

FIG. 1

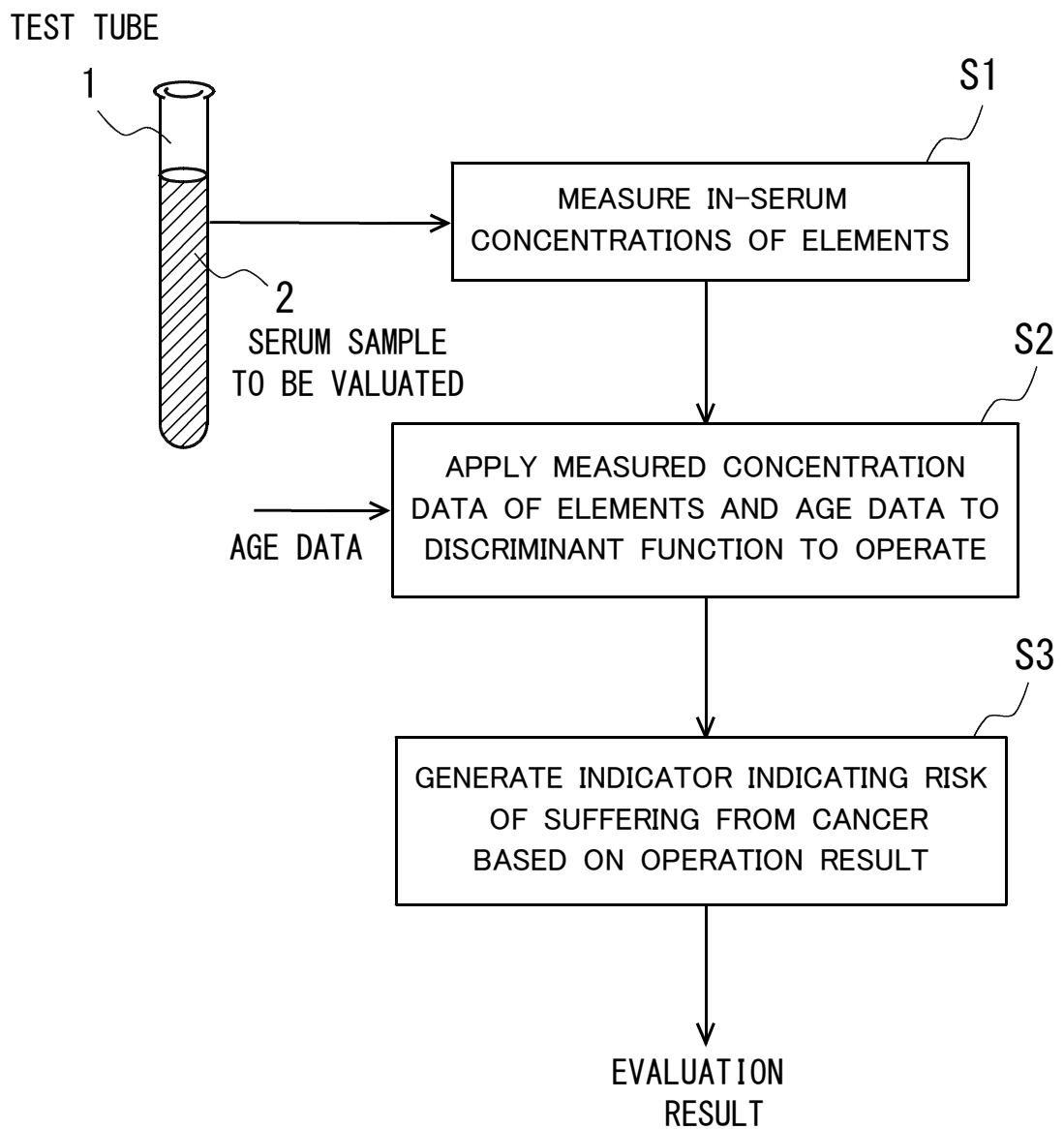
BASIC PRINCIPLE OF
CANCER RISK EVALUATION METHOD OF INVENTION

FIG. 2

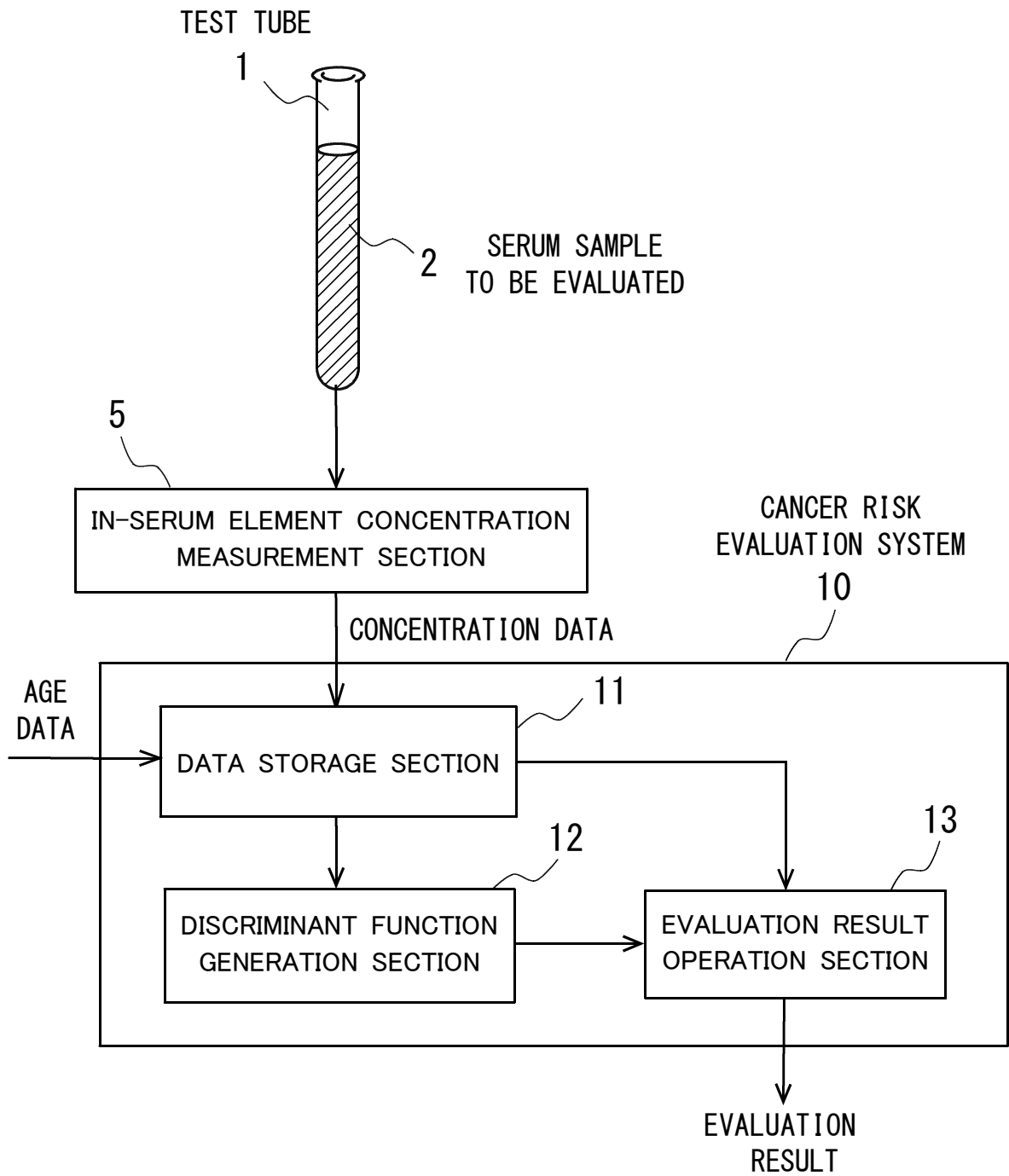
BASIC STRUCTURE OF
CANCER RISK EVALUATION SYSTEM OF INVENTION

FIG. 3

AGE CLASS	MALE		FEMALE		TOTAL	
	NUMBER	%	NUMBER	%	NUMBER	%
20-29	0	-	1	0.2	1	0.1
30-39	8	1.9	13	2.8	21	2.4
40-49	30	7.3	65	14.1	95	10.9
50-59	72	17.5	132	28.6	204	23.3
60-69	184	44.7	150	32.5	334	38.2
70-79	107	26.0	92	19.9	199	22.8
80-89	11	2.7	9	1.9	20	2.3
TOTAL	412	100.0	462	100.0	874	100.0

FIG. 4

SEX	CANCER PATIENT		CONTROL
	SITE	NUMBER	NUMBER
MALE	PANCREATIC CANCER	1 4 4	3 6 4
	PROSTATE CANCER	9 4	
	COLORECTAL CANCER	1 7 4	
FEMALE	ENDOMETRIAL CANCER	1 5 5	2 4 8
	BREAST CANCER	1 5 7	
	COLORECTAL CANCER	1 5 0	

FIG. 5

ITEM	MALE			FEMALE		
	PANCREATIC CANCER	PROSTATE CANCER	COLORECTAL CANCER	BREAST CANCER	ENDOMETRIAL CANCER	COLORECTAL CANCER
AGE	+	++	+	++	++	++
Na(ppm)	--	++	++			++
K(ppm)		++	+		--	
Rb(ppb)	-	--	--			
Cs(ppb)						--
Mg(ppm)				--	--	
Ca(ppm)	++	--			+	-
Sr(ppb)		--				
P(ppm)	-	-	--	-		-
As(ppb)		++		++		+
S(ppm)	--	--	--	--	--	--
Se(ppb)	--		++			
Fe(ppb)	-	++		++	+	+
Co(ppb)			++			
Cu(ppb)	++		++			++
Zn(ppb)	++		++	++		++
Mo(ppb)		--	--		++	
Ag(ppb)						++

-/+ : $P < 0.05$, --/++ : $P < 0.01$

FIG. 6 EXAMPLE 1 (PANCREATIC CANCER, MALE)

