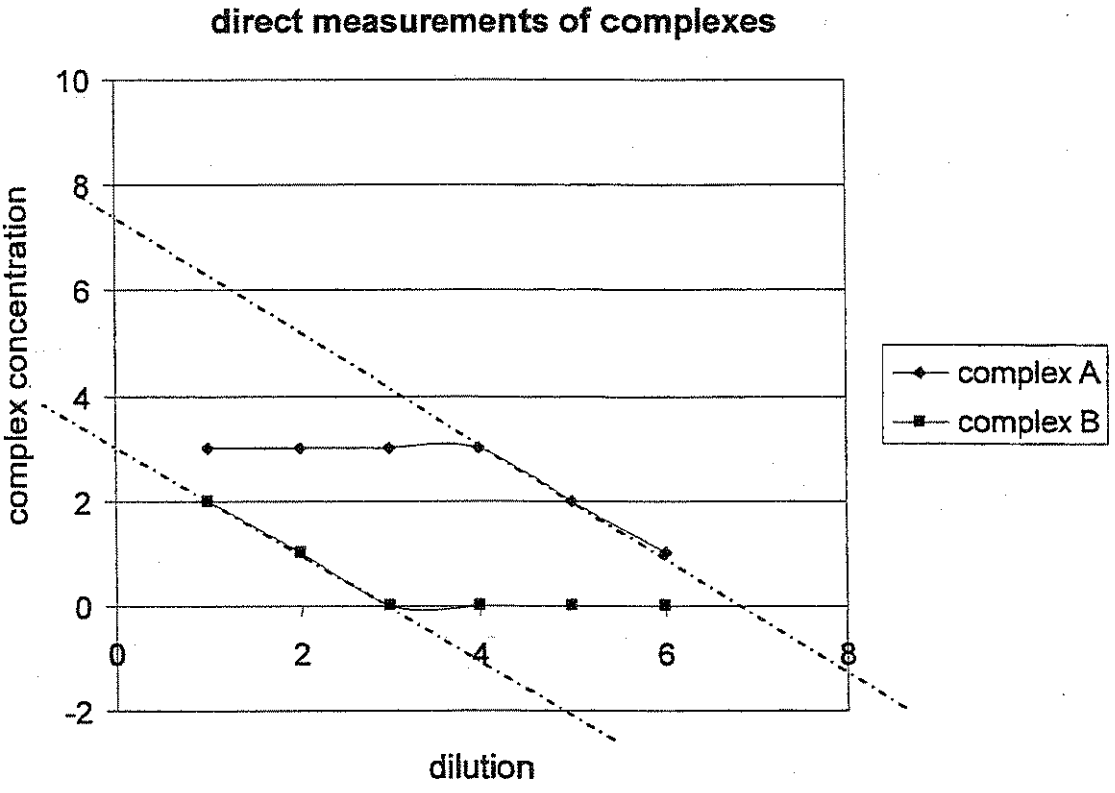
direct measurements of complexes
10
8
6
4
2
0
-2
0
2
4
6
8
complex concentration
dilution
complex A
complex B

Figure 1C

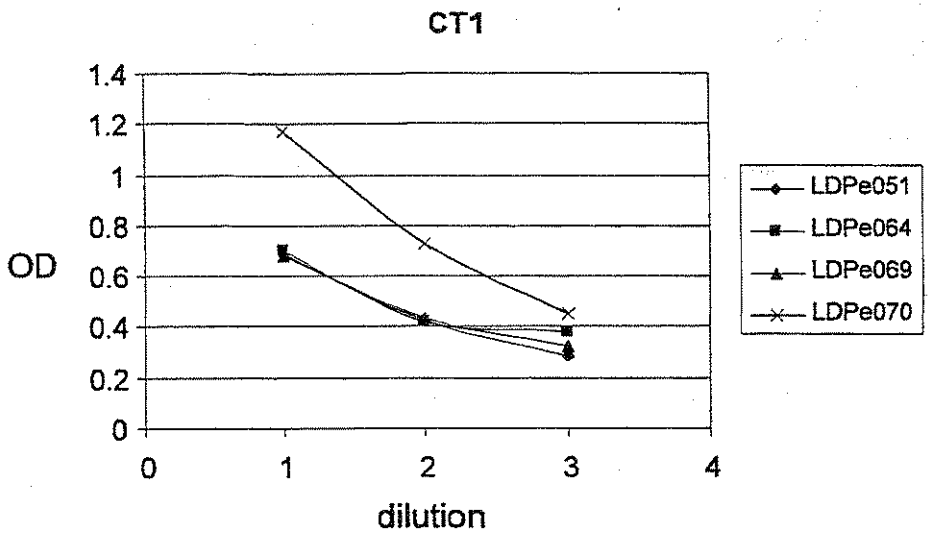

Figure 2A-1

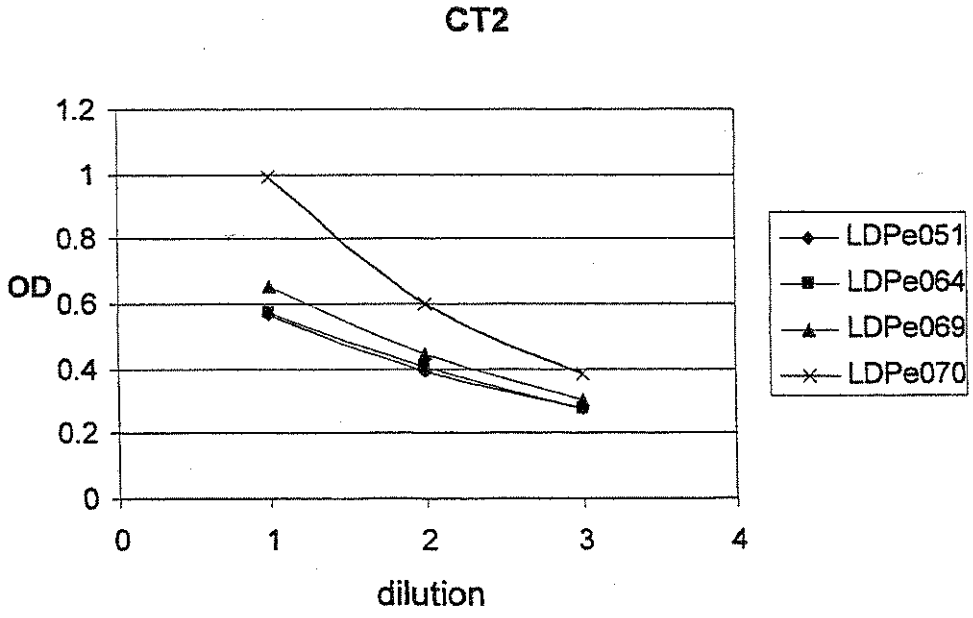

Figure 2A-2

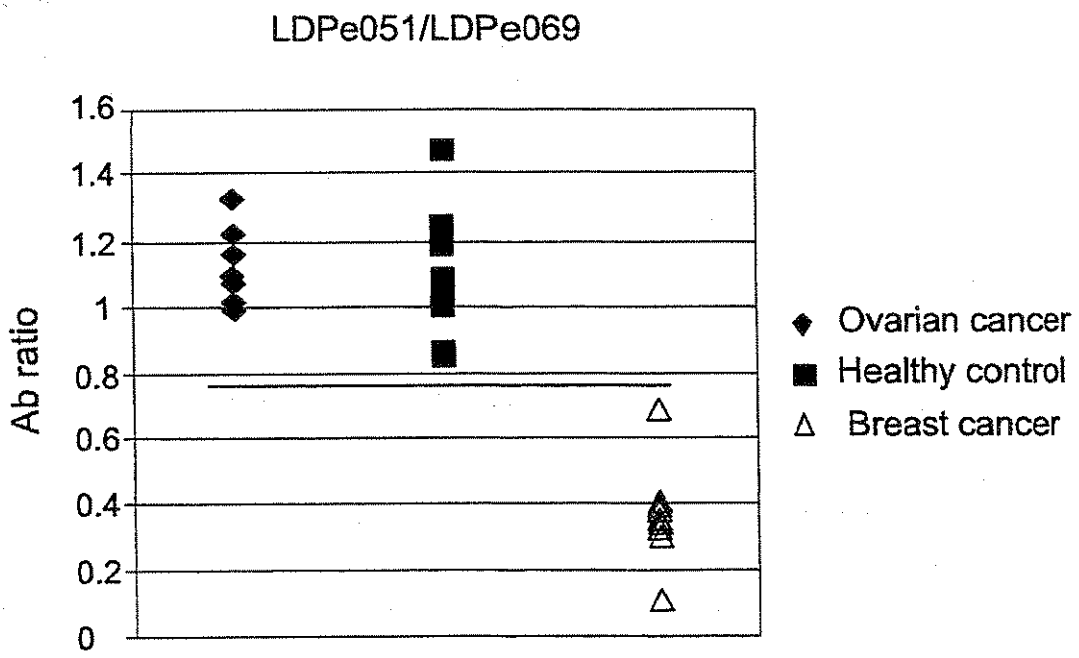
LDPe051/LDPe069
Ab ratio
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Ovarian cancer
Healthy control
Breast cancer

Figure 2B

Table 7

51_69	Sensitivity	Lower bound (95%)	Upper bound (95%)	Specificity	Lower bound (95%)	Upper bound (95%)	PPV	NPV	LR+	LR-	TP	TN	FP	FN
0.094	0.000	0.000	0.326	1.000	0.713	1.000		0.545		1.000	0	12	0	10
0.290	0.100	0.000	0.429	1.000	0.713	1.000	1.000	0.571	+Inf	0.900	1	12	0	9
0.308	0.200	0.049	0.522	1.000	0.713	1.000	1.000	0.600	+Inf	0.800	2	12	0	8
0.312	0.300	0.106	0.608	1.000	0.713	1.000	1.000	0.632	+Inf	0.700	3	12	0	7
0.332	0.400	0.169	0.688	1.000	0.713	1.000	1.000	0.667	+Inf	0.600	4	12	0	6
0.341	0.500	0.238	0.762	1.000	0.713	1.000	1.000	0.706	+Inf	0.500	5	12	0	5
0.370	0.600	0.312	0.831	1.000	0.713	1.000	1.000	0.750	+Inf	0.400	6	12	0	4
0.384	0.700	0.392	0.894	1.000	0.713	1.000	1.000	0.800	+Inf	0.300	7	12	0	3
0.395	0.800	0.478	0.951	1.000	0.713	1.000	1.000	0.857	+Inf	0.200	8	12	0	2
0.685	0.900	0.571	1.000	1.000	0.713	1.000	1.000	0.923	+Inf	0.100	9	12	0	1
0.849	1.000	0.674	1.000	1.000	0.713	1.000	1.000	1.000	+Inf	0.000	10	12	0	0
0.858	1.000	0.674	1.000	0.917	0.621	1.000	0.909	1.000	12.000	0.000	10	11	1	0
0.875	1.000	0.674	1.000	0.833	0.538	0.962	0.833	1.000	6.000	0.000	10	10	2	0
0.973	1.000	0.674	1.000	0.750	0.460	0.915	0.769	1.000	4.000	0.000	10	9	3	0
1.002	1.000	0.674	1.000	0.667	0.388	0.862	0.714	1.000	3.000	0.000	10	8	4	0
1.022	1.000	0.674	1.000	0.583	0.319	0.806	0.667	1.000	2.400	0.000	10	7	5	0
1.052	1.000	0.674	1.000	0.500	0.255	0.745	0.625	1.000	2.000	0.000	10	6	6	0
1.087	1.000	0.674	1.000	0.417	0.194	0.681	0.588	1.000	1.714	0.000	10	5	7	0
1.088	1.000	0.674	1.000	0.333	0.138	0.612	0.556	1.000	1.500	0.000	10	4	8	0
1.186	1.000	0.674	1.000	0.250	0.085	0.540	0.526	1.000	1.333	0.000	10	3	9	0
1.246	1.000	0.674	1.000	0.167	0.038	0.462	0.500	1.000	1.200	0.000	10	2	10	0
1.477	1.000	0.674	1.000	0.083	0.000	0.379	0.476	1.000	1.091	0.000	10	1	11	0

Test is positive if 51_69 < threshold value

Figure 2C

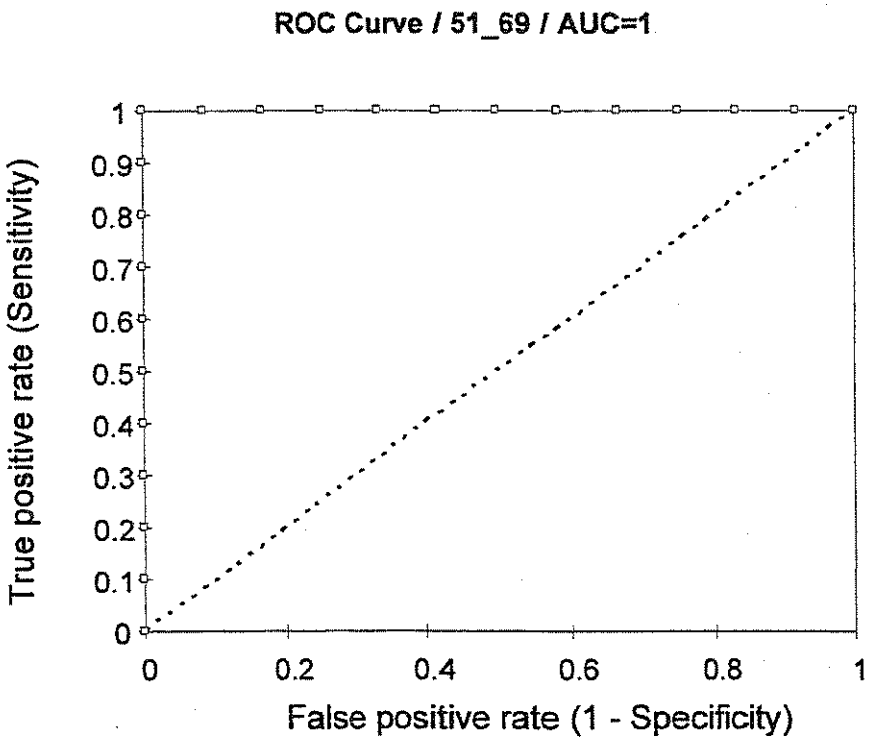
ROC Curve / 51_69 / AUC=1
True positive rate (Sensitivity)
False positive rate (1 - Specificity)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
0.2
0.4
0.6
0.8
1

Figure 2D

Table 8

51_69	Sensitivity	Lower bound (95%)	Upper bound (95%)	Specificity	Lower bound (95%)	Upper bound (95%)	PPV	NPV	LR+	LR-	TP	TN	FP	FN
0.849	1.000	0.622	1.000	0.083	0.000	0.379	0.421	1.000	1.091	0.000	8	1	11	0
0.858	1.000	0.622	1.000	0.167	0.038	0.462	0.444	1.000	1.200	0.000	8	2	10	0
0.875	1.000	0.622	1.000	0.250	0.085	0.540	0.471	1.000	1.333	0.000	8	3	9	0
0.973	1.000	0.622	1.000	0.333	0.138	0.612	0.500	1.000	1.500	0.000	8	4	8	0
0.992	0.875	0.505	0.995	0.333	0.138	0.612	0.467	0.800	1.313	0.375	7	4	8	1
1.002	0.875	0.505	0.995	0.417	0.194	0.681	0.500	0.833	1.500	0.300	7	5	7	1
1.011	0.750	0.400	0.933	0.417	0.194	0.681	0.462	0.714	1.286	0.600	6	5	7	2
1.022	0.750	0.400	0.933	0.500	0.255	0.745	0.500	0.750	1.500	0.500	6	6	6	2
1.052	0.750	0.400	0.933	0.583	0.319	0.806	0.545	0.778	1.800	0.429	6	7	5	2
1.073	0.625	0.304	0.862	0.583	0.319	0.806	0.500	0.700	1.500	0.643	5	7	5	3
1.087	0.625	0.304	0.862	0.667	0.388	0.862	0.556	0.727	1.875	0.563	5	8	4	3
1.088	0.625	0.304	0.862	0.750	0.460	0.915	0.625	0.750	2.500	0.500	5	9	3	3
1.090	0.500	0.217	0.783	0.750	0.460	0.915	0.571	0.692	2.000	0.667	4	9	3	4
1.092	0.375	0.138	0.696	0.750	0.460	0.915	0.500	0.643	1.500	0.833	3	9	3	5
1.160	0.250	0.067	0.600	0.750	0.460	0.915	0.400	0.600	1.000	1.000	2	9	3	6
1.186	0.250	0.067	0.600	0.833	0.538	0.962	0.500	0.625	1.500	0.900	2	10	2	6
1.221	0.125	0.005	0.495	0.833	0.538	0.962	0.333	0.588	0.750	1.050	1	10	2	7
1.246	0.125	0.005	0.495	0.917	0.621	1.000	0.500	0.611	1.500	0.955	1	11	1	7
1.326	0.000	0.000	0.378	0.917	0.621	1.000	0.000	0.579	0.000	1.091	0	11	1	8
1.477	0.000	0.000	0.378	1.000	0.713	1.000		0.600		1.000	0	12	0	8

Test is positive if 51_69 < threshold value

Figure 2E

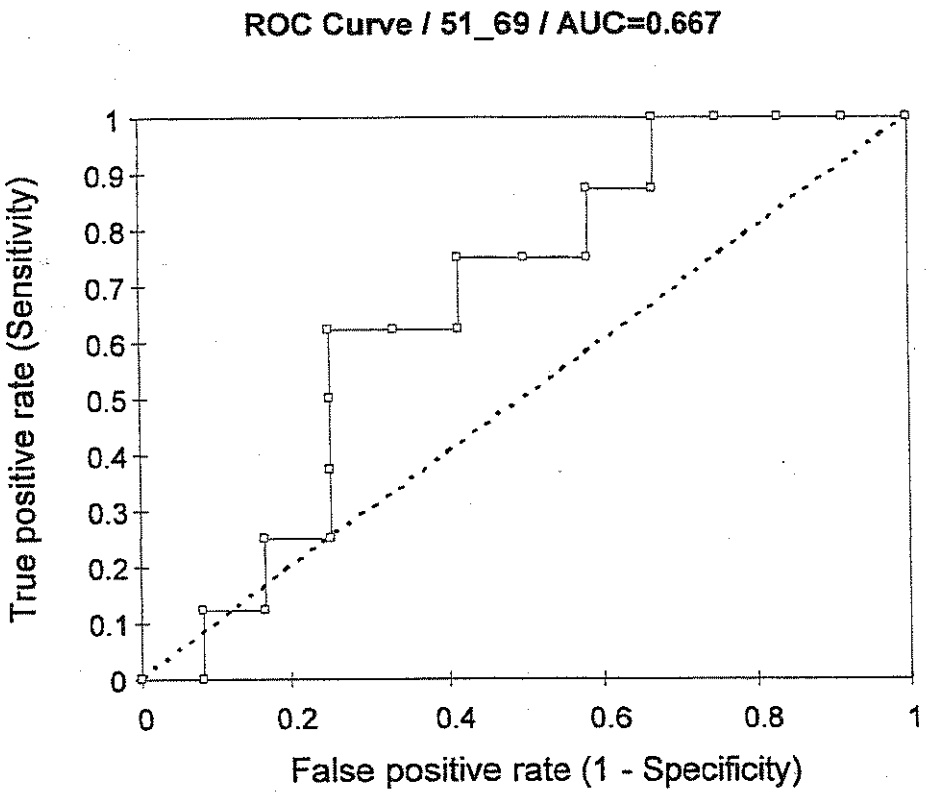
ROC Curve / 51_69 / AUC=0.667
True positive rate (Sensitivity)
False positive rate (1 - Specificity)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
0.2
0.4
0.6
0.8
1

Figure 2F

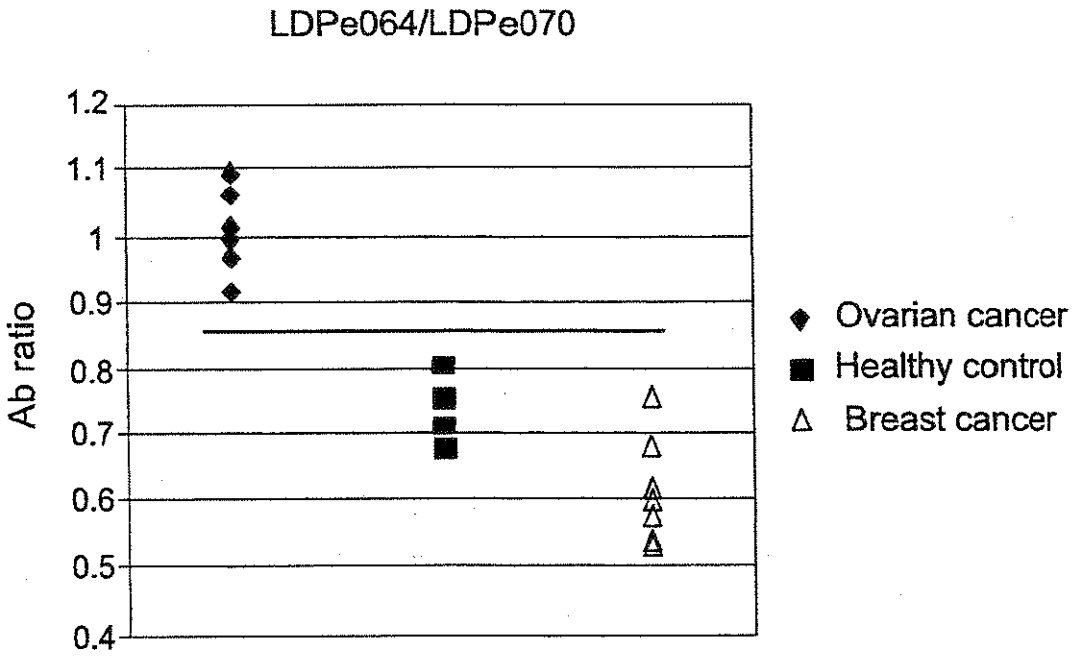
LDPe064/LDPe070
Ab ratio
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
Ovarian cancer
Healthy control
Breast cancer