① PANCREATIC CANCER AND CONTROL

TABLE 1

STATISTICAL DATA	n	%
CONTROL	364	71.65%
PANCREATIC CANCER	144	28.35%
TOTAL	508	100.00%

TABLE 2

FUNDAMENTAL STATISTICS

OBJECTIVE VARIABLE	VARIABLE	n	MEAN	UNBIASED VARIANCE	STANDARD DEVIATION	MINIMUM	MAXIMUM
CONTROL	AGE	364	61.360	100.281	10.014	30.000	75.000
	Na[ppm]	364	3344.564	18955.992	137.681	3080.800	3923.920
	Mg[ppm]	364	21.779	3.105	1.762	16.335	27.331
	P[ppm]	364	124.503	227.310	15.077	89.141	174.475
	S[ppm]	364	1173.032	6899.872	83.065	958.591	1579.547
	K[ppm]	364	177.355	255.223	15.976	129.798	258.005
	Ca[ppm]	364	98.214	36.603	6.050	78.310	124.278
	Fe[ppb]	364	1072.490	117801.352	343.222	288.039	2664.570
	Cu[ppb]	364	907.634	22419.414	149.731	551.814	1567.016
	Zn[ppb]	364	776.736	14247.297	119.362	539.554	1344.875
	As[ppb]	364	3.548	6.419	2.533	0.351	17.053
	Sr[ppb]	364	35.049	146.967	12.123	15.112	101.955
	Rb[ppb]	364	177.180	1138.239	33.738	90.736	328.403
	Se[ppb]	364	151.910	396.427	19.910	107.837	277.093
	Mo[ppb]	364	1.753	1.592	1.262	0.371	15.379
	Cs[ppb]	364	0.793	0.056	0.237	0.331	1.882
	Co[ppb]	364	0.109	0.006	0.081	0.046	0.893
	Ag[ppb]	364	0.367	0.257	0.507	0.007	5.983
PANCREATIC CANCER	AGE	144	64.243	84.591	9.197	31.000	85.000
	Na[ppm]	144	3225.531	10763.646	103.748	2666.295	3562.935
	Mg[ppm]	144	20.596	4.714	2.171	15.062	29.805
	P[ppm]	144	114.424	447.349	21.151	73.230	256.699
	S[ppm]	144	1089.444	9609.034	98.026	816.078	1338.973
	K[ppm]	144	171.626	280.727	16.755	132.142	240.121
	Ca[ppm]	144	95.474	29.909	5.469	79.108	120.140
	Fe[ppb]	144	823.291	156864.602	396.061	210.313	2524.643
	Cu[ppb]	144	1184.775	138109.281	371.631	488.782	2848.773
	Zn[ppb]	144	765.204	23196.036	152.302	449.337	1386.572
	As[ppb]	144	2.867	5.716	2.391	0.261	15.859
	Sr[ppb]	144	32.918	138.612	11.773	13.275	97.864
	Rb[ppb]	144	155.970	900.935	30.016	99.683	270.986
	Se[ppb]	144	133.524	369.937	19.234	73.274	212.776
	Mo[ppb]	144	1.883	1.076	1.037	0.425	7.229
	Cs[ppb]	144	0.657	0.030	0.174	0.243	1.085
	Co[ppb]	144	0.128	0.005	0.068	0.055	0.480
	Ag[ppb]	144	0.394	0.191	0.437	0.011	2.653

FIG. 7 EXAMPLE 1 (PANCREATIC CANCER, MALE)

TABLE 3

VARIABLES CONTAINED IN DISCRIMINANT FUNCTION

VARIABLE	Wilks' lambda	F VALUE	DOF1	DOF2	P VALUE	*: P<0.05 **: P<0.01
AGE	0.9870	6.4309	1	489	0.0115	*
Na[ppm]	0.9650	17.7170	1	489	p < 0.001	**
Mg[ppm]	1.0000	0.0141	1	489	0.9056	
P[ppm]	0.9896	5.1262	1	489	0.0240	*
S[ppm]	0.9667	16.8377	1	489	p < 0.001	**
K[ppm]	1.0000	0.0226	1	489	0.8804	
Ca[ppm]	0.9711	14.5680	1	489	p < 0.001	**
Fe[ppb]	0.9900	4.9283	1	489	0.0269	*
Cu[ppb]	0.8777	68.1614	1	489	p < 0.001	**
Zn[ppb]	0.9792	10.3941	1	489	0.0013	**
As[ppb]	0.9992	0.3729	1	489	0.5417	
Sr[ppb]	0.9986	0.7059	1	489	0.4012	
Rb[ppb]	0.9874	6.2323	1	489	0.0129	*
Se[ppb]	0.9826	8.6541	1	489	0.0034	**
Mo[ppb]	0.9992	0.3793	1	489	0.5383	
Cs[ppb]	0.9925	3.7012	1	489	0.0550	
Co[ppb]	1.0000	0.0224	1	489	0.8811	
Ag[ppb]	1.0000	0.0078	1	489	0.9298	

•DOF: Degree of Freedom

TABLE 4

DISCRIMINANT COEFFICIENTS

VARIABLE	FUNCTION 1
AGE	-0.0188
Na[ppm]	0.0031
Mg[ppm]	0.0052
P[ppm]	0.0101
S[ppm]	0.0048
K[ppm]	-0.0009
Ca[ppm]	-0.0680
Fe[ppb]	0.0005
Cu[ppb]	-0.0024
Zn[ppb]	-0.0020
As[ppb]	0.0179
Sr[ppb]	0.0050
Rb[ppb]	0.0082
Se[ppb]	0.0119
Mo[ppb]	0.0378
Cs[ppb]	0.7887
Co[ppb]	-0.1346
Ag[ppb]	-0.0126
CONSTANT TERM	-9.7483

FIG. 8 EXAMPLE 1 (PANCREATIC CANCER, MALE)

TABLE 5
CENTROID OF EACH GROUP

STATISTICAL DATA	FUNCTION 1
CONTROL	0.5683
PANCREATIC CANCER	-1.4367

TABLE 6
DISCRIMINATION RESULT

		PREDICTED VALUE		PERCENTAGE OF CORRECT CLASSIFICATIONS
		CONTROL	PANCREATIC CANCER	
OBSERVED VALUE	CONTROL	329	35	90.38%
	PANCREATIC CANCER	31	113	78.47%
			OVERALL	87.01%

FIG. 9 EXAMPLE 2 (PROSTATE CANCER, MALE)

②PROSTATE CANCER AND CONTROL

TABLE 11

STATISTICAL DATA	n	%
CONTROL	364	79.48%
PROSTATE CANCER	94	20.52%
TOTAL	458	100.00%

TABLE 12

FUNDAMENTAL STATISTICS

OBJECTIVE VARIABLE	VARIABLE	n	MEAN	UNBIASED VARIANCE	STANDARD DEVIATION	MINIMUM	MAXIMUM
CONTROL	AGE	364	61.360	100.281	10.014	30.000	75.000
	Na[ppm]	364	3344.564	18955.992	137.681	3080.800	3923.920
	Mg[ppm]	364	21.779	3.105	1.762	16.335	27.331
	P[ppm]	364	124.503	227.310	15.077	89.141	174.475
	S[ppm]	364	1173.032	6899.872	83.065	958.591	1579.547
	K[ppm]	364	177.355	255.223	15.976	129.798	258.005
	Ca[ppm]	364	98.214	36.603	6.050	78.310	124.278
	Fe[ppb]	364	1072.490	117801.352	343.222	288.039	2664.570
	Cu[ppb]	364	907.634	22419.414	149.731	551.814	1567.016
	Zn[ppb]	364	776.736	14247.297	119.362	539.554	1344.875
	As[ppb]	364	3.548	6.419	2.533	0.351	17.053
	Sr[ppb]	364	35.049	146.967	12.123	15.112	101.955
	Rb[ppb]	364	177.180	1138.239	33.738	90.736	328.403
	Se[ppb]	364	151.910	396.427	19.910	107.837	277.093
	Mo[ppb]	364	1.753	1.592	1.262	0.371	15.379
	Cs[ppb]	364	0.793	0.056	0.237	0.331	1.882
	Co[ppb]	364	0.109	0.006	0.081	0.046	0.893
	Ag[ppb]	364	0.367	0.257	0.507	0.007	5.983
PROSTATE CANCER	AGE	94	105.616	11999.988	109.544	39.420	468.000
	Na[ppm]	94	3321.671	24571.776	156.754	2780.868	3741.222
	Mg[ppm]	94	21.083	3.543	1.882	15.051	25.900
	P[ppm]	94	111.717	223.902	14.963	86.992	169.307
	S[ppm]	94	1046.699	6740.148	82.098	803.718	1264.607
	K[ppm]	94	177.036	653.366	25.561	122.828	231.518
	Ca[ppm]	94	92.604	93.371	9.663	71.431	108.346
	Fe[ppb]	94	1264.992	237661.111	487.505	454.327	3060.553
	Cu[ppb]	94	865.259	33335.359	182.580	529.146	1738.518
	Zn[ppb]	94	713.266	11713.833	108.230	420.396	1006.582
	As[ppb]	94	4.198	15.311	3.913	0.936	33.124
	Sr[ppb]	94	30.977	89.655	9.469	16.933	60.791
	Rb[ppb]	94	161.896	1114.683	33.387	88.042	263.321
	Se[ppb]	94	142.768	407.743	20.193	99.067	210.954
	Mo[ppb]	94	1.514	0.521	0.722	0.442	4.669
	Cs[ppb]	94	0.695	0.034	0.183	0.313	1.236
	Co[ppb]	94	0.110	0.003	0.052	0.047	0.338
	Ag[ppb]	94	0.584	3.328	1.824	0.028	16.967

FIG. 10 EXAMPLE 2 (PROSTATE CANCER, MALE)

TABLE 13

VARIABLES CONTAINED IN DISCRIMINANT FUNCTION

VARIABLE	Wilks' lambda	F VALUE	DOF1	DOF2	P VALUE	*: P<0.05 **: P<0.01
AGE	0.9561	20.1552	1	439	p < 0.001	**
Na[ppm]	0.9409	27.5582	1	439	p < 0.001	**
Mg[ppm]	1.0000	0.0162	1	439	0.8986	
P[ppm]	0.9864	6.0346	1	439	0.0144	*
S[ppm]	0.8591	71.9999	1	439	p < 0.001	**
K[ppm]	0.9614	17.6430	1	439	p < 0.001	**
Ca[ppm]	0.9754	11.0877	1	439	p < 0.001	**
Fe[ppb]	0.9374	29.3051	1	439	p < 0.001	**
Cu[ppb]	0.9998	0.1028	1	439	0.7486	
Zn[ppb]	0.9996	0.1972	1	439	0.6572	
As[ppb]	0.9842	7.0606	1	439	0.0082	**
Sr[ppb]	0.9814	8.3055	1	439	0.0041	**
Rb[ppb]	0.9768	10.4445	1	439	0.0013	**
Se[ppb]	0.9939	2.6925	1	439	0.1015	
Mo[ppb]	0.9721	12.5853	1	439	p < 0.001	**
Cs[ppb]	0.9999	0.0638	1	439	0.8007	
Co[ppb]	0.9949	2.2343	1	439	0.1357	
Ag[ppb]	0.9953	2.0753	1	439	0.1504	

•DOF: Degree of Freedom

TABLE 14

DISCRIMINANT COEFFICIENTS

VARIABLE	FUNCTION 1
AGE	0.0061
Na[ppm]	0.0037
Mg[ppm]	0.0061
P[ppm]	-0.0128
S[ppm]	-0.0102
K[ppm]	0.0239
Ca[ppm]	-0.0580
Fe[ppb]	0.0010
Cu[ppb]	0.0002
Zn[ppb]	0.0003
As[ppb]	0.0678
Sr[ppb]	-0.0177
Rb[ppb]	-0.0104
Se[ppb]	0.0066
Mo[ppb]	-0.2240
Cs[ppb]	-0.1026
Co[ppb]	1.3779
Ag[ppb]	0.1092
CONSTANT TERM	1.7248