Figure 2G

Table 9

64_70	Sensitivity	Lower bound (95%)	Upper bound (95%)	Specificity	Lower bound (95%)	Upper bound (95%)	PPV	NPV	LR+	LR-	TP	TN	FP	FN
0.579	1.000	0.590	1.000	0.167	0.016	0.584	0.583	1.000	1.200	0.000	7	1	5	0
0.671	1.000	0.590	1.000	0.333	0.096	0.704	0.636	1.000	1.500	0.000	7	2	4	0
0.676	1.000	0.590	1.000	0.500	0.190	0.810	0.700	1.000	2.000	0.000	7	3	3	0
0.714	1.000	0.590	1.000	0.667	0.296	0.904	0.778	1.000	3.000	0.000	7	4	2	0
0.756	1.000	0.590	1.000	0.833	0.416	0.984	0.875	1.000	6.000	0.000	7	5	1	0
0.803	1.000	0.590	1.000	1.000	0.552	1.000	1.000	1.000	+Inf	0.000	7	6	0	0
0.914	0.857	0.464	0.990	1.000	0.552	1.000	1.000	0.857	+Inf	0.143	6	6	0	1
0.966	0.714	0.352	0.921	1.000	0.552	1.000	1.000	0.750	+Inf	0.286	5	6	0	2
0.995	0.571	0.251	0.840	1.000	0.552	1.000	1.000	0.667	+Inf	0.429	4	6	0	3
0.998	0.429	0.160	0.749	1.000	0.552	1.000	1.000	0.600	+Inf	0.571	3	6	0	4
1.013	0.286	0.079	0.648	1.000	0.552	1.000	1.000	0.545	+Inf	0.714	2	6	0	5
1.063	0.143	0.010	0.536	1.000	0.552	1.000	1.000	0.500	+Inf	0.857	1	6	0	6
1.094	0.000	0.000	0.410	1.000	0.552	1.000		0.462		1.000	0	6	0	7

Test is positive if 64_70 > threshold value

Figure 2H

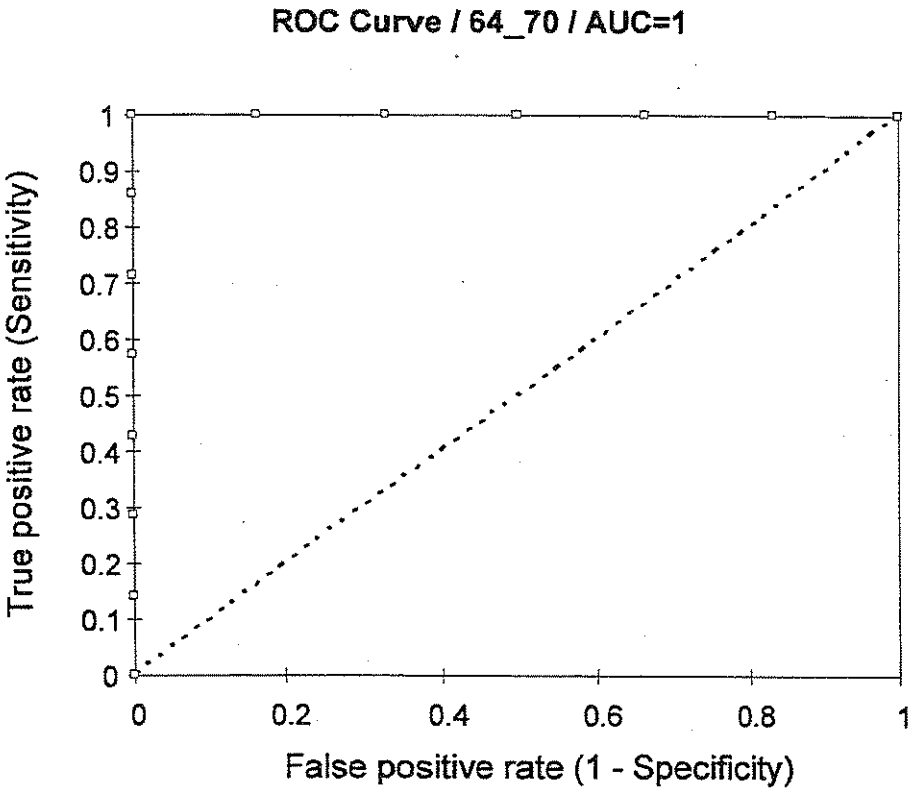
ROC Curve / 64_70 / AUC=1
True positive rate (Sensitivity)
False positive rate (1 - Specificity)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
0.2
0.4
0.6
0.8
1

Figure 2I

Table 10

64_70	Sensitivity	Lower bound (95%)	Upper bound (95%)	Specificity	Lower bound (95%)	Upper bound (95%)	PPV	NPV	LR+	LR-	TP	TN	FP	FN
0.531	0.000	0.000	0.410	1.000	0.552	1.000		0.462		1.000	0	6	0	7
0.538	0.143	0.010	0.536	1.000	0.552	1.000	1.000	0.500	+Inf	0.857	1	6	0	6
0.572	0.286	0.079	0.648	1.000	0.552	1.000	1.000	0.545	+Inf	0.714	2	6	0	5
0.579	0.429	0.160	0.749	1.000	0.552	1.000	1.000	0.600	+Inf	0.571	3	6	0	4
0.593	0.429	0.160	0.749	0.833	0.416	0.984	0.750	0.556	2.571	0.686	3	5	1	4
0.617	0.571	0.251	0.840	0.833	0.416	0.984	0.800	0.625	3.429	0.514	4	5	1	3
0.671	0.714	0.352	0.921	0.833	0.416	0.984	0.833	0.714	4.286	0.343	5	5	1	2
0.676	0.714	0.352	0.921	0.667	0.296	0.904	0.714	0.667	2.143	0.429	5	4	2	2
0.684	0.714	0.352	0.921	0.500	0.190	0.810	0.625	0.600	1.429	0.571	5	3	3	2
0.714	0.857	0.464	0.990	0.500	0.190	0.810	0.667	0.750	1.714	0.286	6	3	3	1
0.755	0.857	0.464	0.990	0.333	0.096	0.704	0.600	0.667	1.286	0.429	6	2	4	1
0.756	1.000	0.590	1.000	0.333	0.096	0.704	0.636	1.000	1.500	0.000	7	2	4	0
0.803	1.000	0.590	1.000	0.167	0.016	0.584	0.583	1.000	1.200	0.000	7	1	5	0

Test is positive if 64_70 < 0.803 threshold value

Figure 2J

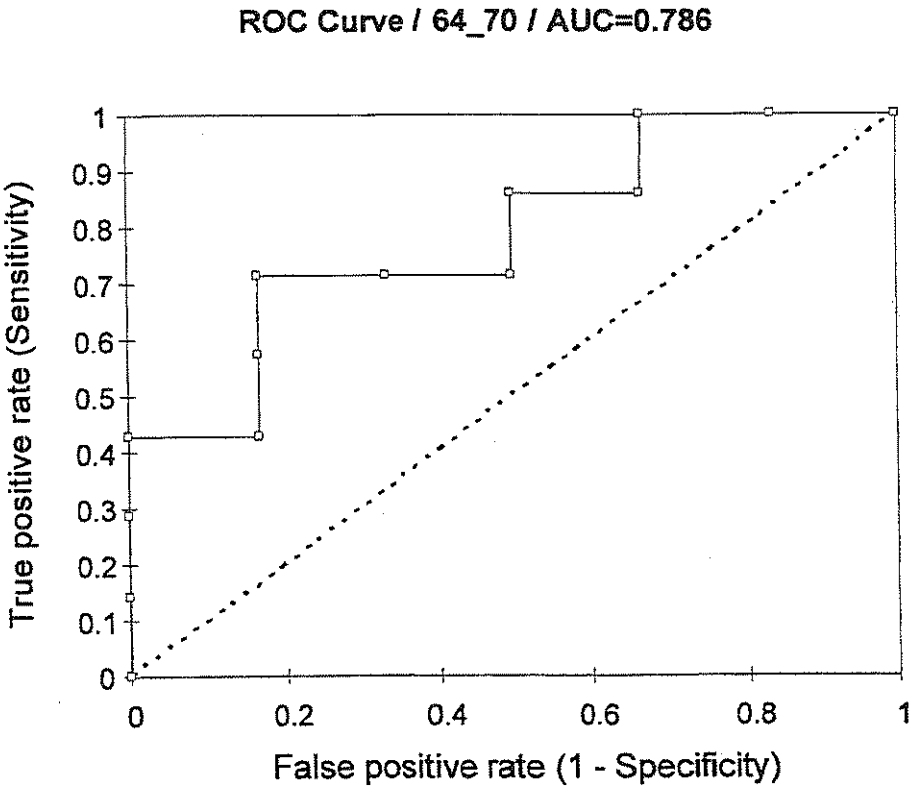
ROC Curve / 64_70 / AUC=0.786
True positive rate (Sensitivity)
False positive rate (1 - Specificity)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
0.2
0.4
0.6
0.8
1

Figure 2K

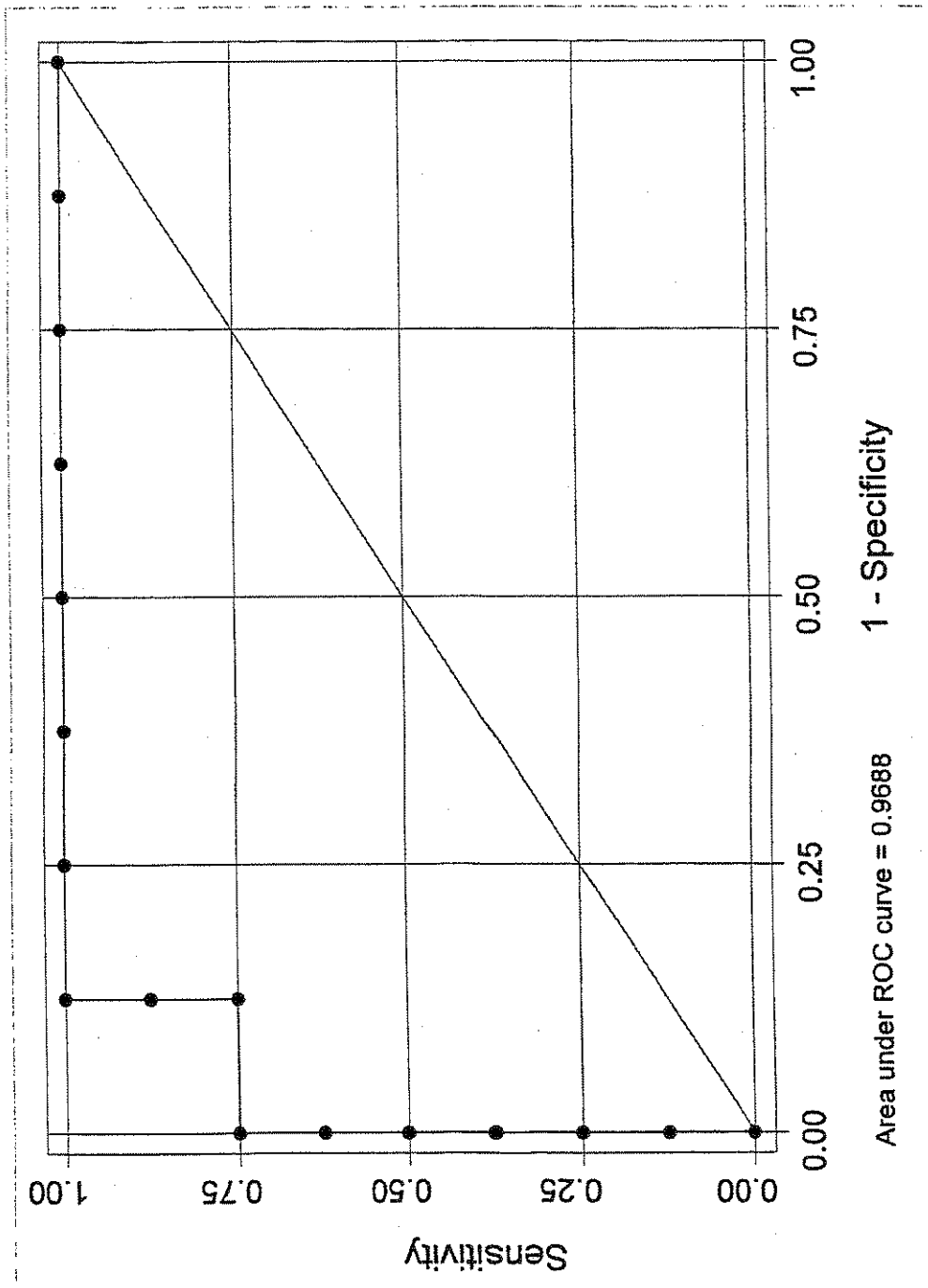
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
0.00
0.25
0.50
0.75
1.00
Area under ROC curve = 0.9688

Figure 3A

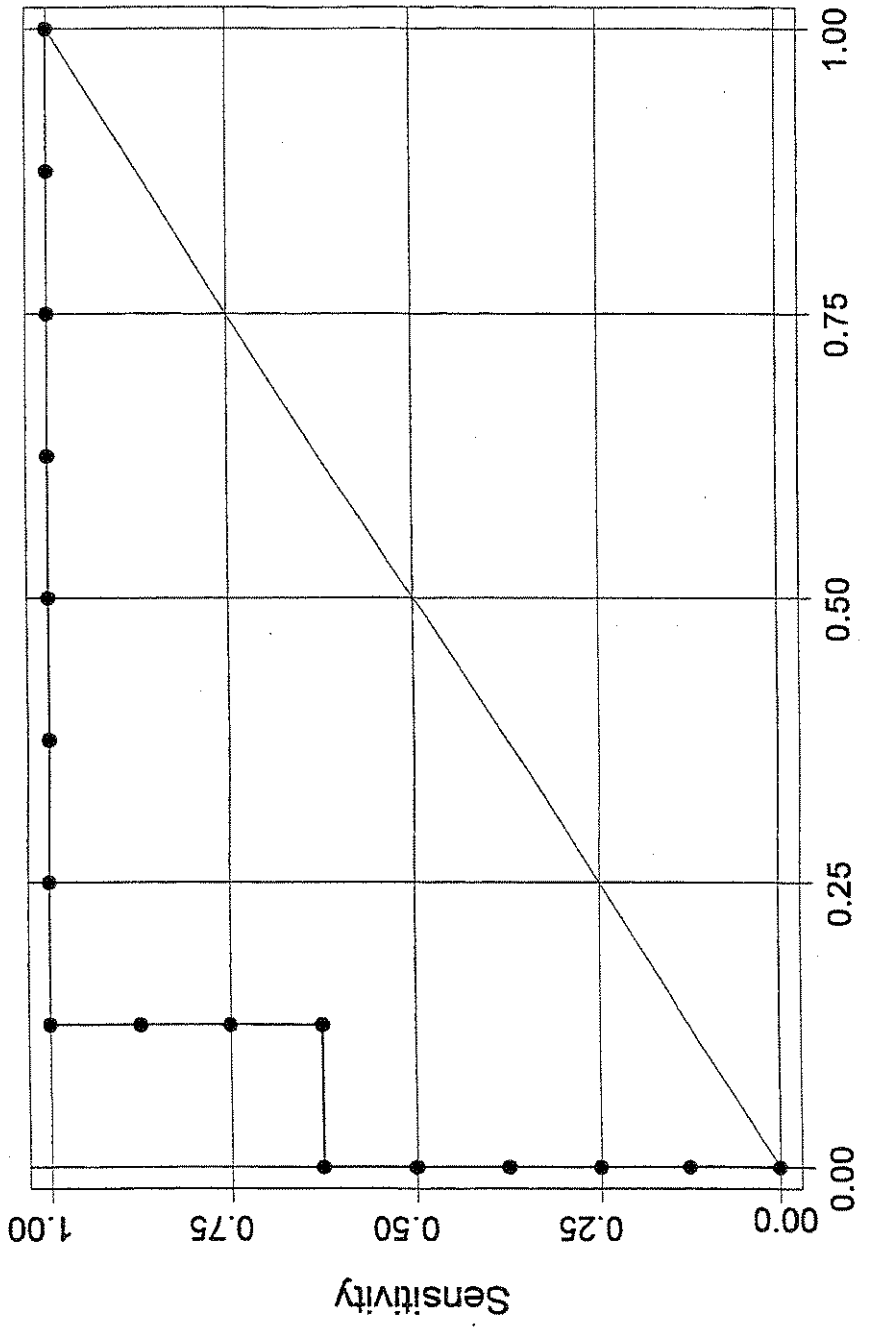
Sensitivity
1.00
0.75
0.50
0.25
0.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9531

Figure 3B

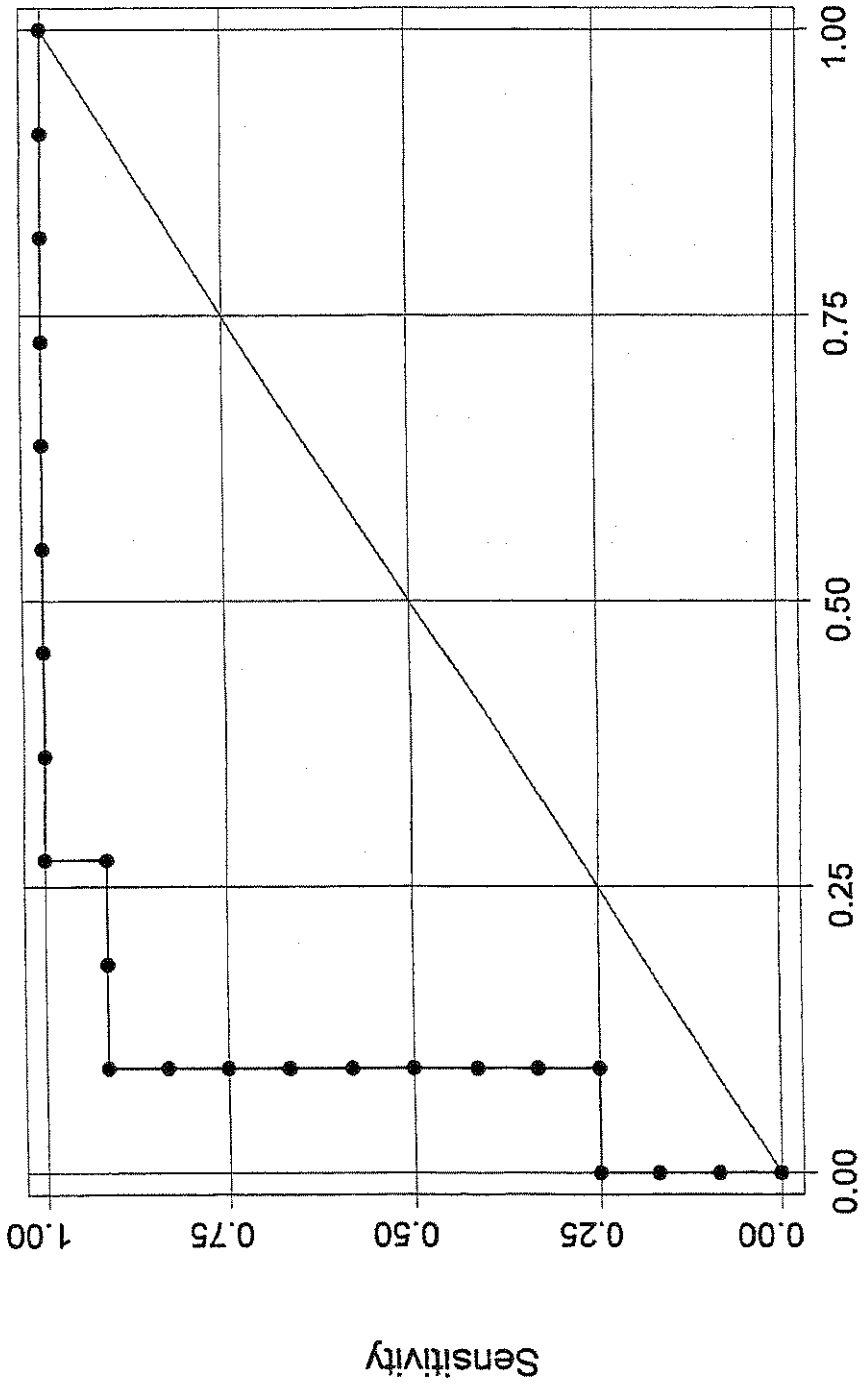
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9167

Figure 3C

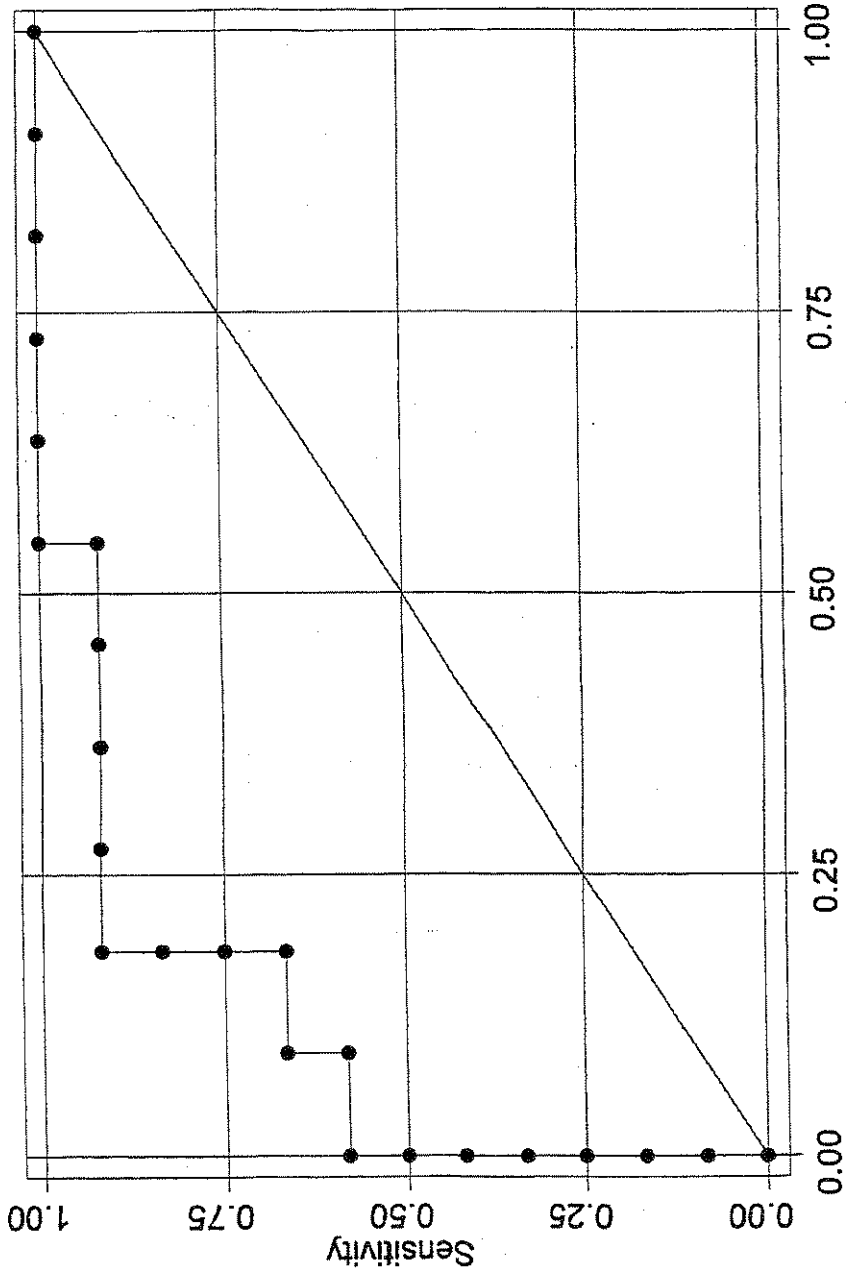
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
0.00
0.25
0.50
0.75
1.00
Area under ROC curve = 0.9015