FIG. 11 EXAMPLE 2 (PROSTATE CANCER, MALE)

TABLE 15
CENTROID OF EACH GROUP

STATISTICAL DATA	FUNCTION 1
CONTROL	-0.4978
PROSTATE CANCER	1.9278

TABLE 16
DISCRIMINATION RESULT

		PREDICTED VALUE		PERCENTAGE OF CORRECT CLASSIFICATIONS
		CONTROL	PROSTATE CANCER	
OBSERVED VALUE	CONTROL	330	34	90.66%
	PROSTATE CANCER	13	81	86.17%
		OVERALL		89.74%

FIG. 12 EXAMPLE 3 (COLORECTAL CANCER, MALE)

③ COLORECTAL CANCER AND CONTROL

TABLE 21

STATISTICAL DATA	n	%
CONTROL	364	67.66%
COLORECTAL CANCER	174	32.34%
TOTAL	538	100.00%

TABLE 22

FUNDAMENTAL STATISTICS

OBJECTIVE VARIABLE	VARIABLE	n	MEAN	UNBIASED VARIANCE	STANDARD DEVIATION	MINIMUM	MAXIMUM
CONTROL	AGE	364	61.360	100.281	10.014	30.000	75.000
	Na[ppm]	364	3344.564	18955.992	137.681	3080.800	3923.920
	Mg[ppm]	364	21.779	3.105	1.762	16.335	27.331
	P[ppm]	364	124.503	227.310	15.077	89.141	174.475
	S[ppm]	364	1173.032	6899.872	83.065	958.591	1579.547
	K[ppm]	364	177.355	255.223	15.976	129.798	258.005
	Ca[ppm]	364	98.214	36.603	6.050	78.310	124.278
	Fe[ppb]	364	1072.490	117801.352	343.222	288.039	2664.570
	Cu[ppb]	364	907.634	22419.414	149.731	551.814	1567.016
	Zn[ppb]	364	776.736	14247.297	119.362	539.554	1344.875
	As[ppb]	364	3.548	6.419	2.533	0.351	17.053
	Sr[ppb]	364	35.049	146.967	12.123	15.112	101.955
	Rb[ppb]	364	177.180	1138.239	33.738	90.736	328.403
	Se[ppb]	364	151.910	396.427	19.910	107.837	277.093
	Mo[ppb]	364	1.753	1.592	1.262	0.371	15.379
	Cs[ppb]	364	0.793	0.056	0.237	0.331	1.882
	Co[ppb]	364	0.109	0.006	0.081	0.046	0.893
	Ag[ppb]	364	0.367	0.257	0.507	0.007	5.983
COLORECTAL CANCER	AGE	174	63.326	73.027	8.546	35.404	87.135
	Na[ppm]	174	3262.573	36148.378	190.127	2298.466	4118.851
	Mg[ppm]	174	21.337	3.992	1.998	14.225	27.782
	P[ppm]	174	109.841	204.132	14.287	76.392	155.493
	S[ppm]	174	1025.638	10860.222	104.212	664.698	1452.943
	K[ppm]	174	173.695	366.199	19.136	115.528	242.765
	Ca[ppm]	174	91.445	54.020	7.350	66.936	116.556
	Fe[ppb]	174	963.550	324937.985	570.033	82.105	3488.577
	Cu[ppb]	174	1014.948	49625.398	222.768	474.098	1728.105
	Zn[ppb]	174	767.968	17091.710	130.735	373.563	1124.602
	As[ppb]	174	3.465	5.446	2.334	0.142	17.591
	Sr[ppb]	174	33.615	144.334	12.014	15.367	97.650
	Rb[ppb]	174	163.923	1335.797	36.549	75.327	367.643
	Se[ppb]	174	142.620	593.554	24.363	38.551	221.766
	Mo[ppb]	174	1.282	0.332	0.576	0.219	4.860
	Cs[ppb]	174	0.731	0.045	0.213	0.216	1.797
	Co[ppb]	174	0.218	0.038	0.194	0.049	1.168
	Ag[ppb]	174	0.449	0.381	0.617	0.009	6.054

FIG. 13 EXAMPLE 3 (COLORECTAL CANCER, MALE)

TABLE 23

VARIABLES CONTAINED IN DISCRIMINANT FUNCTION

VARIABLE	Wilks' lambda	F VALUE	DOF1	DOF2	P VALUE	*: P<0.05 **: P<0.01
AGE	0.9883	6.1602	1	519	0.0134	*
Na[ppm]	0.9645	19.1256	1	519	p < 0.001	**
Mg[ppm]	0.9986	0.7071	1	519	0.4008	
P[ppm]	0.9716	15.1856	1	519	p < 0.001	**
S[ppm]	0.7329	189.1852	1	519	p < 0.001	**
K[ppm]	0.9887	5.9382	1	519	0.0152	*
Ca[ppm]	1.0000	0.0123	1	519	0.9116	
Fe[ppb]	0.9931	3.6110	1	519	0.0580	
Cu[ppb]	0.9391	33.6353	1	519	p < 0.001	**
Zn[ppb]	0.9636	19.6113	1	519	p < 0.001	**
As[ppb]	0.9977	1.2157	1	519	0.2707	
Sr[ppb]	0.9986	0.7489	1	519	0.3872	
Rb[ppb]	0.9807	10.1908	1	519	0.0015	**
Se[ppb]	0.9837	8.5967	1	519	0.0035	**
Mo[ppb]	0.9696	16.2880	1	519	p < 0.001	**
Cs[ppb]	0.9995	0.2604	1	519	0.6101	
Co[ppb]	0.9372	34.8049	1	519	p < 0.001	**
Ag[ppb]	0.9999	0.0436	1	519	0.8346	

•DOF: Degree of Freedom

TABLE 24

DISCRIMINANT COEFFICIENTS

VARIABLE	FUNCTION 1
AGE	0.0161
Na[ppm]	0.0024
Mg[ppm]	0.0317
P[ppm]	-0.0176
S[ppm]	-0.0129
K[ppm]	0.0122
Ca[ppm]	0.0018
Fe[ppb]	0.0003
Cu[ppb]	0.0020
Zn[ppb]	0.0026
As[ppb]	0.0276
Sr[ppb]	-0.0044
Rb[ppb]	-0.0085
Se[ppb]	0.0099
Mo[ppb]	-0.2295
Cs[ppb]	0.1749
Co[ppb]	2.6699
Ag[ppb]	-0.0227
CONSTANT TERM	0.4366

FIG. 14 EXAMPLE 3 (COLORECTAL CANCER, MALE)

TABLE 25
CENTROID OF EACH GROUP

STATISTICAL DATA	FUNCTION 1
CONTROL	-0.8072
COLORECTAL CANCER	1.6886

TABLE 26
DISCRIMINATION RESULT

		PREDICTED VALUE		PERCENTAGE OF CORRECT CLASSIFICATIONS
		CONTROL	COLORECTAL CANCER	
OBSERVED VALUE	CONTROL	338	26	92.86%
	COLORECTAL CANCER	22	152	87.36%
			OVERALL	91.08%

FIG. 15 EXAMPLE 4 (ENDOMETRIAL CANCER, FEMALE)

④ENDOMETRIAL CANCER AND CONTROL

TABLE 31

STATISTICAL DATA	n	%
CONTROL	248	61.54%
ENDOMETRIAL CANCER	155	38.46%
TOTAL	403	100.00%

TABLE 32

FUNDAMENTAL STATISTICS

OBJECTIVE VARIABLE	VARIABLE	n	MEAN	UNBIASED VARIANCE	STANDARD DEVIATION	MINIMUM	MAXIMUM
CONTROL	AGE	248	52.702	130.728	11.434	30.000	70.000
	Na[ppm]	248	3345.250	21624.906	147.054	2931.025	3865.949
	Mg[ppm]	248	22.428	2.943	1.715	17.369	27.633
	P[ppm]	248	131.433	212.523	14.578	93.752	184.009
	S[ppm]	248	1136.034	4613.853	67.925	950.359	1414.263
	K[ppm]	248	174.254	218.855	14.794	134.569	235.392
	Ca[ppm]	248	98.745	29.529	5.434	78.869	124.393
	Fe[ppb]	248	913.462	123191.867	350.987	80.915	2468.603
	Cu[ppb]	248	1007.381	22727.952	150.758	635.642	1772.913
	Zn[ppb]	248	792.517	12898.719	113.573	496.980	1109.072
	Se[ppb]	248	149.481	477.199	21.845	111.674	282.918
	Rb[ppb]	248	175.792	866.111	29.430	95.505	268.300
	Sr[ppb]	248	31.840	80.094	8.950	13.440	79.124
	As[ppb]	248	2.876	7.313	2.704	0.279	27.591
	Mo[ppb]	248	1.416	0.606	0.779	0.319	5.208
	Cs[ppb]	248	0.826	0.054	0.233	0.398	2.014
	Co[ppb]	248	0.201	0.081	0.284	0.025	3.504
	Ag[ppb]	248	0.440	0.189	0.434	0.025	2.745
ENDOMETRIAL CANCER	AGE	155	59.994	103.201	10.159	34.000	84.000
	Na[ppm]	155	3243.595	9650.339	98.236	2963.369	3608.707
	Mg[ppm]	155	20.971	2.545	1.595	16.910	24.981
	P[ppm]	155	121.090	182.516	13.510	84.165	164.762
	S[ppm]	155	1025.570	5516.395	74.272	822.112	1233.784
	K[ppm]	155	158.398	173.821	13.184	131.812	217.662
	Ca[ppm]	155	94.115	32.205	5.675	79.789	120.000
	Fe[ppb]	155	926.482	184468.883	429.498	163.043	2735.406
	Cu[ppb]	155	1009.521	46342.026	215.272	228.880	1856.322
	Zn[ppb]	155	734.491	17893.503	133.767	347.846	1201.938
	Se[ppb]	155	139.125	362.584	19.042	89.107	204.675
	Rb[ppb]	155	143.625	710.703	26.659	87.956	268.869
	Sr[ppb]	155	31.935	94.243	9.708	14.586	64.445
	As[ppb]	155	3.065	6.274	2.505	0.437	18.155
	Mo[ppb]	155	1.909	0.638	0.799	0.389	5.588
	Cs[ppb]	155	0.661	0.042	0.204	0.291	1.618
	Co[ppb]	155	0.200	0.045	0.212	0.055	2.124
	Ag[ppb]	155	0.562	0.631	0.794	0.049	5.744

FIG. 16 EXAMPLE 4 (ENDOMETRIAL CANCER, FEMALE)