Figure 3D

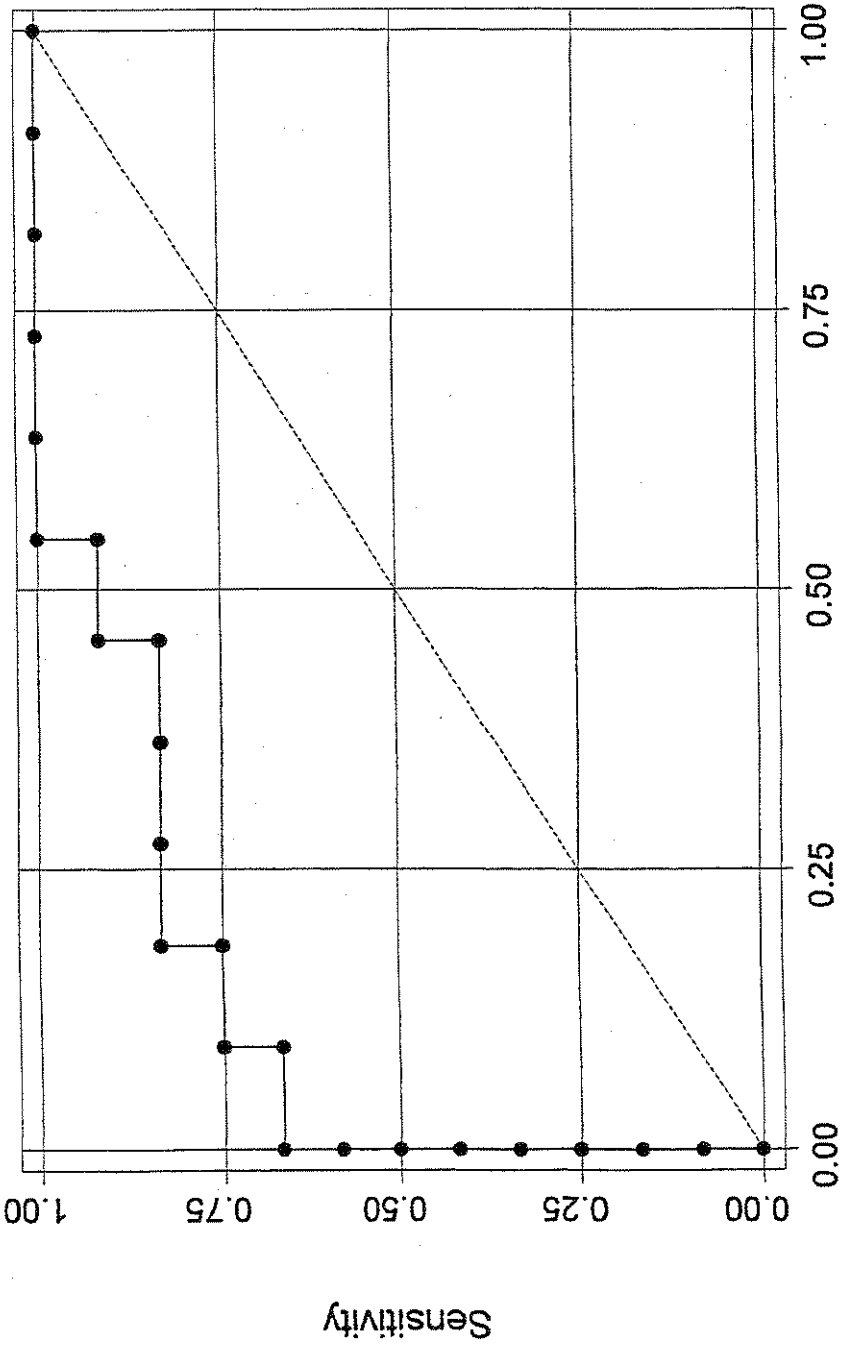
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.8939

Figure 3E

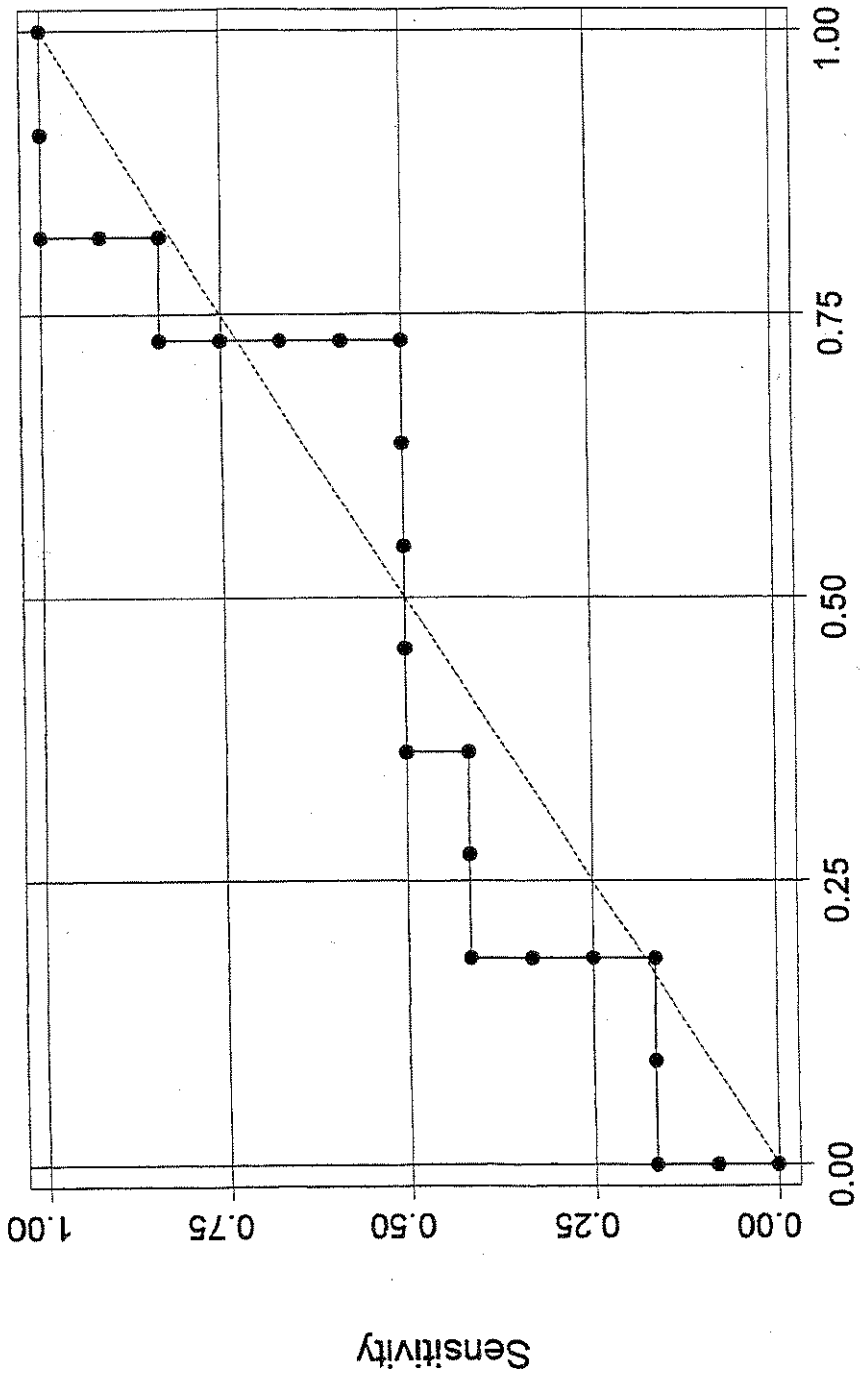
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.5455

Figure 3F

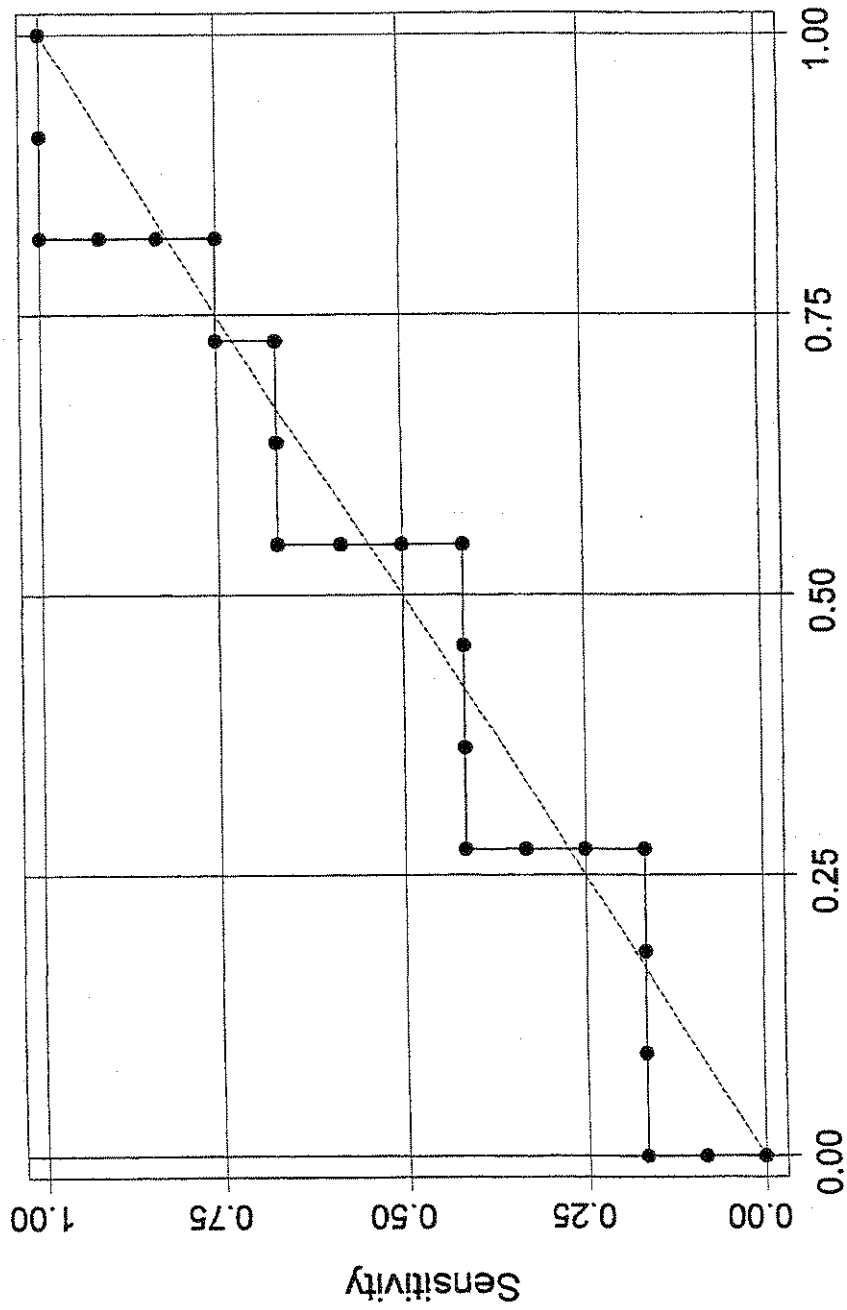
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.5303

Figure 3G

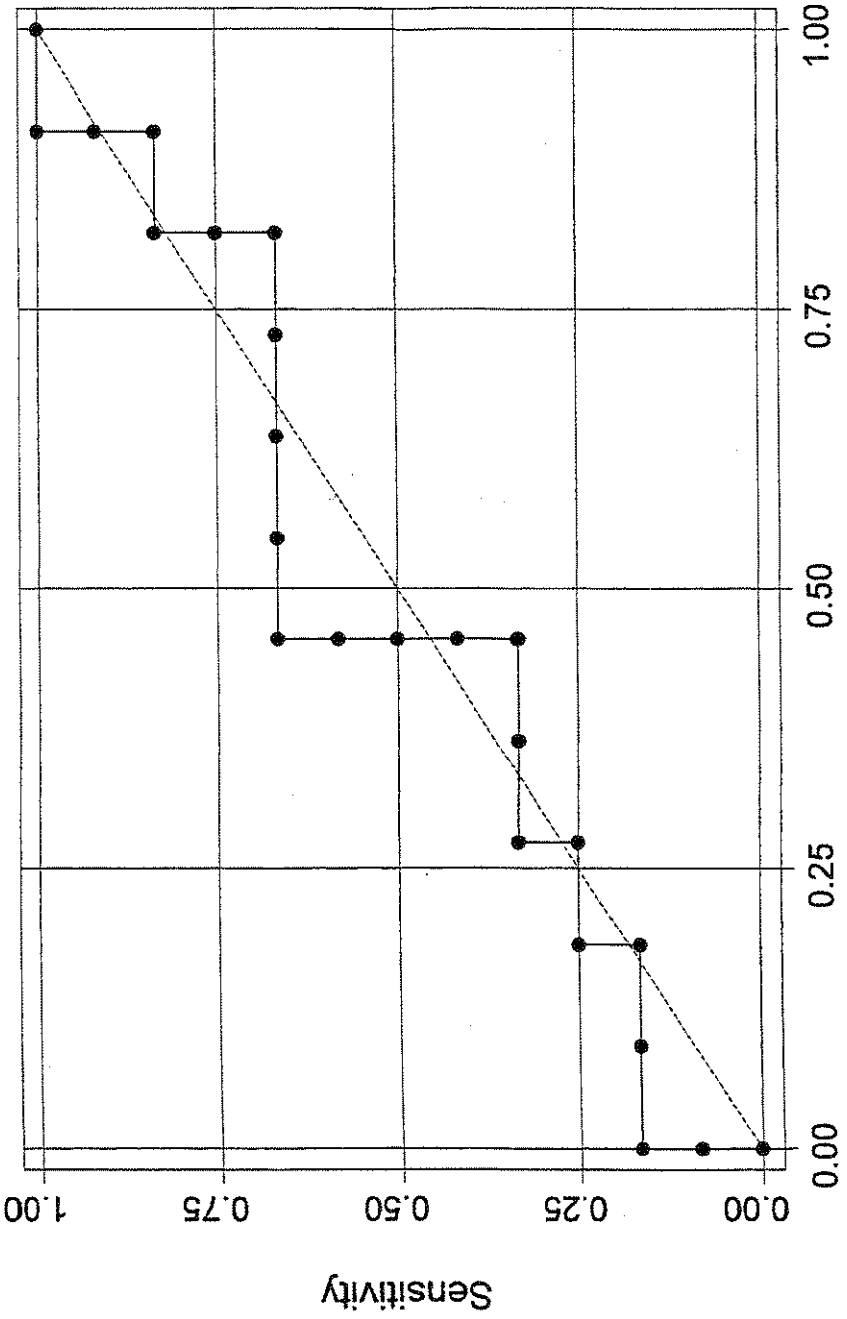
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.5227

Figure 3H

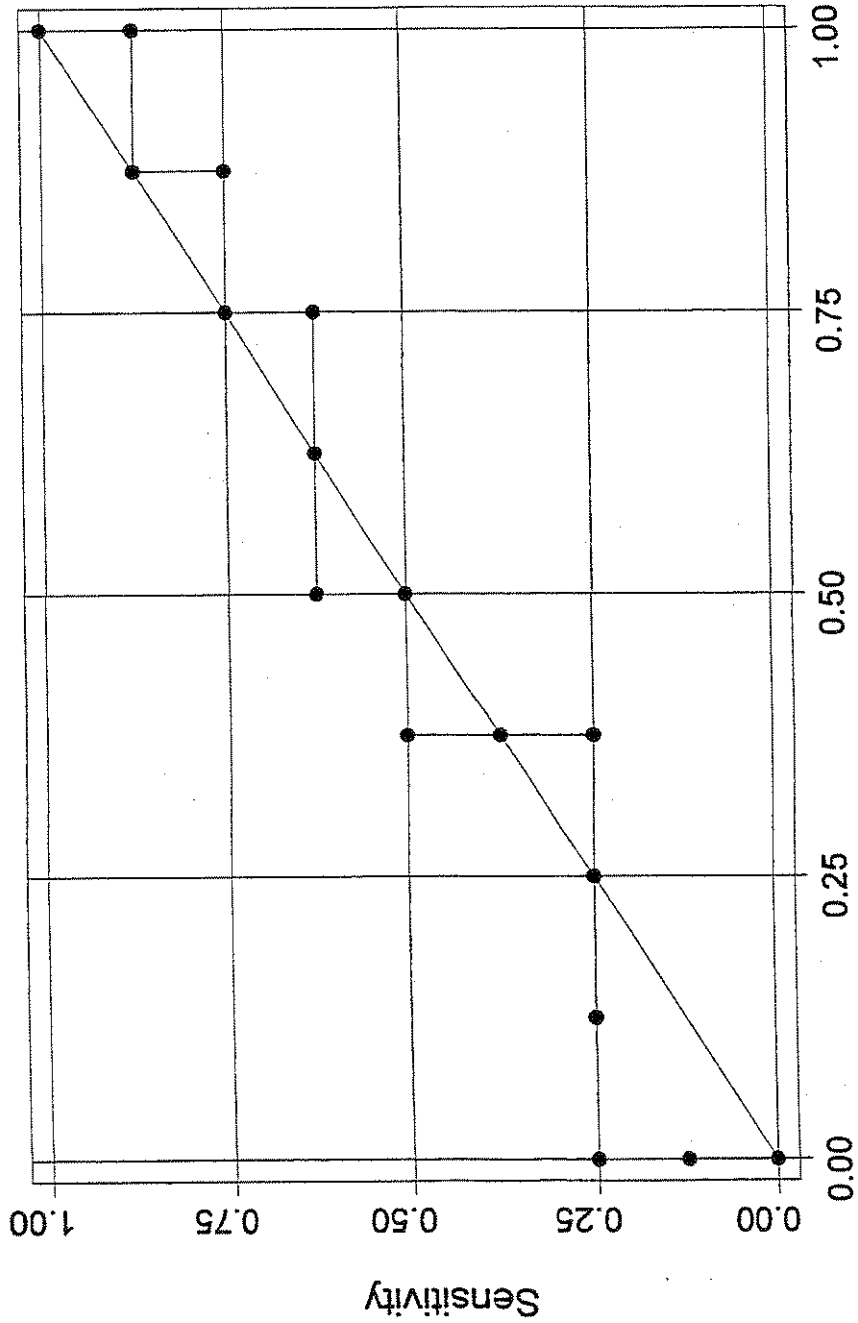
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.5156

Figure 3I

Figure 4

Table 11 full description of antigens sequences

SEQ. ID NO.	Sequence Name	Sequence	Origin	Reference
SEQ ID NO. 1	LDP-E-7	VFETLEEIT	Her2/Neu/Erbb2. /Jagged-2	
SEQ ID NO. 2	LDP-E-17	YSQAVPAVTEGPIPEV	Cathepsin D	
SEQ ID NO. 3	LDP-E-51	biotin-ahx-VATYAGQFNQDYLSGMAANMSGTFGGANMPNLY	Annexin XI-A	Fernandez-Madrid, F., et al. (2004). "Autoantibodies to Annexin XI-A and Other Autoantigens in the Diagnosis of Breast Cancer." Cancer Res. 64(15): 5089-96.
SEQ ID NO. 4	LDP-E-64	biotin-ahx-EPPLSQETFSDLWKLLPENNVLSPL		Lubin, R., et al. (1995). "p53 antibodies in patients with various types of cancer: assay, identification, and characterization." Clin Cancer Res. 1(12): 1463-9.
SEQ ID NO. 5	LDP-E-71	biotin-ahx-NHEPSVTQVILDRPY		Hansen (2001) id ibid.

SEQ ID NO. 17	LDP-R-62	MKLSLVAAMLLLLSAARAEEEDKKEDVGTVV GIDLGTTYSCVGVFKNGRVEIIANDQGNRITPS YVAFTPEGERLIGDAAKNQLTSNPENTVFDAK RLIGRTWNDPSVQQDIKFLPFKVVEKKTKPYI QVDIGGGQTKTFAPEEISAMVLTKMKETAEAY LGKKVTHAVVTVPAYFNDAQRQATKDAGTIA GLNVMRIINEPTAAAIAYGLDKREGEKNILVF DLGGGTFDVSLLTIDNGVFEVVATNGDTHLG GEDFDQRVMEHFIKLYKKKTGKDVRKDNRAV QKLRREVEKAKRALSSQHQARIEIESFYEGED FSETLTRAKFEELNMDLFRSTMKPVQKVLED SDLKKSDIDEIVLVGGSTRIPKIQQLVKEFFNG KEPSRGINPDEAVAYGAAVQAGVLSGDQDTG DLVLLDVCPLTLGIETVGGVMTKLIPRNTVVP TKKSQIFSTASDNQPTVTIKVYEGERPLTKDN HLLGTFDLTGIPPAPRGVPQIEVTFEIDVNGIL RVTAEDKGTGNKNKITITNDQNRLTPEEIERM VNDAEKFAEEDKKLKERIDTRNELESYAYSLK NQIGDKEKLGGKLSSEDKETMEKAVEEKIEW LESHQDADIEDFKAKKKELEEIVQPIISKLYGS AGPPPTGEEDTAEKDEL	GRP78		
SEQ ID NO. 18	LDP-R-080	MAPYPCGCHILLLLFCCLAAARANLLNLNWL WFNNEDTSHAATTIPEPQGPLPVQPTADTTTH	Endostatin	

Chinni (1997) id ibid.
Mintz, P. J., et al. (2003). "Fingerprinting the circulating repertoire of antibodies from cancer patients." Nat Biotechnol. 21(1): 57-63. Epub 2002 Dec 23.
Betchelt et. Al., (2006) " Autoantibodies to endostatin in patients with breast cancer.

	VTPRNGSTEPATAPGSPEPPSELLEDGQDTPT		correlation to endostatin levels and clinical
	SAESPDAPEENIAGVGAEILNVAKGIRSFVQL		outcome" British Journal of Cancer (2006)
	WNDTVPTESLARAETLVLETPVGPLALAGPSS		94, 1066 – 1070
	TRQENGTTLWPSRGIPSSPGAHTTEAGTLPAP		
	TPSPPSLGRPWAPLTGPSVPPPSSGRASLSSLL		
	GGAPPWGSLQDPDSQGLSPAAAAPSQQLQRP		
	DVRLRTPLLHPLVMGSLGKHAAPSAFSSGLPG		
	ALSQVAVTTLTRDSGAWVSHVANSVGPGLAN		
	NSALLGADPEAPAGRCLPLPPSLPVCGHLGIS		
	RFWLPNHLHHESGEQVRAGARAWGGLLQTH		
	CHPFLAWFFCLLLVPPCGSVPPPAPPPCCQFC		
	EALQDACWSRLGGGRLPVACASLPTQEDGYC		
	VLIGPAAERISEEVGLLQLLGDPPPQQVTQTD		
	DPDVGLAYVFGPDANSGQVARYHFPSLFFRDF		
	SLLFHIRPATEGPGVLFAITDSAQAMVLLGVK		
	LSGVQDGHQDISLLYTEPGAGQTHTIAASFRLP		
	AFVGQWTHLALSVAGGFVALYVDCEEFQRMP		
	LARSSRGLELEPGAGLFVAQAGGADPDKFQG		
	VIAELKVRRDPQVSPMHCLDEEGDDSDGASG		
	DSGSGLGDARELLREETGAALKPRLPAPPPVT		
	TPPLAGGSSTEDSRSEEVEEQTTVASLGAQTL		
	PGSDSVSTWDGSVRTPGGRVKEGGLKGQKGE		
	PGVPGPPGRAGPPGSPCLPGPPGLPCPVSPLG		

		PAGPALQTVPGPQGPPGPPGRDGTPGRDGEP GDPGEDGKPGDTGPQGFPGTPGDVGPKGDKG DPGVGERGPPGPQGPPGPPGPSFRHDKLTFID MEGSGFGGDLEALRGPRGFPGPPGPPGVPGL PGEPGRFGVNSSDVPGPAGLPGVPGREGPPGF PGLPGPPGPPGREGPPGRTGQKGSLGEAGAP GHKGSKGAPGPAGARGESGLAGAPGPAGPPG PPGPPGPPGPGLPAGFDDMEGSGGPFWSTAR SADGPQGPPGLPGLKGDPGVPGLPGAKGEVG ADGVPGFPGLPGREGIAGPQGPKGDRGSRGE KGDPGKDGVGQPGLPGPPGPPGPVVYVSEQD GSVLSVPGPEGRPGFAGFPGPAGPKGNLGSK GERGSPGPKGEKGEPGSIFSPDGGALGPAQKG AKGEPGFRGPPGPYGRPGYKGEIGFPGRPGRP GMNGLKGEKGEPGDASLGFGMRGMPGPPGP PGPPGPPGTPVYDSNVFAESSRPGPPGLPGNQ GPPGPKGAKGEVGPPGPPGQFPFDFLQLEAE MKGEKGDRGDAGQKGERGEPGGGGFFGSSL PGPPGPPGPPGPRGYPGIPGPKGESIRGQPGPP GPQGPPGIGYEGRQGPPGPPGPPGPPSFPGPH RQTISVPGPPGPPGPPGPPGTMGASSGVRLWA TRQAMLGQVHEVPEGWLIFVAEQEELYVRVQ NGFRKVQLEARTPLPRGTDNEVAALQPPVVQ		

		GALHQIITLRDYIPRILGPEAFQQYVGPYEGYD STANPTVSNVFSTAAFRFGHATIHPLVRRLDA SFQEHPDLPGLWLHQAFFSPWTLLRGGGLDP DRGLLARPAKLQVQDQLMNEELTERLFVLSN SSTLDLASINLQRGRDHGLPGYNEWREFCGLP RLETPADLSTAIASRSVADKILDLYKHPDNIDV WLGGLAENFLPRARTGPLFACLIGKQMKALR DGDWFWWENSHVFTDAQRRELEKHSLSRVIC DNTGLTRVPMDAFQVGKFPEIDFESCDSITGM NLEAWRETFPQDDKCGFPESVENGDFVHCEE SGRRVLVYSCRHGYELQGREQLTCTQEGWDF QPPLCKDVNECADGAHPPCHASARCRNTKGG FQCLCADPYELGDDGRTCVDSGRLPRVTWIS MSLAALLIGGFAGLTSTVICRWTRTGTKSTLPI SETGGGTPELRCGKHQAVGTSPQRAAAQDSE QESAGMEGRDTHRLPRAL		Seidenfels et. Al., (2008)" HER2 testing to manage patients with breast cancer or other solid tumors." Evid Rep Technol Assess vol (172):1-362
SEQ ID NO. 20	LDP-R-085	MELAALCRWGLLLALLPPGAASTQVCTGTDM KLRLPASPETHLDMLRHLYQGCQVVQGNLEL TYLPTNASLSFLQDIQEVQGYVLIAHNQVRQV PLQRLRIVRGTQLFEDNYALAVLDNGDPLNNT TPVTGASPGGLRELQLRSLTEILKGGVLIQRNP QLCYQDTILWKDIFHKNNQLALTLIDTNRSRA	Erbb2	

CHPCSPMCKGSRCWGESSEDCQSLTRTVCAG
GCARCKGPLPTDCCHEQCAAGCTGPKHSDCL
ACLHFNHSGICELHCPALVTYNTDTFESMPNP
EGRYTFGASCVTACPYNYLSTDVGSCTLVCPL
HNQEVTAEDGTQRCEKCSKPCARVCYGLGME
HLREVRAVTSANIQEFAGCKKIFGSLAFLPESF
DGDPASNTAPLQPEQLQVFETLEEITGYLYISA
WPDSLPDLSVFQNLQVIRGRILHNGAYSLTLQ
GLGISWLGLRSLRELGSGLALIHHNTHLCFVH
TVPWDQLFRNPHQALLHTANRPEDECVGEGL
ACHQLCARGHCWGPGPTQCVNCSQFLRGQEC
VEECRVLQGLPREYVNARHCLPCHPECQPQN
GSVTCFGPEADQCVACAHYKDPPFCVARCPS
GVKPDLSYMPIWKFPDEEGACQPCPINCTHSC
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GVVFGILIKRRQQKIRKYTMRRLLQETELVEP
LTPSGAMPNQAQMRILKETELRKVKVLGSGA
FGTVYKGIWIPDGENVKIPVAIKVLRENTSPKA
NKEILDEAYVMAGVGSPYVSRLLGICLTSTVQ
LVTQLMPYGCLLDHVRENRGRLGSQDLLNWC
MQIAKGMSYLEDVRLVHRDLAARNVLVKSPN
HVKITDFGLARLLDIDETEYHADGGKVPIKWM
ALESILRRRFTHQSDVWSYGVTVWELMTFGA

		KPYDGIPAREIPDLLEKGERLPQPPICTIDVYM IMVKCWMIDSECRPRFRELVSEFSRMARDPQ RFVVIQNEDLGPASPLDSTFYRSLLEDDDMGD LVDAEEYLVPQQGFFCPDPAPGAGGMVHHRH RSSSTRSGGGDLTLGLEPSEEEAPRSPLAPSEG AGSDVFDGDLGMGAAKGLQSLPTHDPSPLQR YSEDPTVPLPSETDGYVAPLTCSPQPEYVNQP DVRPQPPSPREGPLPAARPAGATLERPKTLSP GKNGVVKDVFAFGGAVENPEYLTPQGGAAPQ PHPPPAFSPAFDNLYYWDQDPPERGAPPSTFK GTPTAENPEYLGLDVPV		
SEQ ID NO. 6	LDP-E-070	Biotin-TVETPQTAKTAYYAT		
SEQ ID NO. 7	LDP-E-069	Biotin-SQRIPARIHHFPTSI		