TABLE 33

VARIABLES CONTAINED IN DISCRIMINANT FUNCTION

VARIABLE	Wilks' lambda	F VALUE	DOF1	DOF2	P VALUE	*: P<0.05 **: P<0.01
AGE	0.9074	39.2096	1	384	p < 0.001	**
Na[ppm]	0.9909	3.5326	1	384	0.0609	
Mg[ppm]	0.9642	14.2404	1	384	p < 0.001	**
P[ppm]	0.9992	0.3058	1	384	0.5806	
S[ppm]	0.8966	44.2953	1	384	p < 0.001	**
K[ppm]	0.9468	21.5820	1	384	p < 0.001	**
Ca[ppm]	0.9888	4.3467	1	384	0.0377	*
Fe[ppb]	0.9900	3.8771	1	384	0.0497	*
Cu[ppb]	0.9992	0.3102	1	384	0.5779	
Zn[ppb]	0.9993	0.2789	1	384	0.5977	
Se[ppb]	0.9984	0.6184	1	384	0.4321	
Rb[ppb]	0.9970	1.1555	1	384	0.2831	
Sr[ppb]	1.0000	0.0181	1	384	0.8930	
As[ppb]	1.0000	0.0000	1	384	0.9971	
Mo[ppb]	0.9563	17.5318	1	384	p < 0.001	**
Cs[ppb]	0.9954	1.7665	1	384	0.1846	
Co[ppb]	0.9918	3.1694	1	384	0.0758	
Ag[ppb]	0.9980	0.7513	1	384	0.3866	

•DOF: Degree of Freedom

TABLE 34

DISCRIMINANT COEFFICIENTS

VARIABLE	FUNCTION 1
AGE	-0.0449
Na[ppm]	0.0012
Mg[ppm]	0.1728
P[ppm]	0.0030
S[ppm]	0.0081
K[ppm]	0.0296
Ca[ppm]	-0.0369
Fe[ppb]	-0.0004
Cu[ppb]	-0.0002
Zn[ppb]	0.0003
Se[ppb]	0.0029
Rb[ppb]	0.0040
Sr[ppb]	0.0010
As[ppb]	-0.0001
Mo[ppb]	-0.3634
Cs[ppb]	0.5401
Co[ppb]	-0.4894
Ag[ppb]	-0.0997
CONSTANT TERM	-16.5526

FIG. 17 EXAMPLE 4 (ENDOMETRIAL CANCER, FEMALE)

TABLE 35
CENTROID OF EACH GROUP

STATISTICAL DATA	FUNCTION 1
CONTROL	0.9216
ENDOMETRIAL CANCER	-1.4745

TABLE 36
DISCRIMINATION RESULT

		PREDICTED VALUE		PERCENTAGE OF CORRECT CLASSIFICATIONS
		CONTROL	ENDOMETRIAL CANCER	
OBSERVED VALUE	CONTROL	222	26	89.52%
	ENDOMETRIAL CANCER	14	141	90.97%
		OVERALL		90.07%

FIG. 18 EXAMPLE 5 (BREAST CANCER, FEMALE)

⑤BREAST CANCER AND CONTROL

TABLE 41

STATISTICAL DATA	n	%
CONTROL	248	61.23%
BREAST CANCER	157	38.77%
TOTAL	405	100.00%

TABLE 42

FUNDAMENTAL STATISTICS

OBJECTIVE VARIABLE	VARIABLE	n	MEAN	UNBIASED VARIANCE	STANDARD DEVIATION	MINIMUM	MAXIMUM
CONTROL	AGE	248	52.702	130.728	11.434	30.000	70.000
	Na[ppm]	248	3345.250	21624.906	147.054	2931.025	3865.949
	Mg[ppm]	248	22.428	2.943	1.715	17.369	27.633
	P[ppm]	248	131.433	212.523	14.578	93.752	184.009
	S[ppm]	248	1136.034	4613.853	67.925	950.359	1414.263
	K[ppm]	248	174.254	218.855	14.794	134.569	235.392
	Ca[ppm]	248	98.745	29.529	5.434	78.869	124.393
	Fe[ppb]	248	913.462	123191.867	350.987	80.915	2468.603
	Cu[ppb]	248	1007.381	22727.952	150.758	635.642	1772.913
	Zn[ppb]	248	792.517	12898.719	113.573	496.980	1109.072
	Se[ppb]	248	149.481	477.199	21.845	111.674	282.918
	Rb[ppb]	248	175.792	866.111	29.430	95.505	268.300
	Sr[ppb]	248	31.840	80.094	8.950	13.440	79.124
	As[ppb]	248	2.876	7.313	2.704	0.279	27.591
	Mo[ppb]	248	1.416	0.606	0.779	0.319	5.208
	Cs[ppb]	248	0.826	0.054	0.233	0.398	2.014
	Co[ppb]	248	0.201	0.081	0.284	0.025	3.504
	Ag[ppb]	248	0.440	0.189	0.434	0.025	2.745
BREAST CANCER	AGE	157	58.352	135.134	11.625	27.319	87.710
	Na[ppm]	157	3259.483	15406.846	124.124	2886.890	3511.222
	Mg[ppm]	157	21.303	2.238	1.496	17.734	25.664
	P[ppm]	157	122.489	155.494	12.470	94.727	160.053
	S[ppm]	157	1062.133	5358.477	73.202	859.977	1230.381
	K[ppm]	157	174.916	3323.744	57.652	139.628	671.430
	Ca[ppm]	157	95.269	27.923	5.284	83.123	119.810
	Fe[ppb]	157	1248.891	586358.258	765.740	158.521	6656.016
	Cu[ppb]	157	974.892	25945.975	161.078	630.391	2004.917
	Zn[ppb]	157	854.041	14347.897	119.783	559.811	1231.696
	Se[ppb]	157	147.925	633.060	25.161	111.158	364.813
	Rb[ppb]	157	158.716	952.202	30.858	94.532	278.563
	Sr[ppb]	157	31.499	98.087	9.904	15.389	77.340
	As[ppb]	157	3.233	3.313	1.820	0.643	13.813
	Mo[ppb]	157	1.241	0.144	0.380	0.488	2.605
	Cs[ppb]	157	0.684	0.042	0.205	0.260	1.772
	Co[ppb]	157	0.151	0.015	0.124	0.000	0.876
	Ag[ppb]	157	0.512	0.320	0.565	0.045	3.621