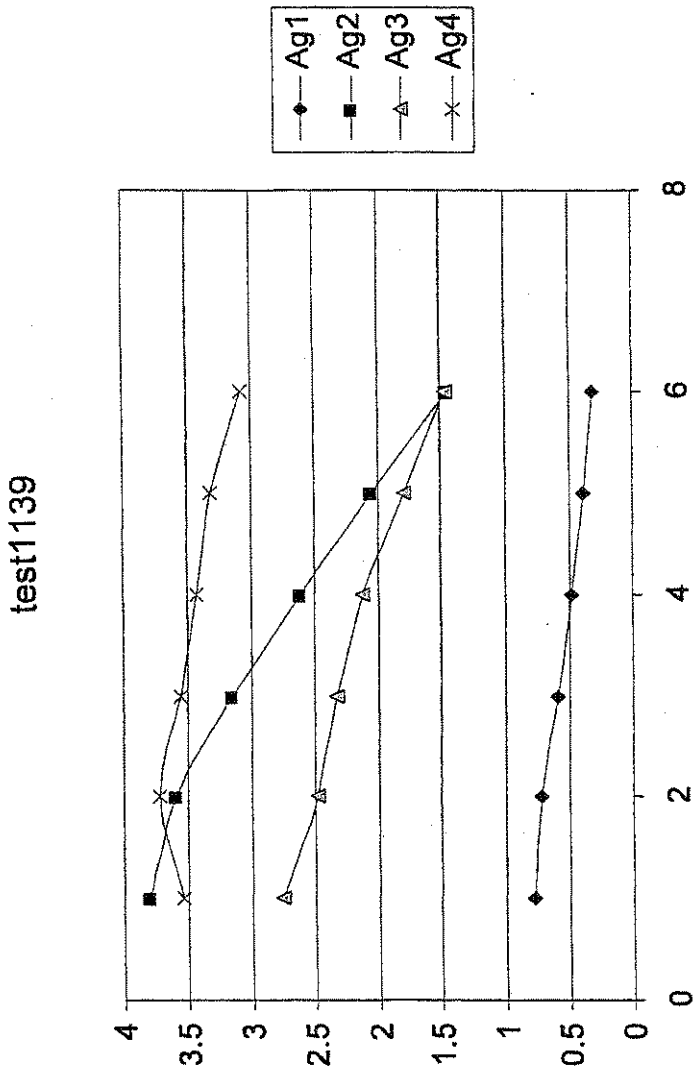

Figure ~~5A~~ 4A

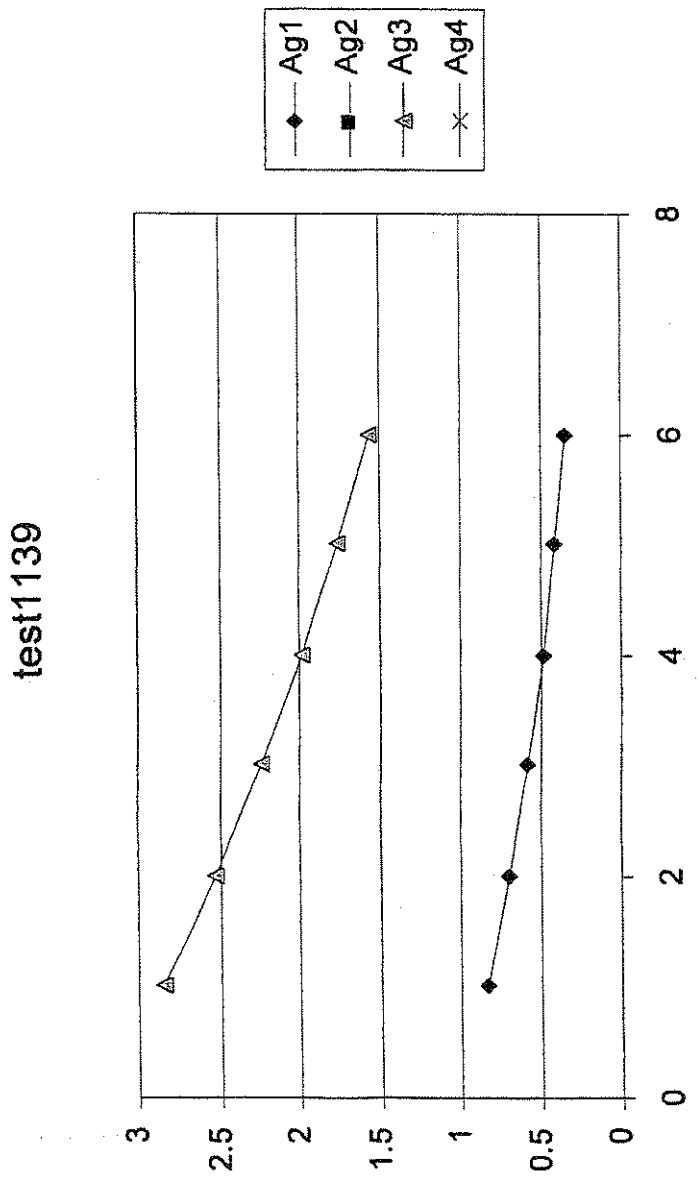

Figure ~~5B~~4B

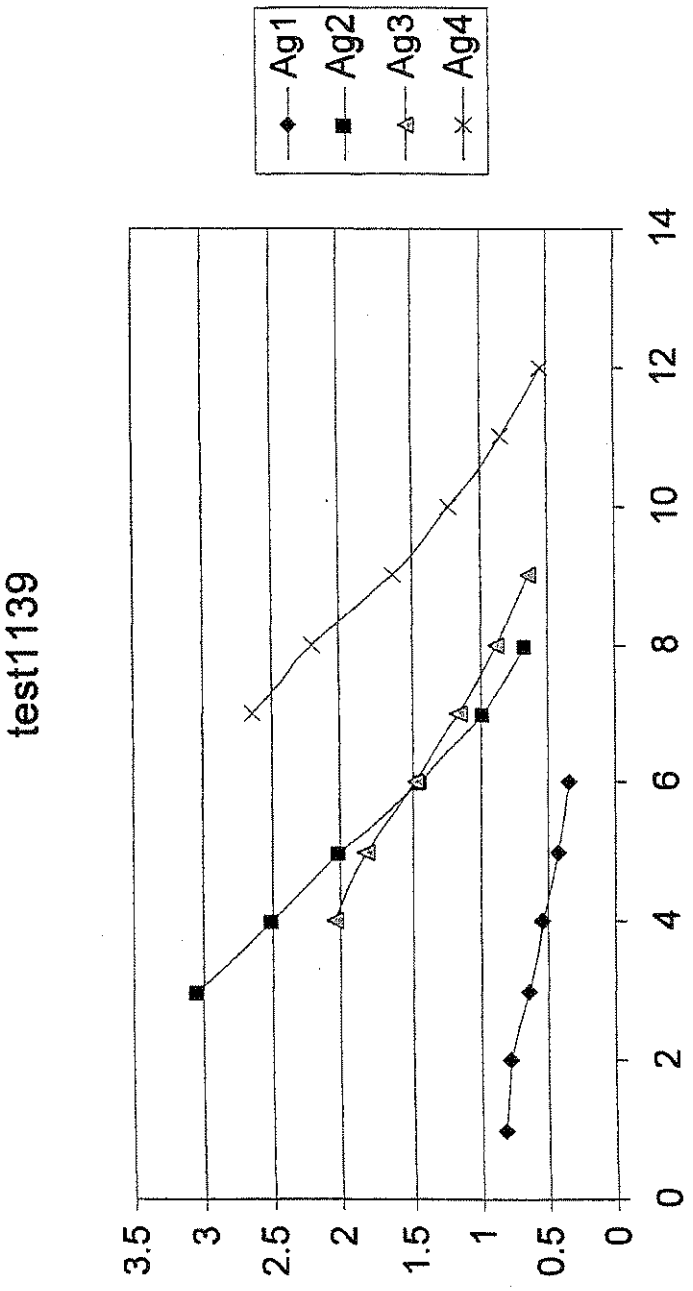

Figure ~~5C~~ 4C

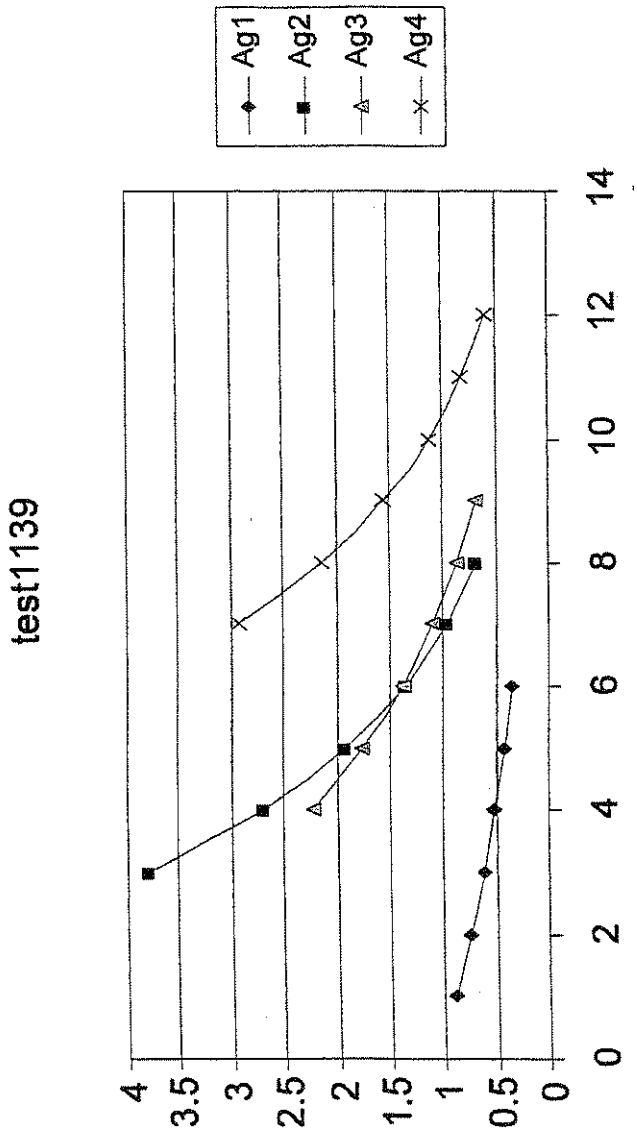

Figure ~~5D~~ 4D

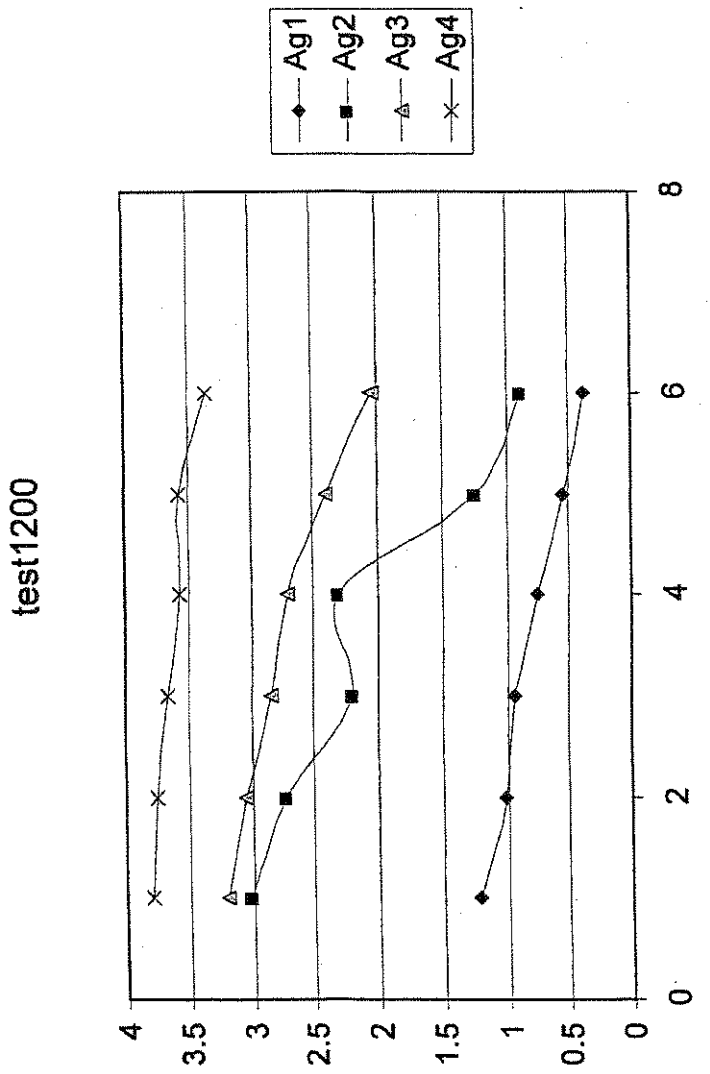

Figure ~~6A~~ 5A

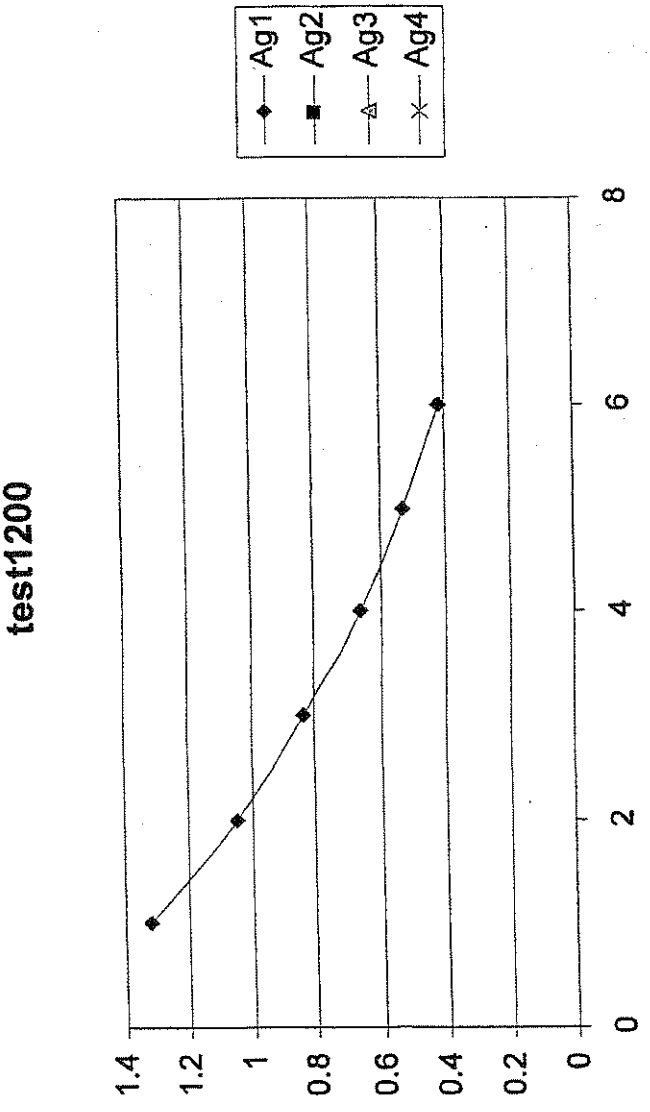

Figure ~~6B~~ 5B

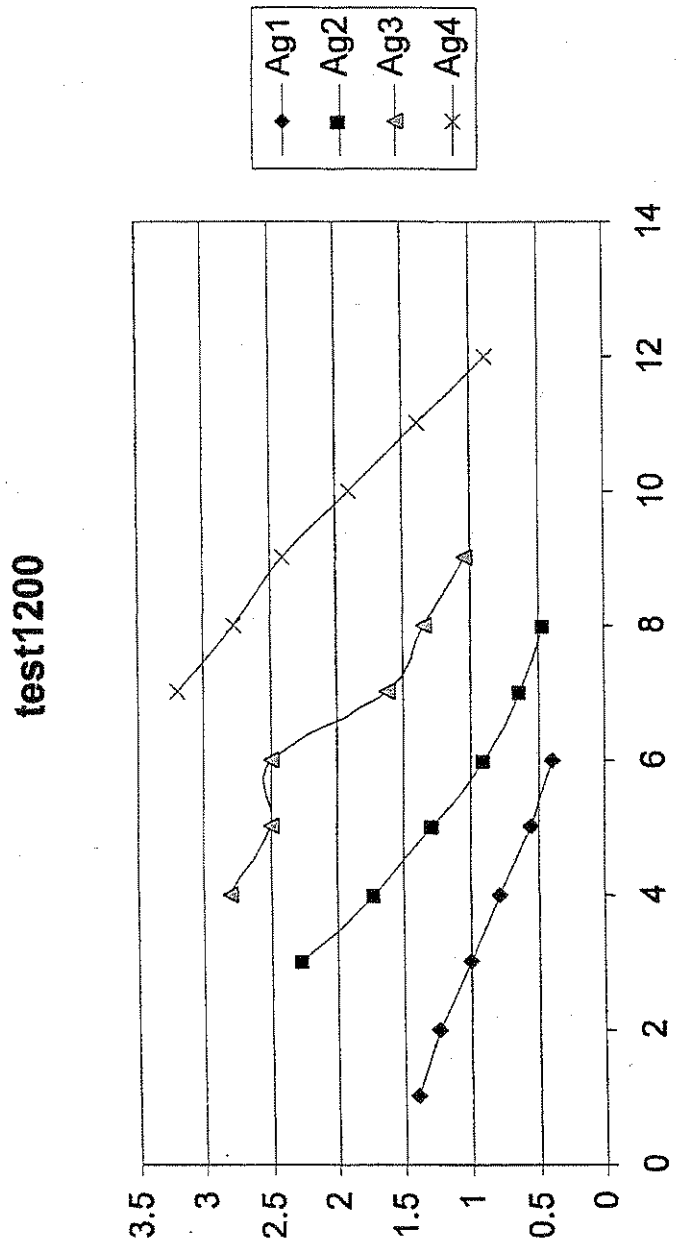

Figure ~~6C~~ 5C

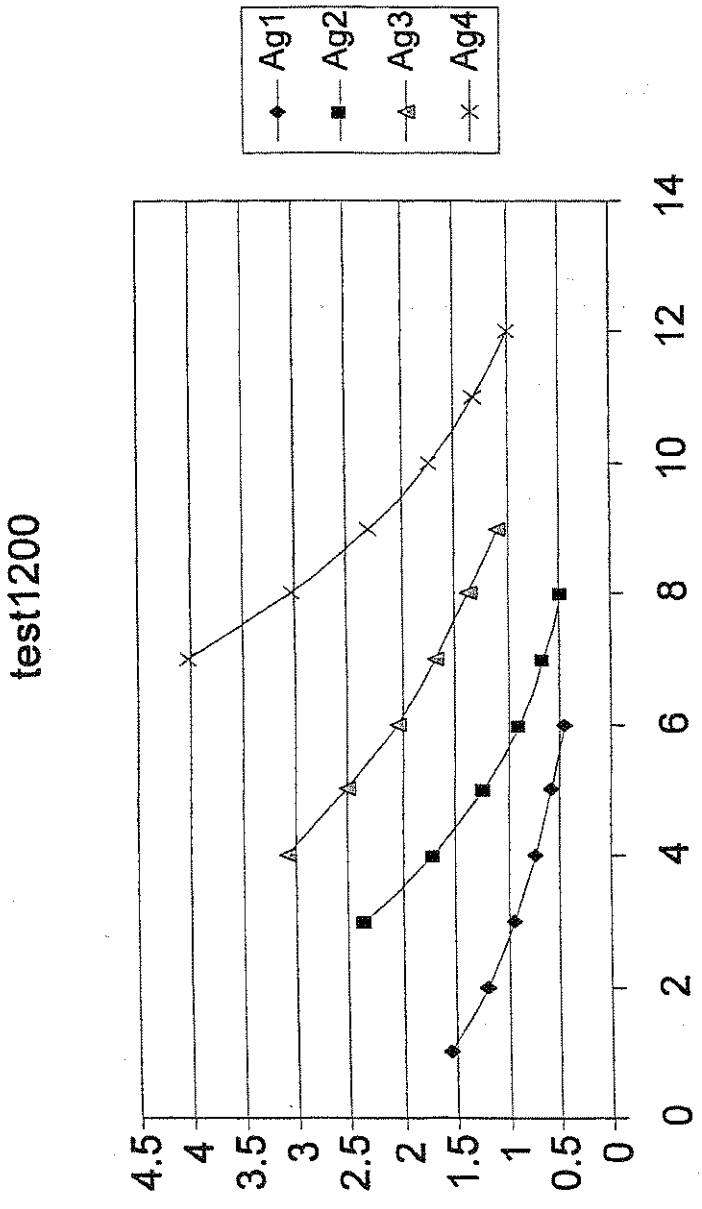

Figure ~~6B~~ 5D

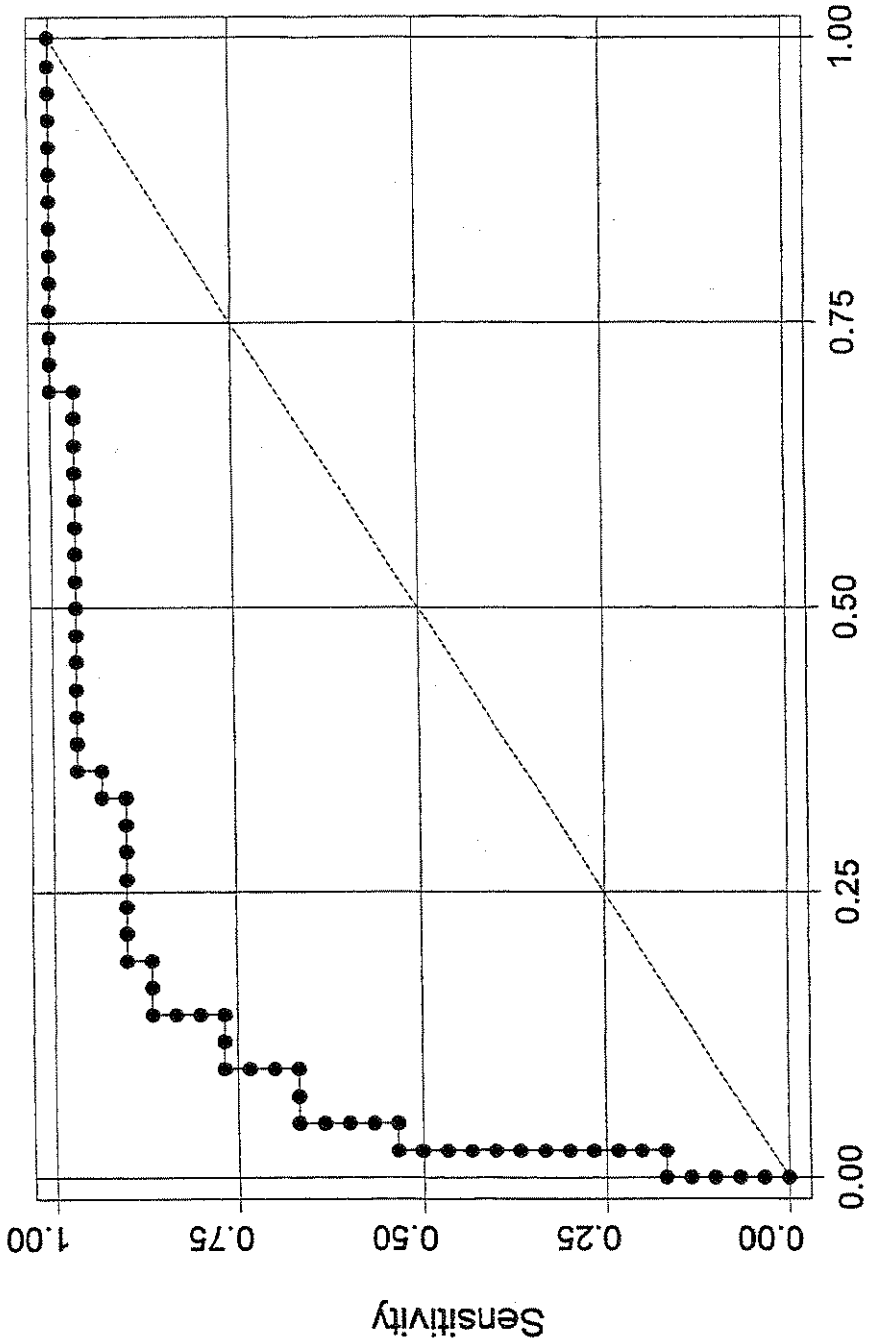
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9087

Figure ~~7A~~ 6A

ntype	LD Pe002	LD Pe012	LD Pe016	LD Pe039	LD Pe066	LD Pe069	LD Pe070	LD Pe071	LD Pe041	LD Pe076	LD Pe077	LD Pe078	LD Pe079	LD Pe095
0	-1.715	0.183	-1.262	-0.317	-0.876	-1.137	-1.184	-0.955	-0.672	-0.629	-0.683	-0.398	0.593	-0.528
0	-0.832	0.981	-0.520	0.255	-0.057	-0.382	-0.217	-0.408	-0.482	-0.271	-0.382	-0.164	-0.034	-0.226
0	-1.044	0.947	-0.494	0.095	-0.305	-0.477	-0.413	-0.539	-0.338	-0.223	-0.282	-0.237	0.581	-0.074
0	-1.073	0.851	0.247	-0.266	-0.060	-0.362	-0.176	-0.731	-0.226	0.099	-0.135	0.167	0.459	-0.035
0	-0.946	0.976	0.402	0.201	-0.126	-0.470	-0.171	-0.516	0.048	-0.031	-0.012	0.343	0.372	-0.033
0	-0.709	0.731	0.646	0.020	-0.164	-0.408	-0.565	-0.637	-0.131	0.451	-0.233	0.261	1.525	-0.007
0	-0.773	0.434	0.174	0.114	0.152	-0.136	-0.037	-0.411	-0.004	0.066	0.002	0.171	0.466	0.009
0	-0.805	0.842	0.064	0.412	0.592	-0.274	0.101	-0.002	-0.137	0.096	0.054	0.032	1.221	0.033
0	-1.003	1.114	-0.294	-0.006	0.108	-0.309	-0.135	-0.587	0.075	0.318	0.039	0.523	0.639	0.124
0	-0.706	1.290	0.055	0.381	0.336	-0.145	0.023	-0.339	0.098	0.247	0.131	0.272	0.727	0.143
0	-1.084	0.399	-0.228	0.186	-0.319	-0.408	-0.355	-0.515	-0.078	-0.016	-0.150	-0.031	-0.002	0.145
0	-0.445	1.513	0.018	0.256	0.679	-0.055	0.103	0.107	0.129	0.139	0.267	0.309	0.411	0.182
0	-1.037	1.415	0.088	0.180	0.150	-0.150	-0.079	-0.241	0.149	0.509	0.196	0.742	0.874	0.218
0	-0.330	1.015	0.207	0.473	0.628	0.063	0.269	0.180	0.091	0.152	0.189	0.205	1.093	0.221
0	-0.330	0.843	0.236	0.872	0.890	0.095	0.533	0.091	0.128	0.507	0.302	1.350	1.449	0.255
0	-1.070	0.873	-0.053	0.606	0.320	-0.027	-0.033	-0.301	-0.296	-0.214	-0.140	0.718	0.583	0.316
0	-0.506	1.224	0.403	0.505	0.502	0.331	0.360	-0.128	0.166	0.387	0.294	0.789	1.003	0.340
0	-0.621	0.989	0.134	0.664	0.534	0.069	0.372	-0.127	0.057	0.227	0.208	0.505	1.062	0.382
0	-0.960	0.504	-0.247	-0.054	0.149	0.239	-0.166	-0.334	-0.011	0.060	0.033	0.651	1.492	0.403
0	-0.509	1.402	0.537	1.080	1.390	0.333	1.062	0.128	0.441	0.494	0.348	0.754	0.774	0.418
0	-0.599	0.987	0.446	0.631	0.744	0.125	0.350	-0.137	0.385	0.473	0.351	0.926	0.828	0.447
0	-1.050	0.459	0.120	0.364	0.091	0.091	0.048	-0.293	0.423	0.404	0.471	0.437	0.661	0.475
0	-0.325	1.293	0.751	0.640	0.692	0.356	0.892	0.065	0.431	0.547	0.434	0.750	0.756	0.527
0	-0.317	1.196	0.479	0.655	0.764	0.545	0.605	0.156	0.362	0.495	0.430	0.611	0.756	0.606
0	-0.504	1.071	0.060	0.213	0.442	-0.004	0.128	-0.176	0.386	0.382	0.304	0.442	0.778	0.632
0	-0.505	1.348	0.066	0.263	0.526	0.067	0.102	-0.197	0.496	0.516	0.411	0.766	0.886	0.656
0	-0.586	0.799	0.206	0.523	0.649	0.208	0.330	0.029	0.351	0.492	0.443	0.723	0.855	0.662
0	-0.491	1.278	0.585	0.725	0.562	0.166	0.328	0.115	0.369	0.445	0.377	0.701	1.334	0.694

Figure ~~7B-1~~ 6B-1

ntype	LD Pe002	LD Pe012	LD Pe016	LD Pe039	LD Pe066	LD Pe069	LD Pe070	LD Pe071	LD Pe041	LD Pe076	LD Pe077	LD Pe078	LD Pe079	LD Pe095
0	-0.370	1.258	0.507	0.569	0.548	0.375	0.379	0.097	0.530	0.667	0.530	0.792	1.510	0.707
0	-0.491	1.163	0.381	0.763	0.676	0.339	0.393	-0.089	0.639	0.705	0.589	0.697	0.837	0.720
0	-0.137	0.992	0.566	0.776	0.816	0.505	0.499	0.123	0.588	0.603	0.607	0.971	0.972	0.728
0	-0.386	0.973	0.317	0.314	0.413	0.108	0.101	-0.096	0.522	0.474	0.505	0.549	1.167	0.756
0	-0.169	1.486	0.864	1.103	0.961	0.798	0.794	0.597	0.824	0.887	0.882	0.935	1.133	0.803
0	-0.963	1.165	0.354	0.631	0.538	0.364	0.257	0.258	0.546	0.715	0.764	0.607	0.930	0.811
0	0.163	1.528	0.896	1.020	0.897	0.773	0.842	0.556	0.791	0.878	0.902	1.119	1.431	0.834
0	-0.248	1.314	0.824	1.190	0.998	0.692	0.810	0.495	0.866	0.893	0.830	0.979	1.167	0.867
0	-0.142	1.440	0.893	1.043	1.075	0.791	0.773	0.554	1.003	0.974	1.051	1.168	1.163	1.003
0	-0.004	1.074	0.264	0.675	0.977	0.407	0.766	0.232	0.542	0.758	0.610	0.971	1.365	1.005
0	-0.126	1.392	0.915	1.063	0.850	0.870	0.659	0.545	0.979	1.012	1.101	1.151	1.408	1.088
0	-0.055	1.417	1.108	1.403	1.135	0.980	1.063	0.830	1.070	1.167	1.130	1.101	1.175	1.089
0	-0.273	1.353	0.843	1.062	0.776	0.821	0.731	0.540	1.007	1.073	1.163	1.068	1.471	1.112
0	-0.467	1.125	0.821	1.110	0.747	0.859	0.564	0.550	1.136	1.133	1.163	1.452	1.253	1.147
1	-1.103	0.715	-0.365	-0.614	-0.414	-0.836	-0.664	-0.856	-0.712	-0.559	-0.870	-0.696	0.515	-0.576
1	0.937	0.334	-0.663	-0.456	0.400	-0.535	-0.499	-0.434	-0.602	-0.371	-0.394	0.521	-0.262	-0.422
1	-1.048	1.101	-0.686	0.052	-0.117	-0.718	-0.362	-0.661	-0.564	-0.266	-0.309	-0.320	0.020	-0.319
1	1.115	0.491	-0.673	0.012	0.089	-0.684	-0.651	-0.585	-0.558	-0.235	-0.560	-0.262	0.665	-0.285
1	-1.111	0.383	-0.423	0.218	-0.043	-0.499	-0.486	-0.575	-0.440	-0.390	-0.286	-0.340	-0.447	-0.255
1	-0.810	0.316	-0.403	-0.154	-0.063	-0.361	-0.359	-0.294	-0.361	-0.334	-0.218	0.697	-0.232	-0.216
1	-1.313	0.466	-0.332	-0.059	0.198	-0.764	-0.508	-0.741	-0.797	0.640	-0.596	-0.231	0.803	-0.145
1	-0.982	0.102	-0.284	0.010	-0.032	-0.269	-0.264	-0.764	-0.080	0.051	-0.172	-0.060	0.021	-0.113
1	-0.981	0.360	-0.443	-0.252	0.065	-0.498	-0.178	-0.655	-0.224	-0.214	-0.236	0.067	-0.115	-0.077
1	-0.604	0.827	0.082	0.267	0.283	-0.084	0.167	-0.138	-0.207	0.127	-0.108	0.117	0.560	-0.052
1	-0.334	0.463	0.018	0.293	0.196	-0.199	-0.191	-0.424	0.145	0.017	0.273	0.028	0.516	0.052
1	-0.308	0.557	0.224	1.335	1.444	0.545	1.360	0.422	0.114	0.052	0.167	0.020	0.052	0.063
1	-0.610	0.802	-0.243	0.511	0.400	-0.278	0.292	-0.175	0.009	-0.065	-0.014	0.014	0.435	0.137
1	-0.938	1.019	-0.138	0.386	0.380	-0.120	-0.184	-0.178	0.088	0.092	0.187	0.292	0.511	0.156

Figure ~~7B-2~~ 6B-2

ntype	LD Pe002	LD Pe012	LD Pe016	LD Pe039	LD Pe066	LD Pe069	LD Pe070	LD Pe071	LD Pe041	LD Pe076	LD Pe077	LD Pe078	LD Pe079	LD Pe095
1	-0.717	0.394	0.025	0.012	0.264	-0.283	-0.180	-0.478	-0.019	0.139	-0.131	0.189	0.473	0.208
1	-0.398	1.221	0.129	0.340	0.515	0.112	0.043	-0.239	0.243	0.378	0.150	0.376	0.960	0.211
1	-0.657	1.280	0.191	0.337	0.498	0.187	0.152	-0.138	0.366	0.496	0.310	0.394	0.803	0.429
1	-0.274	1.041	0.349	0.404	0.854	0.065	0.442	0.004	0.316	0.706	0.481	0.693	1.331	0.501
1	-0.390	1.282	0.156	0.260	0.417	0.072	0.148	-0.147	0.427	0.541	0.438	0.480	1.283	0.526
1	-0.127	0.855	0.446	0.670	0.769	0.464	0.515	0.167	0.507	0.603	0.473	0.696	1.091	0.565
1	-0.157	1.264	0.909	0.893	1.044	0.507	0.629	0.253	0.654	0.684	0.746	1.327	1.121	0.720
1	-1.034	0.887	0.066	0.631	0.242	0.201	0.077	0.169	0.866	0.918	0.959	0.611	0.911	0.772
1	-0.499	1.064	1.520	0.395	0.456	0.330	0.250	0.080	0.663	0.944	0.638	0.944	0.986	0.801
1	-0.483	1.235	0.492	0.925	0.919	0.602	0.456	0.363	0.600	0.811	0.727	0.681	0.894	0.859
1	-0.374	0.977	0.515	0.987	0.606	0.505	0.462	0.389	1.011	0.963	0.960	1.011	1.111	0.916
1	0.279	1.405	1.079	1.204	1.076	1.018	0.995	0.773	0.950	0.950	0.994	1.270	1.088	0.918
1	-0.663	1.133	0.098	0.725	0.274	0.311	0.161	0.272	1.016	0.995	1.079	0.825	1.079	0.979
1	-0.227	1.161	0.691	1.007	0.790	0.759	0.644	0.594	0.992	1.029	1.095	0.980	1.453	0.981
1	-0.253	1.335	0.714	1.071	0.786	0.713	0.750	0.546	1.089	1.107	1.153	1.398	1.314	1.086
1	-0.617	1.101	0.310	0.712	0.358	0.462	0.305	0.382	1.061	1.059	1.154	0.879	1.152	1.126

Figure ~~7B-3~~ 6B-3

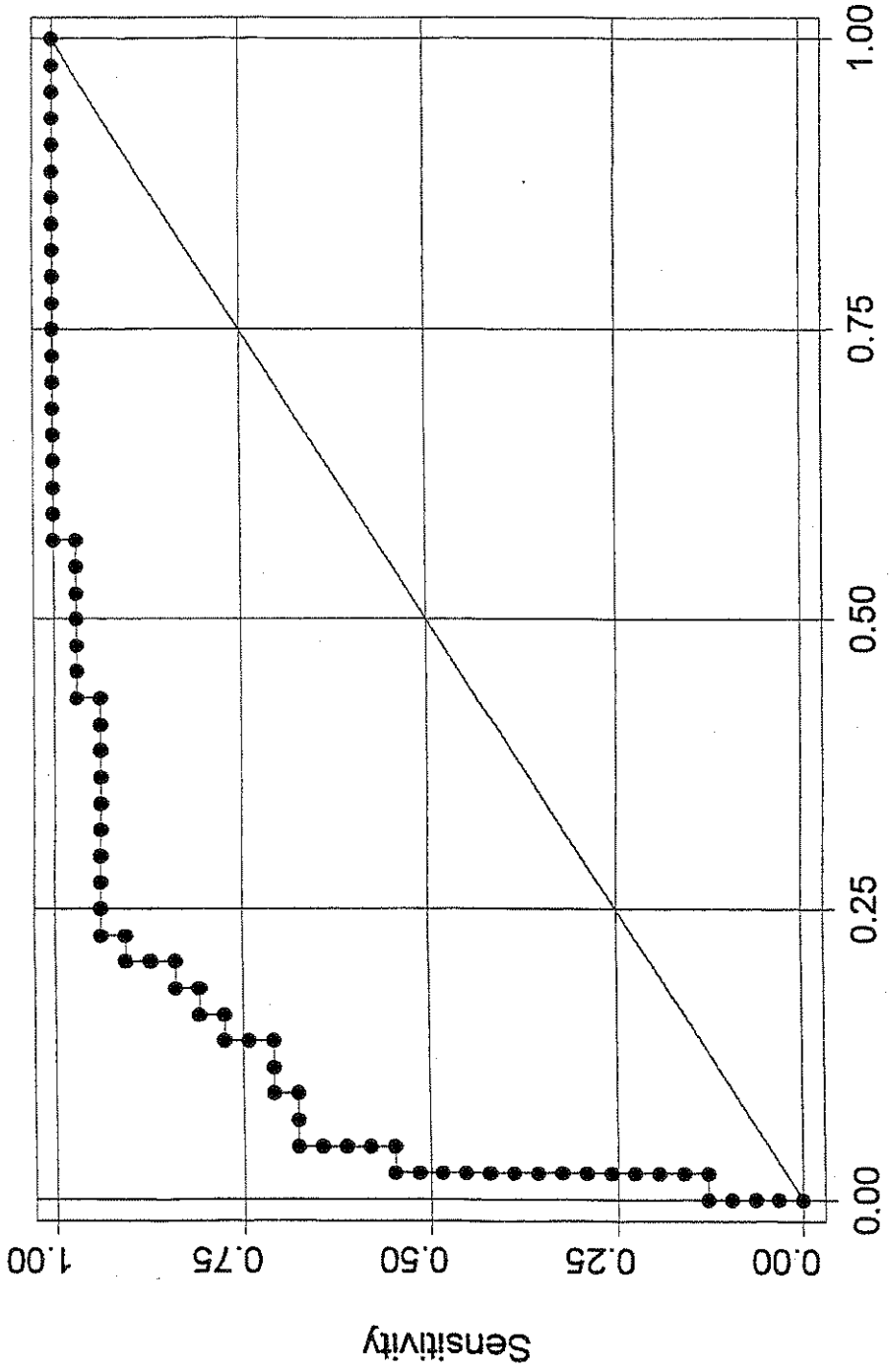
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9091

Figure ~~7C~~ 6C

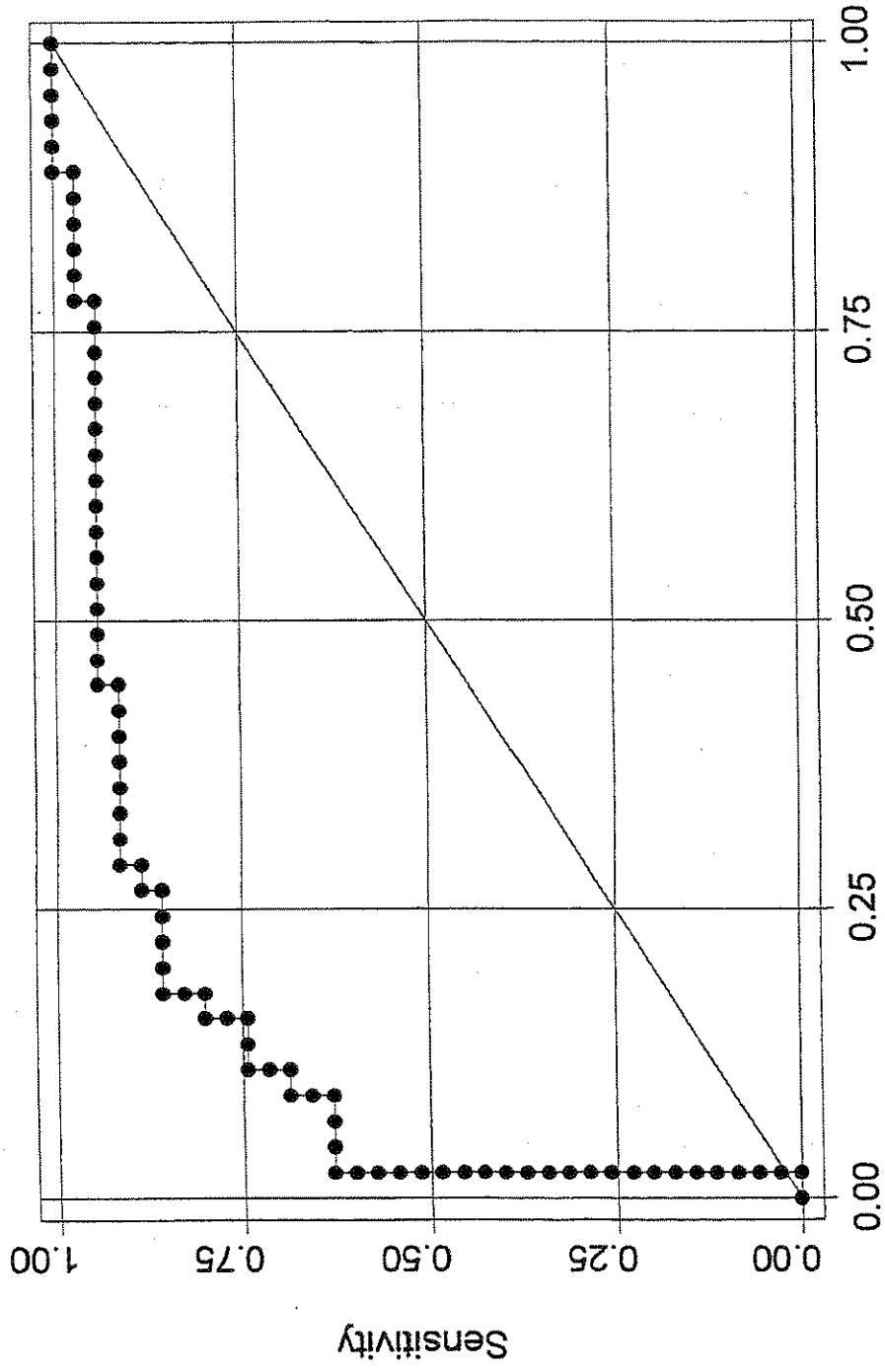
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.8794

Figure ~~7D~~ 6D

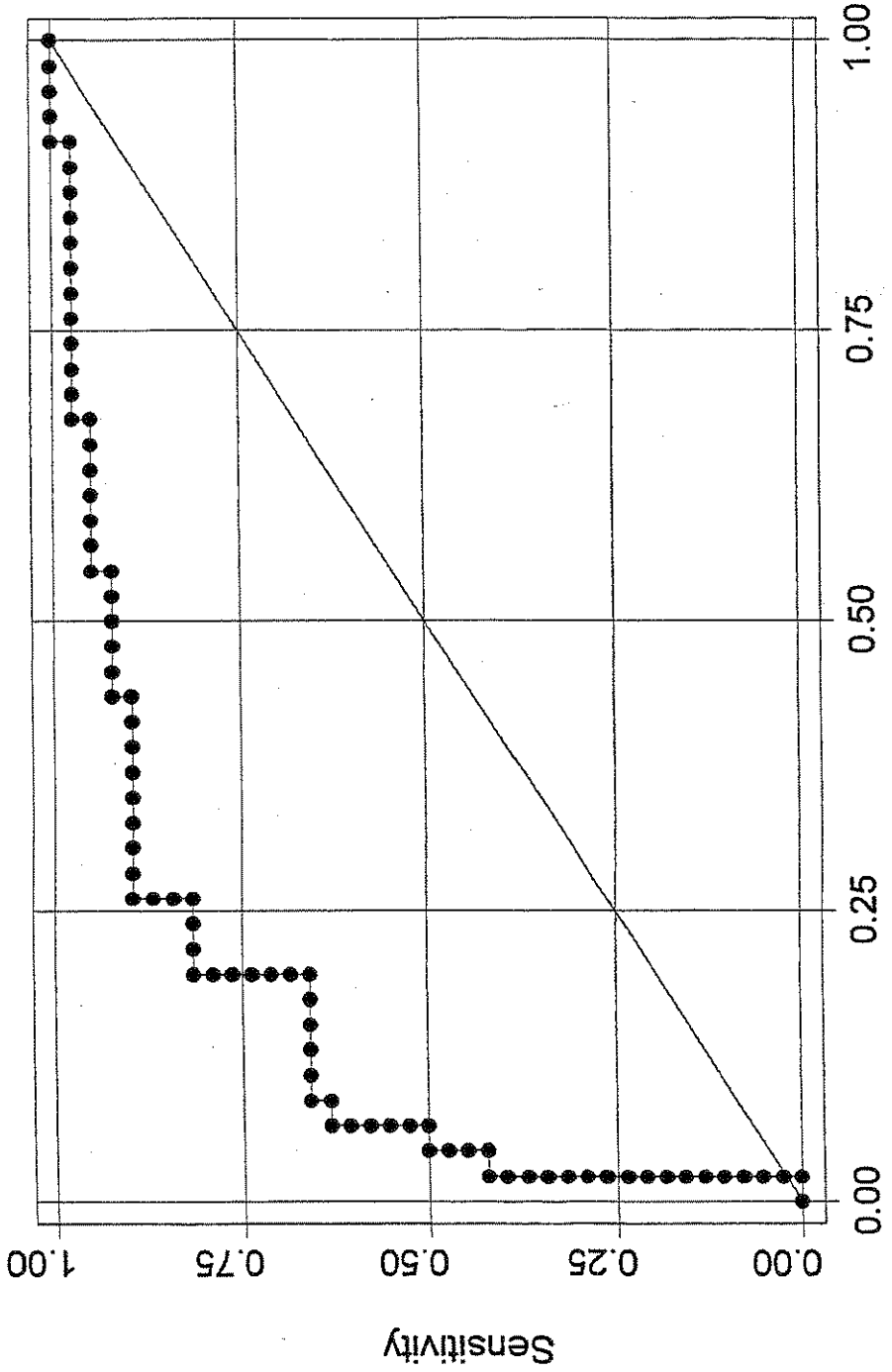
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
0.00
0.25
0.50
0.75
1.00
Area under ROC curve = 0.8576

Figure ~~7~~E 6E

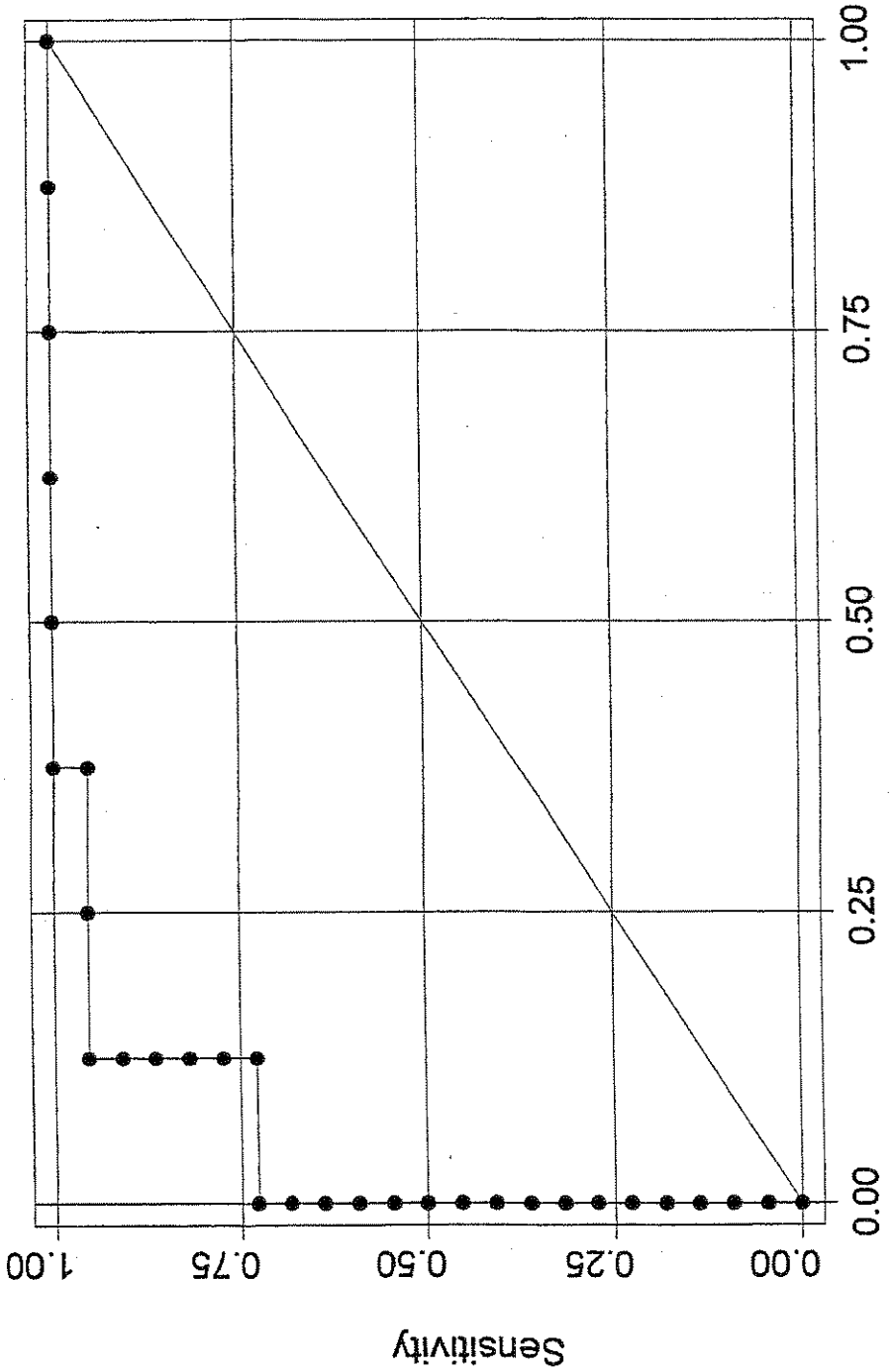
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9545

Figure 7F 6F

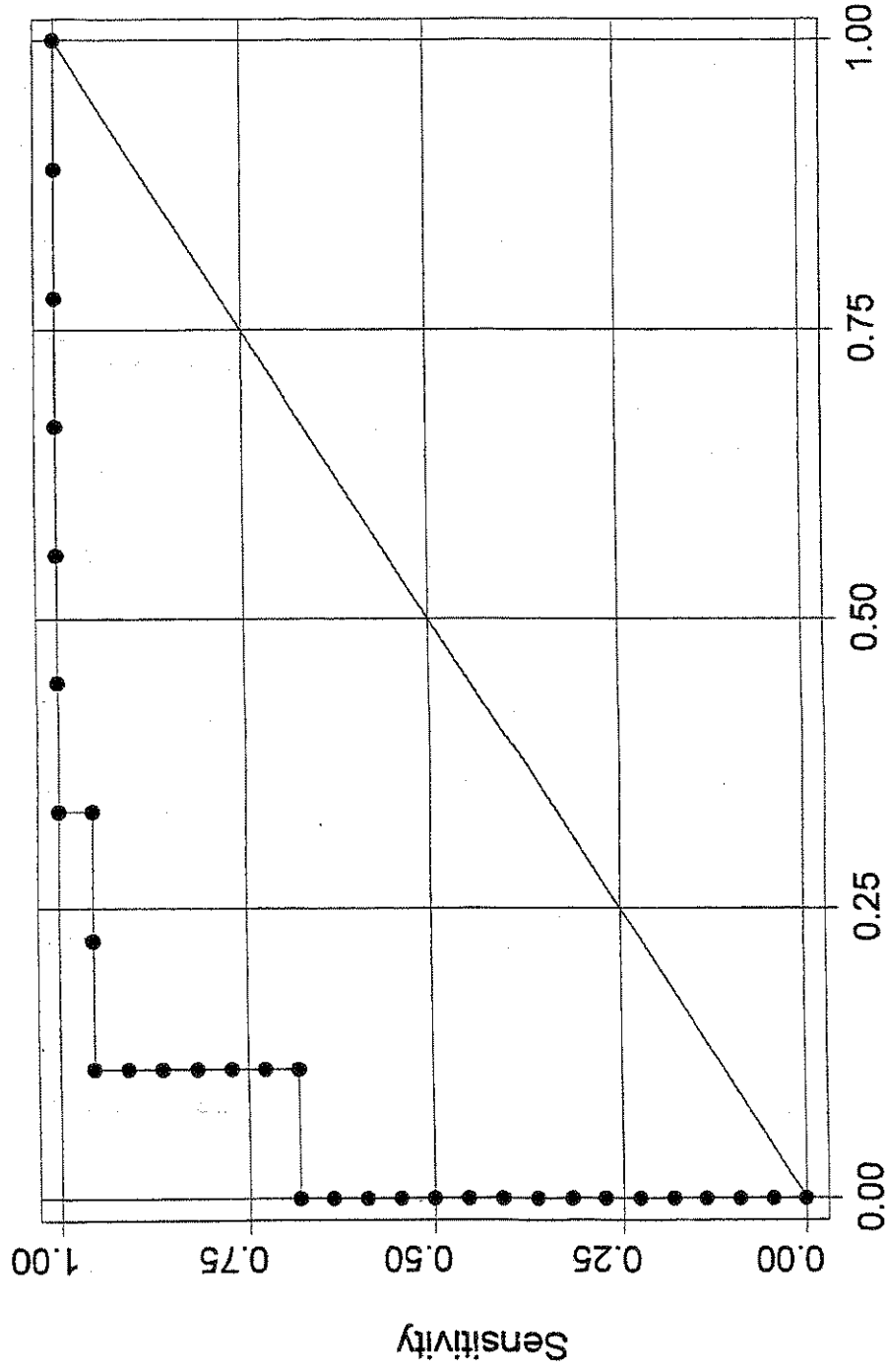
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9545

Figure 7G 6G

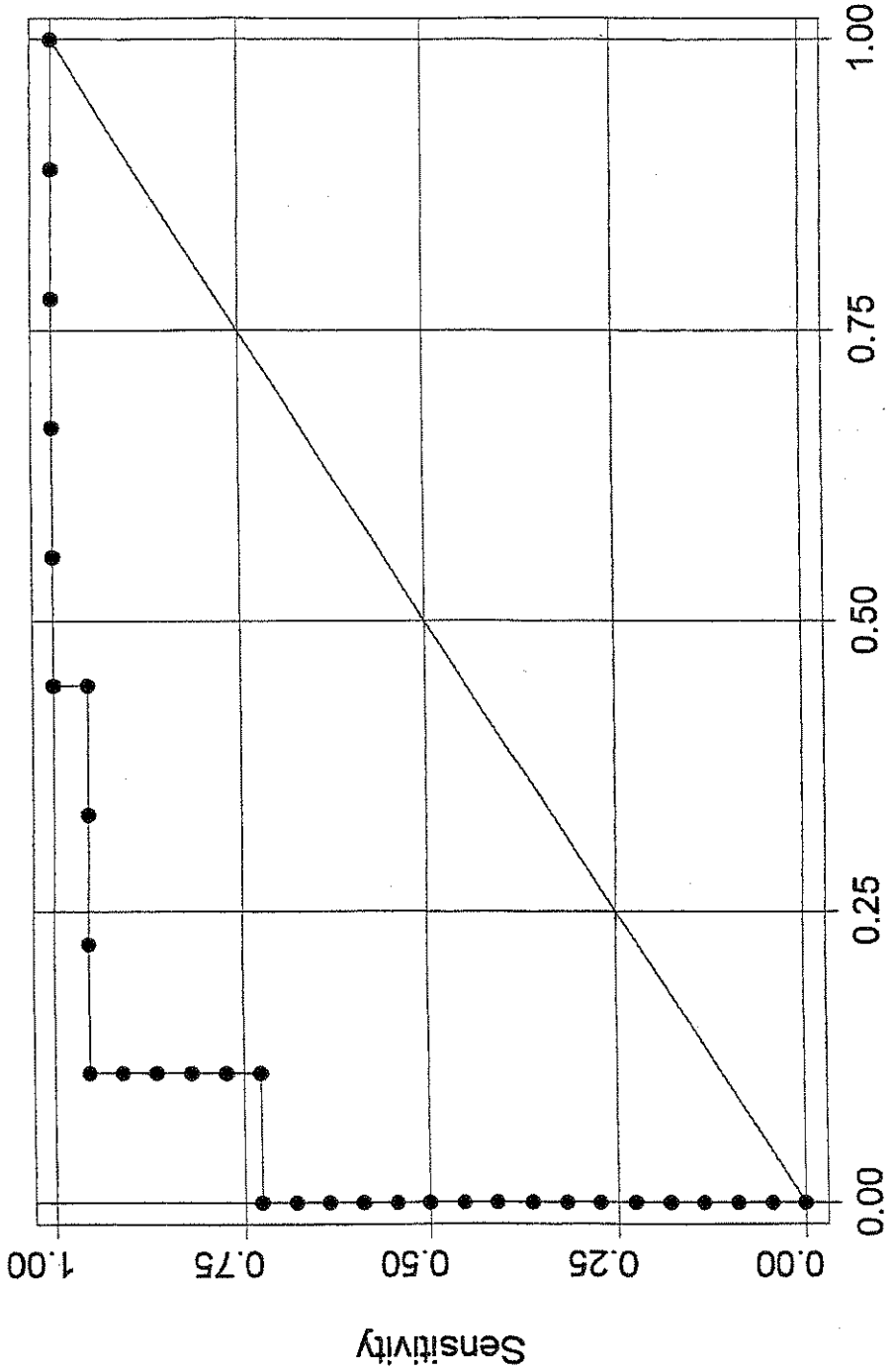
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9545

Figure ~~7H~~ 6H

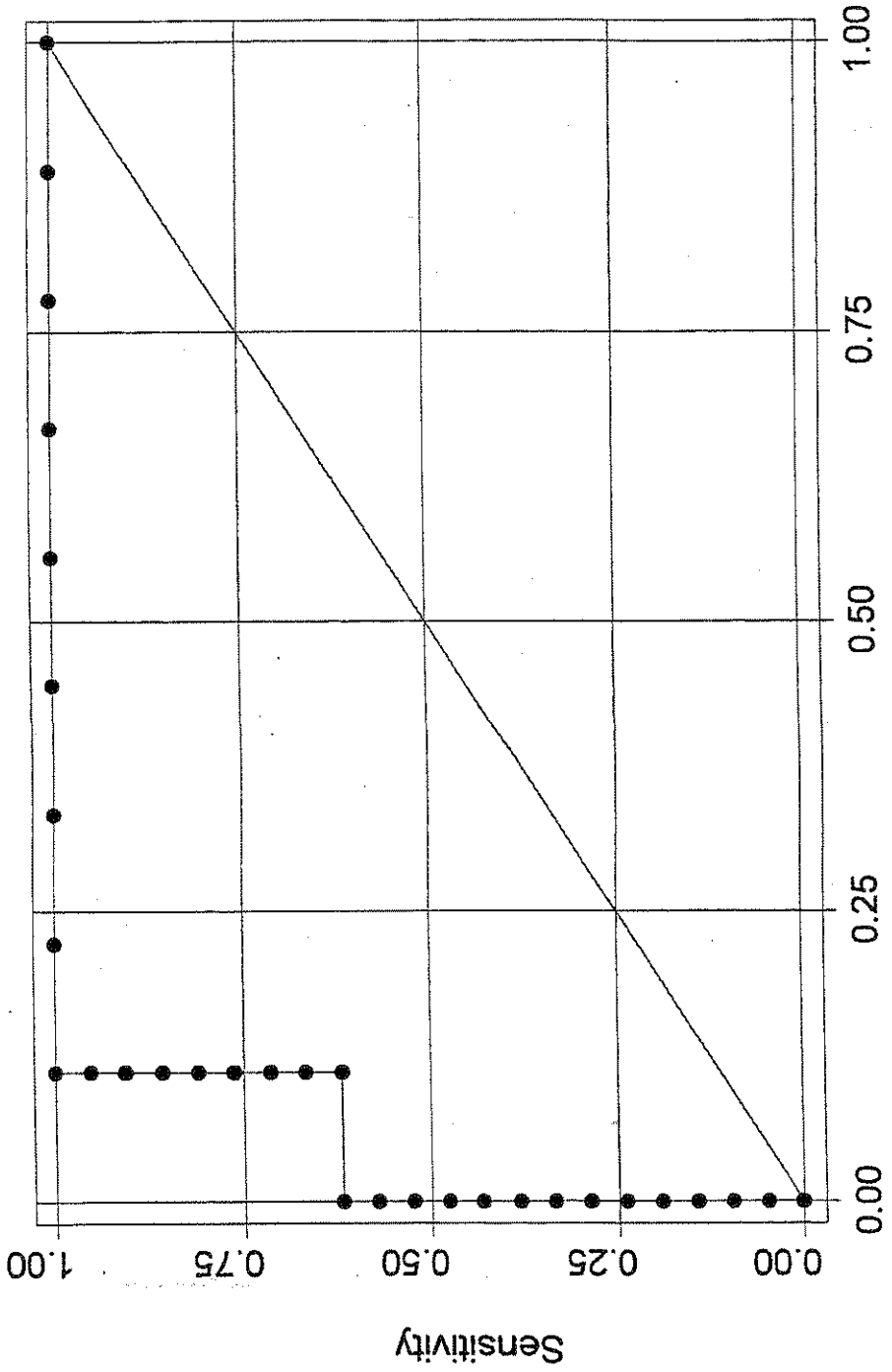
Sensitivity
1.00
0.75
0.50
0.25
0.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9577

Figure ~~71~~ 61

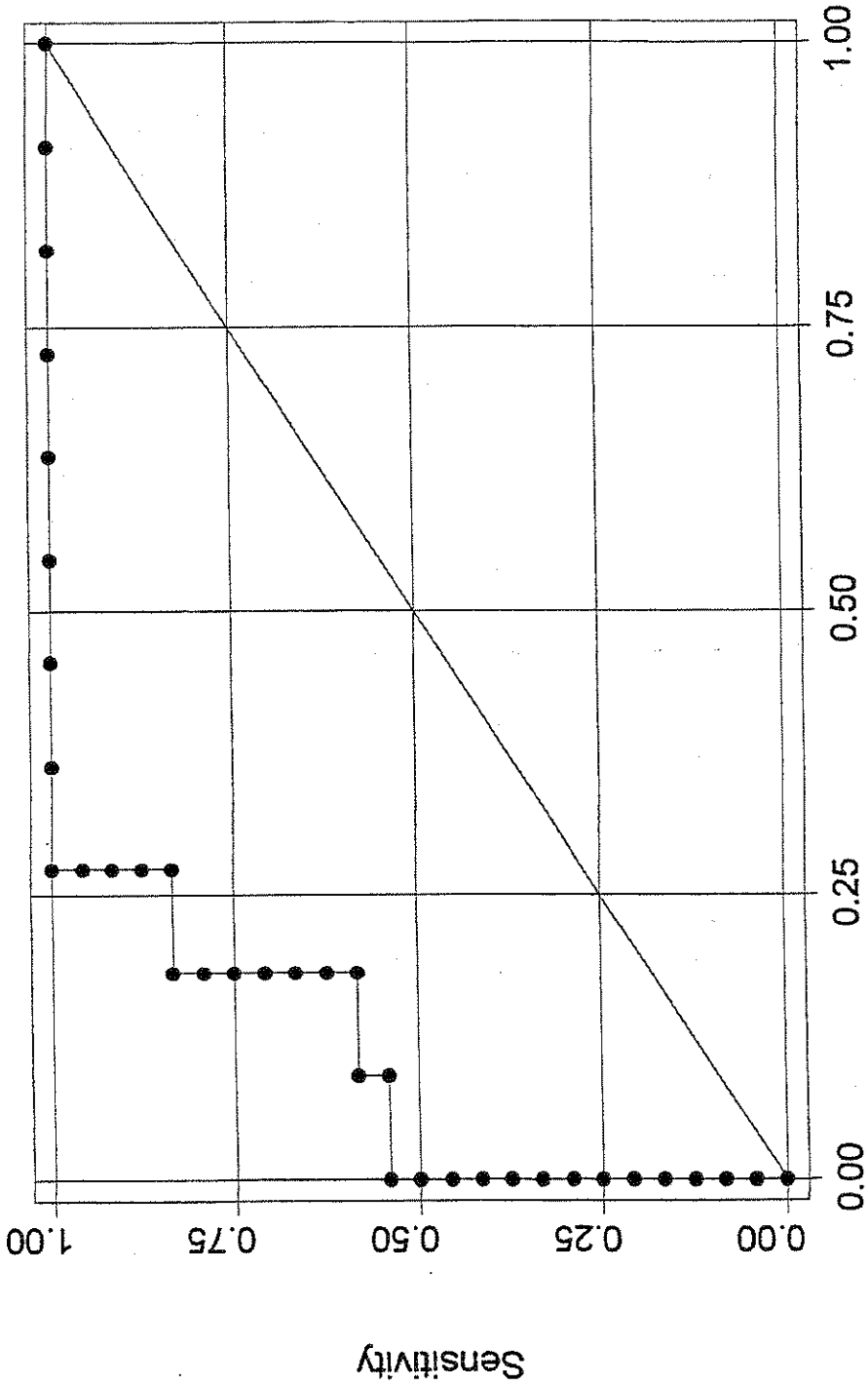
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.9053

Figure ~~7J~~ 6J

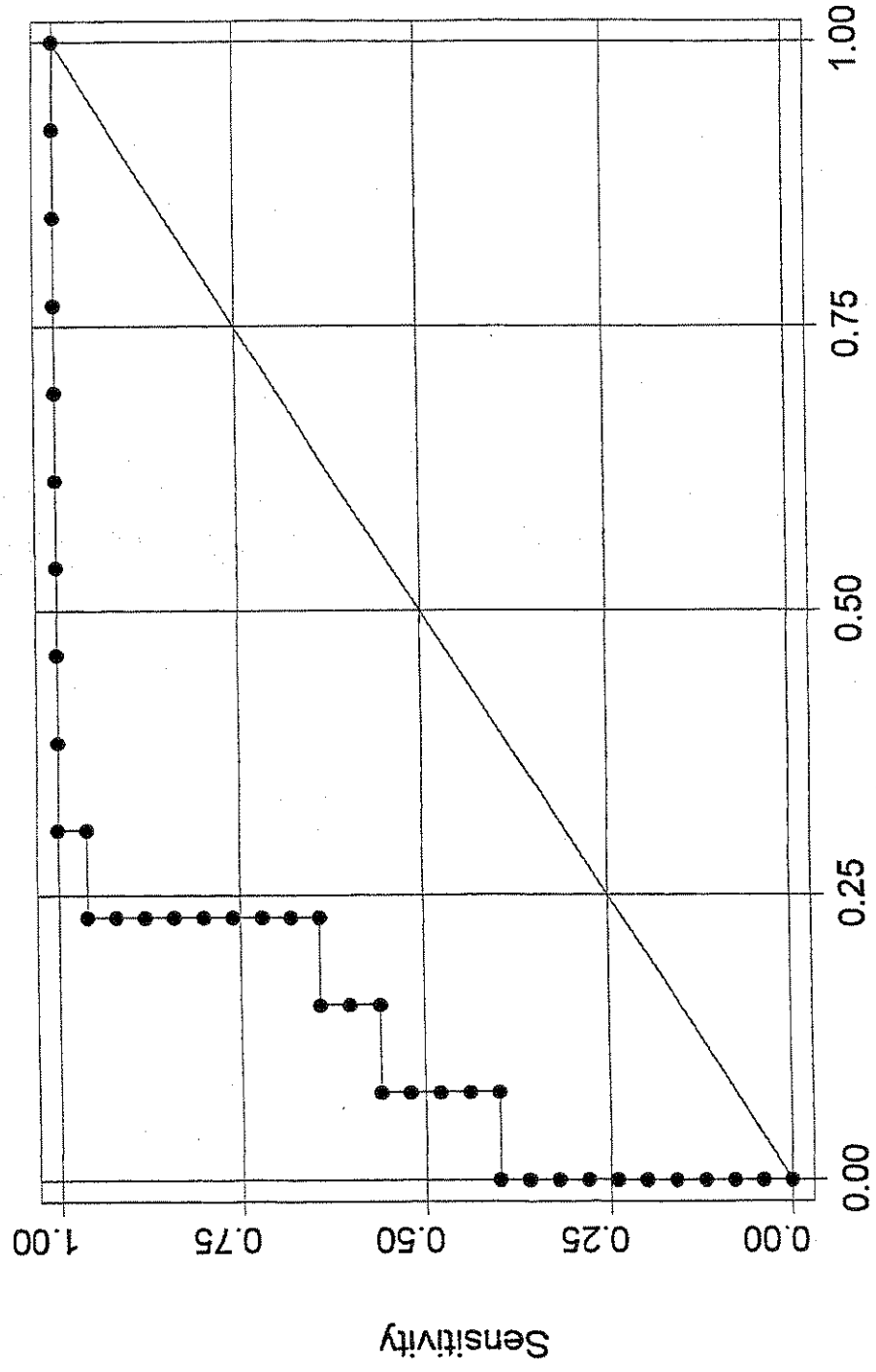
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.8892

Figure ~~7K~~ 6K

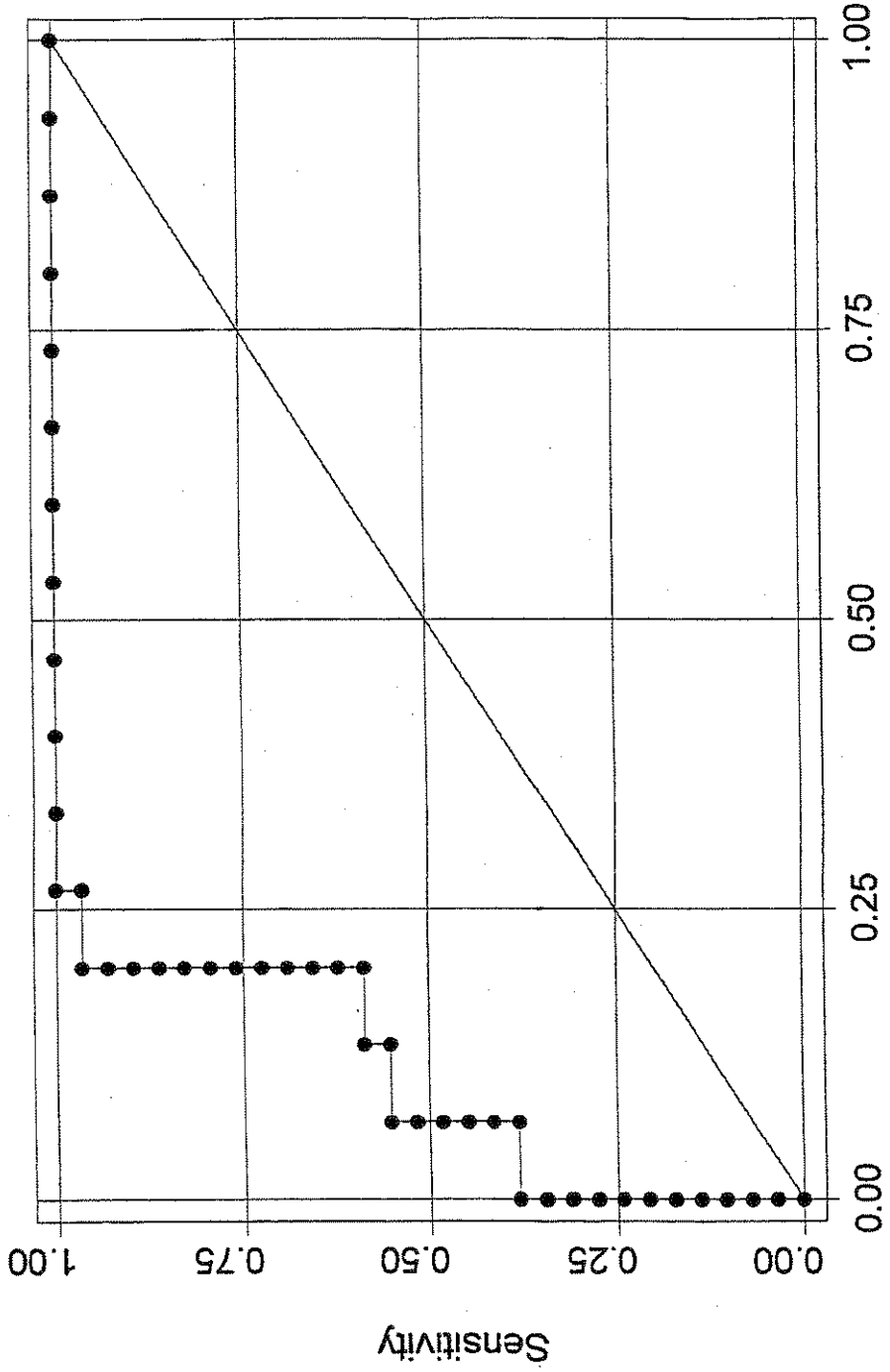
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.8989

Figure ~~7~~ 6L

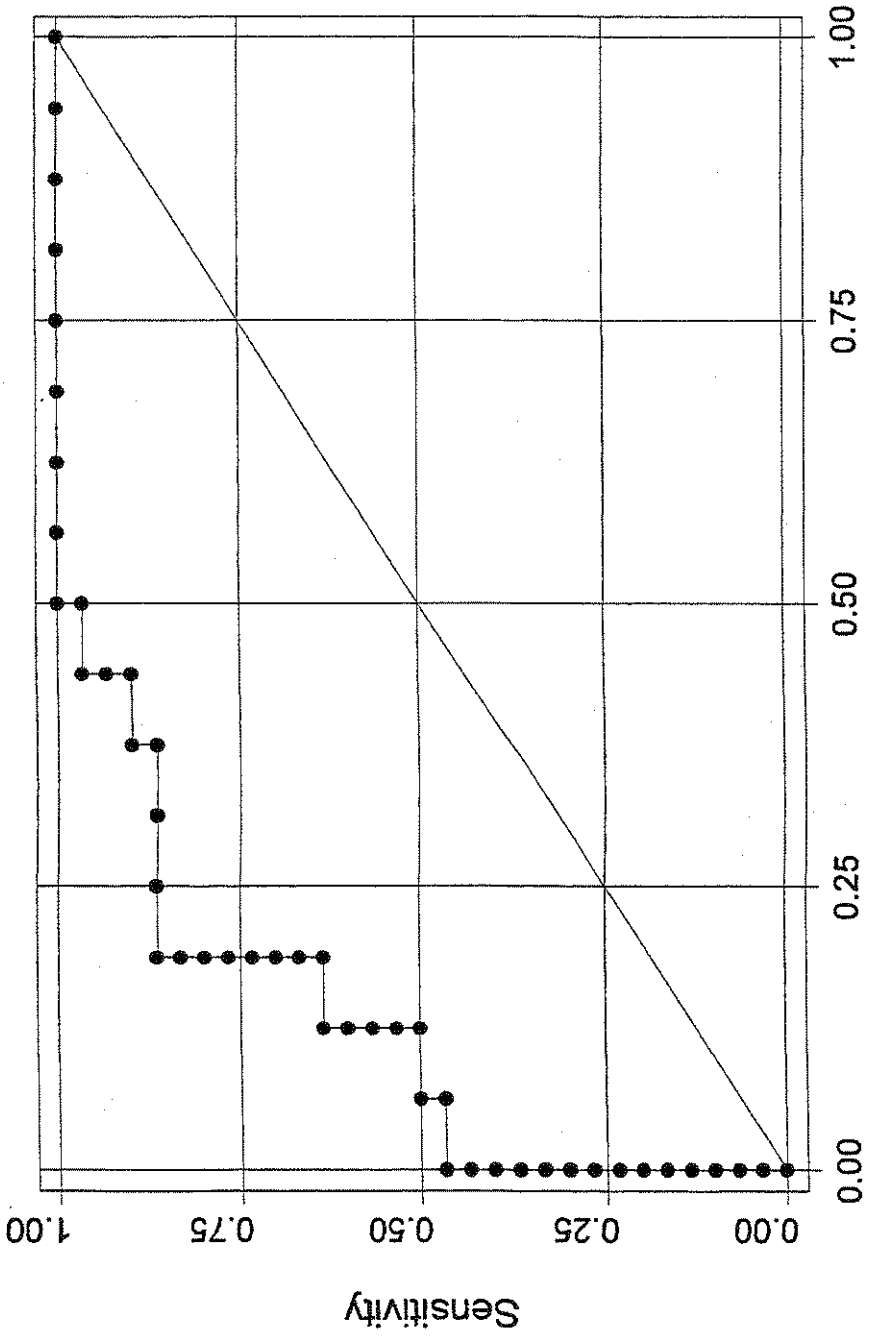
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 - Specificity
0.00
0.25
0.50
0.75
1.00
Area under ROC curve = 0.8792

Figure ~~7M~~ 6M

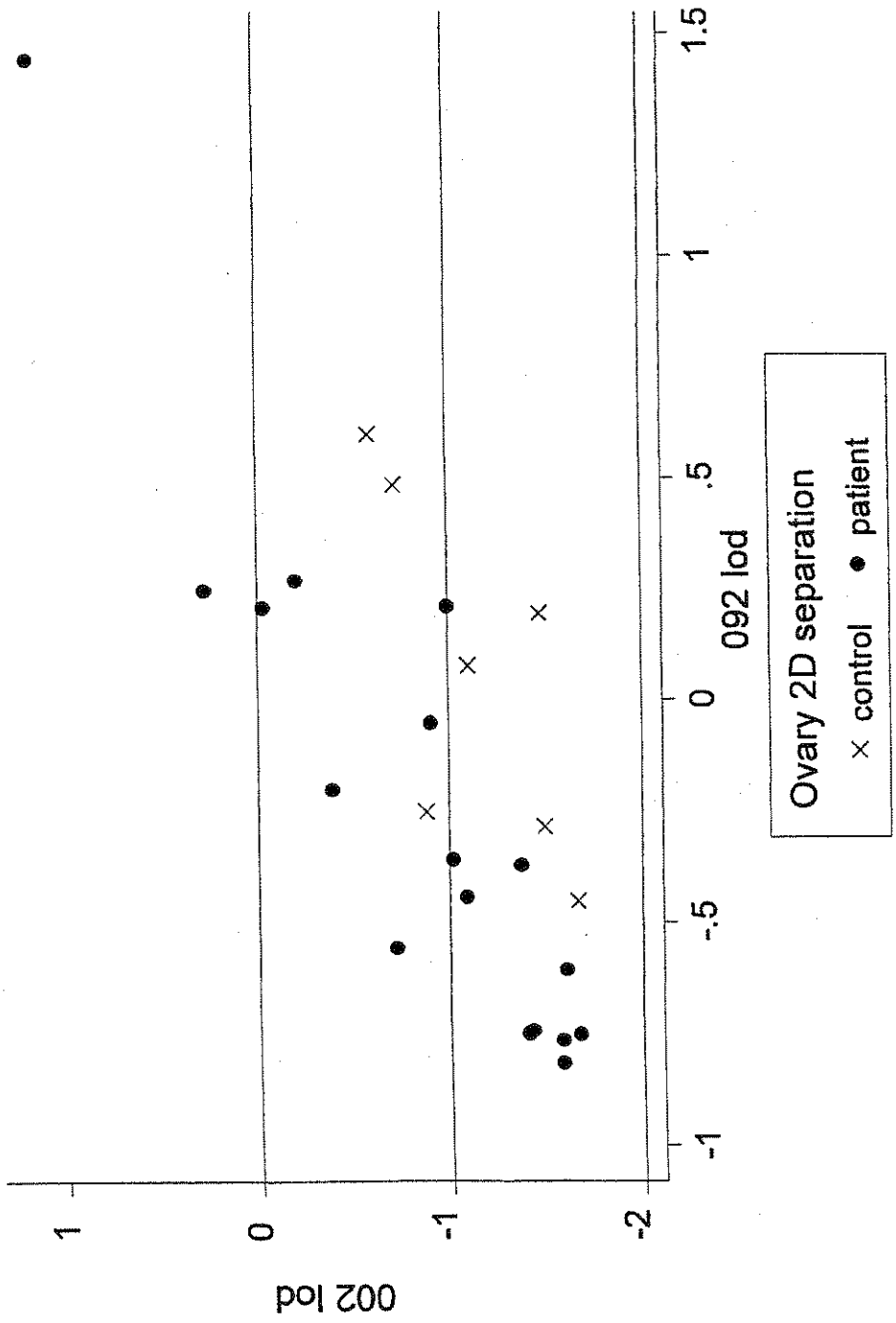
Ovary 2D separation
control
patient
092 lod
002 lod
1.5
1
.5
0
-.5
-1
1
0
-1
-2

Figure ~~7N~~ 6N

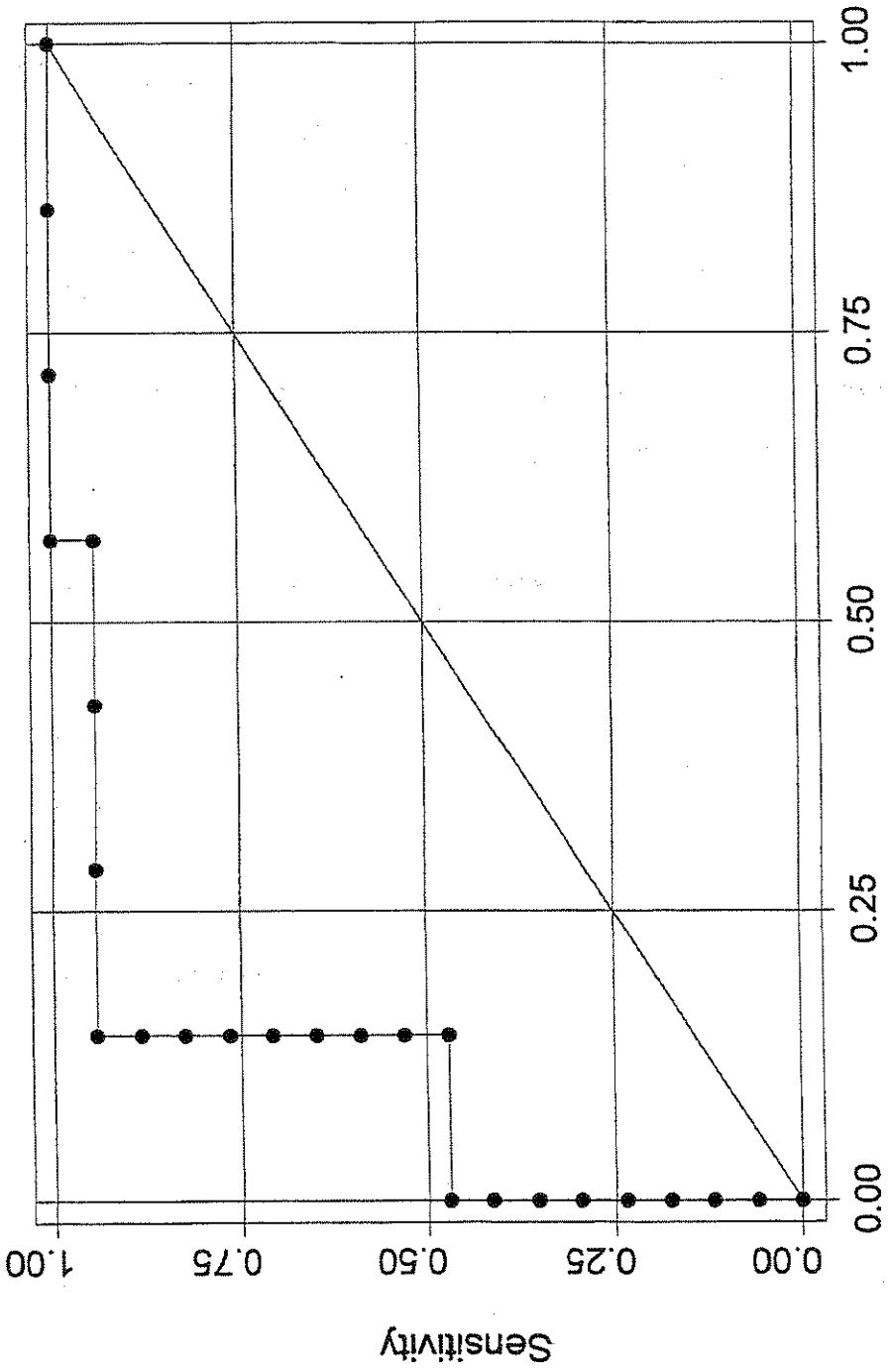
Sensitivity
1.00
0.75
0.50
0.25
0.00
0.00
0.25
0.50
0.75
1.00
Area under ROC curve = 0.8992
1 - Specificity

Figure ~~70~~ 60

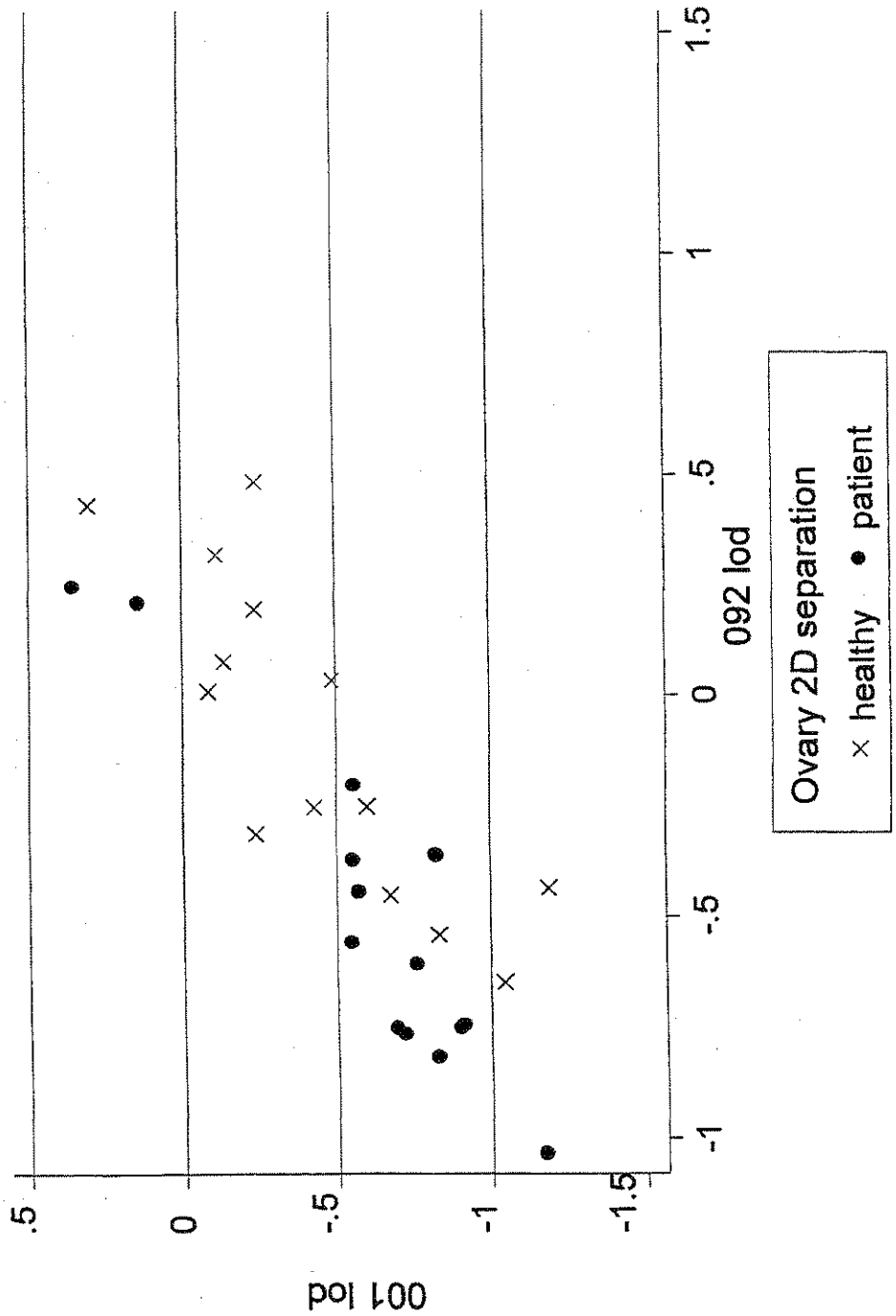
Ovary 2D separation
× healthy • patient
092 lod
001 lod
1.5
1
.5
0
-.5
-1
-1.5

Figure ~~7P~~ 6P

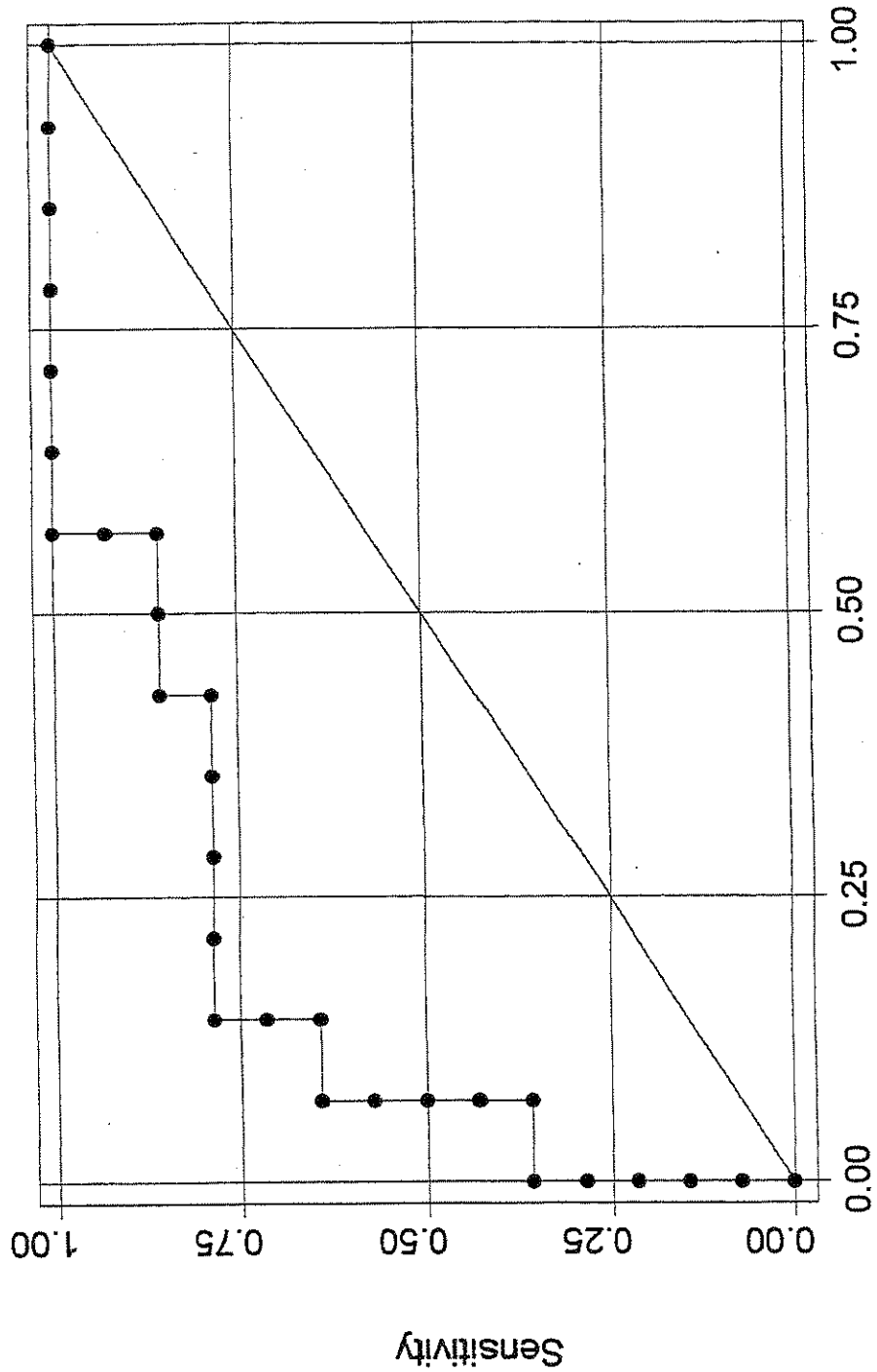
Sensitivity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
1 - Specificity
Area under ROC curve = 0.8469

Figure ~~7Q~~ 6Q

Figure 8

Table 38 – list of sequences of peptide/protein used as antigen to form complexes with autoantibodies in examples 1-8.

SEQ. ID NO.	*Name*	*E/R*	*#*	*sequence*	*Gene /protein accession no.*	*Origin*
SEQ. ID NO. 1	LDP	E	7	VFETLEEIT		Synthetic
SEQ. ID NO. 2	LDP	E	17	YSQAVPAVTEGRIPEV		Synthetic
SEQ. ID NO. 3	LDP	E	51	biotin-VATYAGQFNQDYLSGMAANMSGTFGGANMPNLY		Synthetic
SEQ. ID NO. 4	LDP	E	64	biotin-EPPLSQETFSDLWKLLPENNVLSPL		Synthetic
SEQ. ID NO. 5	LDP	E	71	Biotin-NHEPSVTQVILDRPY		Synthetic
SEQ. ID NO. 17	LDP	R	62	GRP78 / HSPA5	BC020235	Human recombinant protein
SEQ. ID NO. 18	LDP	R	80	Endostatin	NP_085059.2	Human recombinant protein
SEQ. ID NO. 19	LDP	R	84	TPO	NP_000538.3	Human recombinant

						protein
					NP_001005862.1	Human recombinant protein
SEQ. ID NO. 20	LDP	R	85	Erbb2		
SEQ. ID NO. 6	LDP	E	70	Biotin-TVETPQTAKTAYYAT		Synthetic
SEQ. ID NO. 7	LDP	E	69	Biotin-SQRIPARIHHFPTSI		Synthetic
SEQ. ID NO. 8	LDP	E	1	IISAVVGI		Synthetic
SEQ. ID NO. 9	LDP	E	2	QRASPLTSIISAVVGI		Synthetic
SEQ. ID NO. 10	LDP	E	8	TAPLQPEQLQVFETLEEI		Synthetic
SEQ. ID NO. 11	LDP	E	12	HGVTSAPDTRPAPGSTAPPAHGVTSAPDTRPAPGSTAPP AHGVTSAPDTRPAPGSTAPPAHGVTSAPDTRPAPGSTAP PA		Synthetic
SEQ. ID NO. 12	LDP	E	16	KAAELIPLHKLAAK		Synthetic
SEQ. ID NO. 13	LDP	E	39	SGSGHGVTSAPDTR-Biotin		Synthetic
SEQ. ID NO. 21	LDP	R	41	RPA32	NP_002937.1	Human recombinant protein
SEQ. ID NO. 14	LDP	E	66	DDLMLSPDDIEQWFTEDPGP - biotin		Synthetic

SEQ. ID NO.15	LDP	E	72	biotin-PPTGEEDTAEKDEL		Synthetic
SEQ. ID NO. 22	LDP	R	76	HOXB7	NM_004502	Human recombinant protein
SEQ. ID NO. 23	LDP	R	77	P53	BC000474	Human recombinant protein
SEQ. ID NO. 24	LDP	R	78	90K	CAA55699.1	Human recombinant protein
SEQ. ID NO. 25	LDP	R	79	CEA	NP_004354.2	Human recombinant protein
SEQ. ID NO. 16	LDP	E	92	TVETPQTAKTAYYAT		Synthetic
SEQ. ID NO. 26	LDP	R	95	purified cathepsin D	P07339.1	Human purified protein

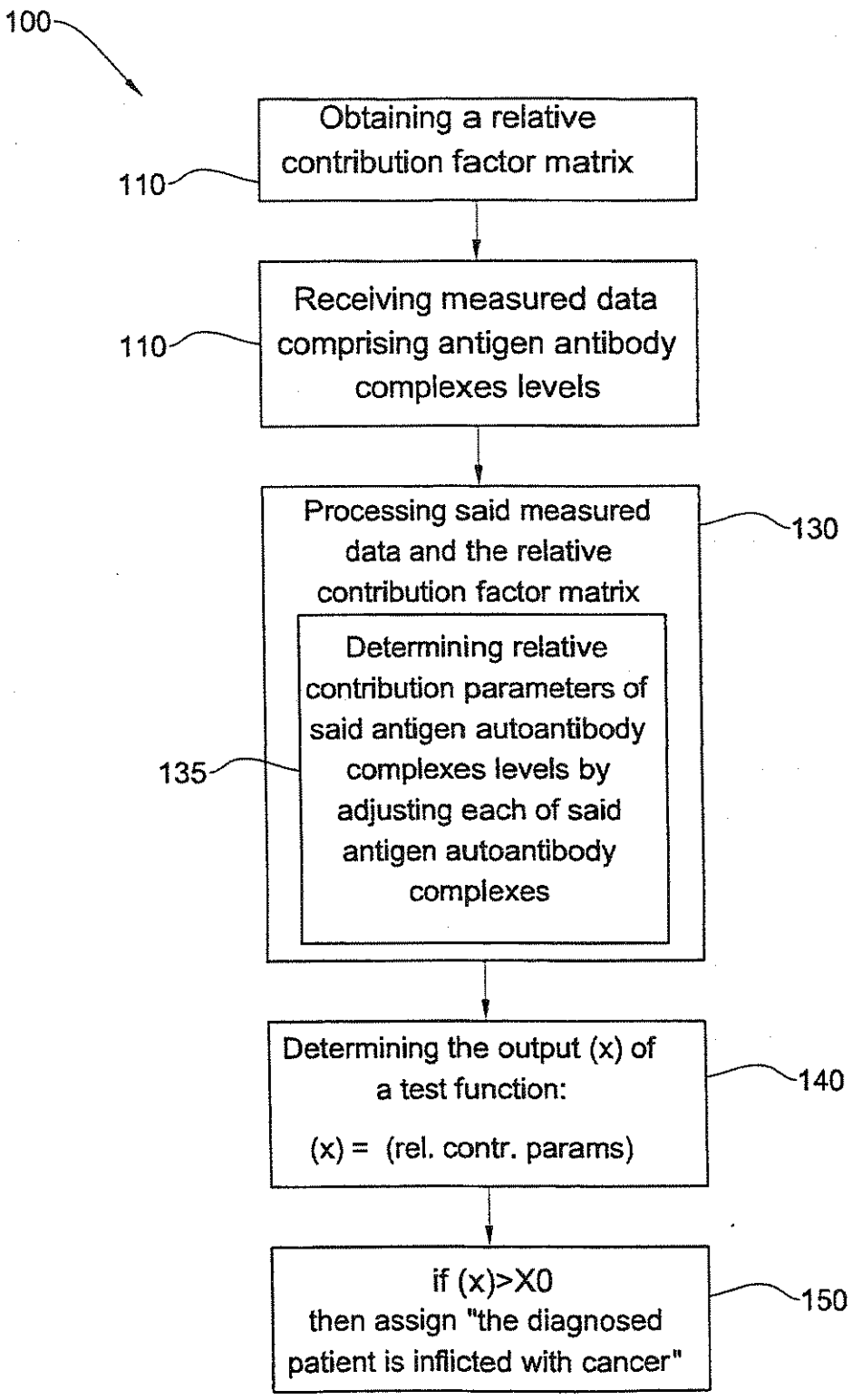
100
Obtaining a relative contribution factor matrix
110
Receiving measured data comprising antigen antibody complexes levels
110
Processing said measured data and the relative contribution factor matrix
130
Determining relative contribution parameters of said antigen autoantibody complexes levels by adjusting each of said antigen autoantibody complexes
135
Determining the output (x) of a test function:
(x) = (rel. contr. params)
140
if (x)>X0
then assign "the diagnosed patient is inflicted with cancer"
150

Figure ~~9~~ 7

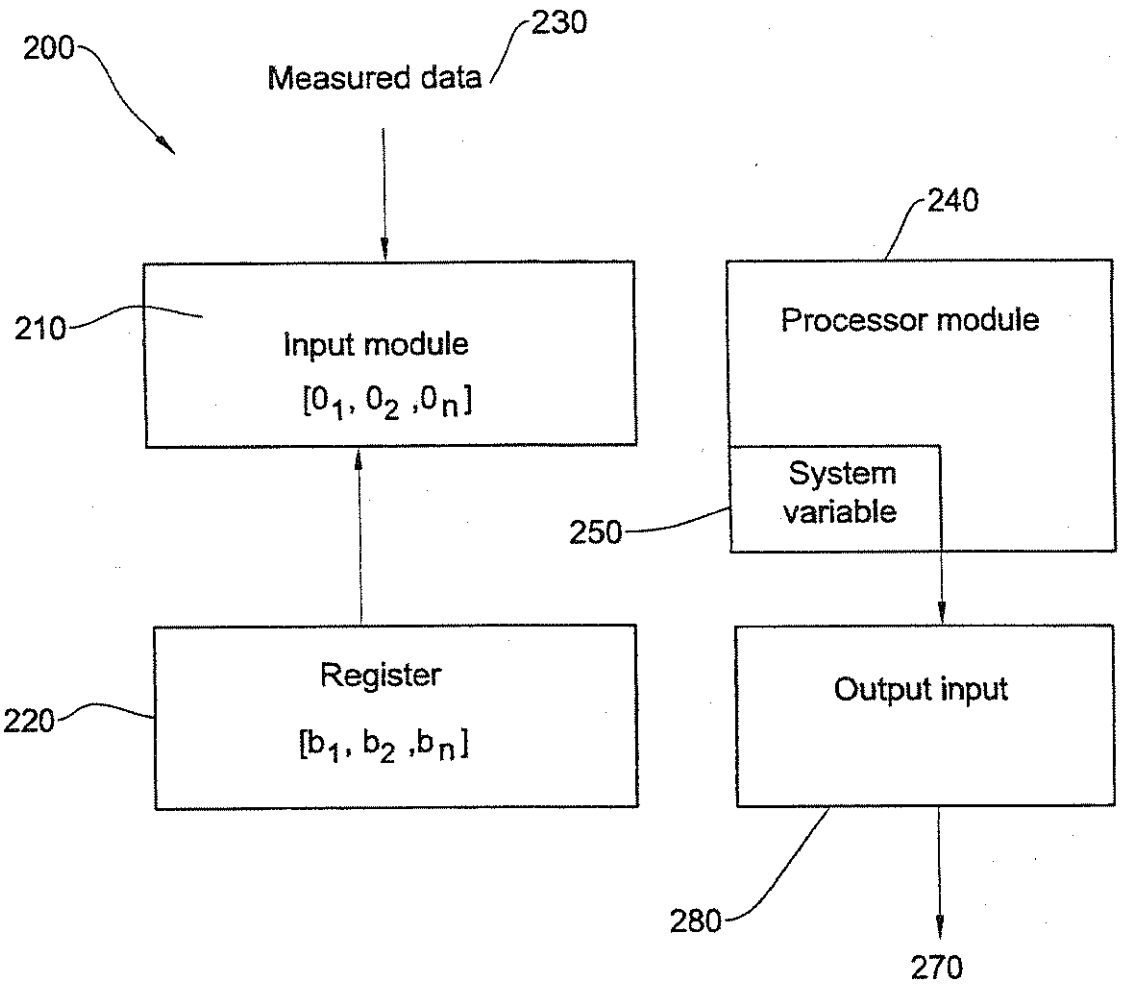
200
230
Measured data
240
210
Input module
$[0_1, 0_2, 0_n]$
Processor module
System variable
250
Register
$[b_1, b_2, b_n]$
220
Output input
280
270

Figure ~~10~~ 8