FIG. 19 EXAMPLE 5 (BREAST CANCER, FEMALE)

TABLE 43

VARIABLES CONTAINED IN DISCRIMINANT FUNCTION

VARIABLE	Wilks' lambda	F VALUE	DOF1	DOF2	P VALUE	*: P<0.05 **: P<0.01
AGE	0.9084	38.9388	1	386	p < 0.001	**
Na[ppm]	0.9963	1.4379	1	386	0.2312	
Mg[ppm]	0.9620	15.2542	1	386	p < 0.001	**
P[ppm]	0.9891	4.2649	1	386	0.0396	*
S[ppm]	0.9365	26.1947	1	386	p < 0.001	**
K[ppm]	0.9995	0.1937	1	386	0.6601	
Ca[ppm]	0.9938	2.4216	1	386	0.1205	
Fe[ppb]	0.9484	21.0118	1	386	p < 0.001	**
Cu[ppb]	0.9908	3.5994	1	386	0.0585	
Zn[ppb]	0.9289	29.5356	1	386	p < 0.001	**
Se[ppb]	1.0000	0.0097	1	386	0.9217	
Rb[ppb]	0.9997	0.1207	1	386	0.7284	
Sr[ppb]	0.9993	0.2558	1	386	0.6133	
As[ppb]	0.9995	0.1755	1	386	0.6755	
Mo[ppb]	0.9941	2.2731	1	386	0.1325	
Cs[ppb]	0.9714	11.3520	1	386	p < 0.001	**
Co[ppb]	0.9988	0.4662	1	386	0.4951	
Ag[ppb]	0.9985	0.5817	1	386	0.4461	

•DOF: Degree of Freedom

TABLE 44

DISCRIMINANT COEFFICIENTS

VARIABLE	FUNCTION 1
AGE	-0.0478
Na[ppm]	0.0009
Mg[ppm]	0.2012
P[ppm]	0.0124
S[ppm]	0.0069
K[ppm]	-0.0010
Ca[ppm]	0.0259
Fe[ppb]	-0.0007
Cu[ppb]	0.0009
Zn[ppb]	-0.0037
Se[ppb]	0.0003
Rb[ppb]	0.0012
Sr[ppb]	0.0041
As[ppb]	-0.0135
Mo[ppb]	0.1726
Cs[ppb]	1.3479
Co[ppb]	0.2230
Ag[ppb]	-0.1165
CONSTANT TERM	-14.9771

FIG. 20 EXAMPLE 5 (BREAST CANCER, FEMALE)

TABLE 45
CENTROID OF EACH GROUP

STATISTICAL DATA	FUNCTION 1
CONTROL	0.7859
BREAST CANCER	-1.2414

TABLE 46
DISCRIMINATION RESULT

		PREDICTED VALUE		PERCENTAGE OF CORRECT CLASSIFICATIONS
		CONTROL	BREAST CANCER	
OBSERVED VALUE	CONTROL	207	41	83.47%
	BREAST CANCER	21	136	86.62%
		OVERALL		84.69%

FIG. 21 EXAMPLE 6 (COLORECTAL CANCER, FEMALE)

⑥ COLORECTAL CANCER AND CONTROL

TABLE 51

STATISTICAL DATA	n	%
CONTROL	248	62.31%
COLORECTAL CANCER	150	37.69%
TOTAL	398	100.00%

TABLE 52

FUNDAMENTAL STATISTICS

OBJECTIVE VARIABLE	VARIABLE	n	MEAN	UNBIASED VARIANCE	STANDARD DEVIATION	MINIMUM	MAXIMUM
CONTROL	AGE	248	52.702	130.728	11.434	30.000	70.000
	Na[ppm]	248	3345.250	21624.906	147.054	2931.025	3865.949
	Mg[ppm]	248	22.428	2.943	1.715	17.369	27.633
	P[ppm]	248	131.433	212.523	14.578	93.752	184.009
	S[ppm]	248	1136.034	4613.853	67.925	950.359	1414.263
	K[ppm]	248	174.254	218.855	14.794	134.569	235.392
	Ca[ppm]	248	98.745	29.529	5.434	78.869	124.393
	Fe[ppb]	248	913.462	123191.867	350.987	80.915	2468.603
	Cu[ppb]	248	1007.381	22727.952	150.758	635.642	1772.913
	Zn[ppb]	248	792.517	12898.719	113.573	496.980	1109.072
	Se[ppb]	248	149.481	477.199	21.845	111.674	282.918
	Rb[ppb]	248	175.792	866.111	29.430	95.505	268.300
	Sr[ppb]	248	31.840	80.094	8.950	13.440	79.124
	As[ppb]	248	2.876	7.313	2.704	0.279	27.591
	Mo[ppb]	248	1.416	0.606	0.779	0.319	5.208
	Cs[ppb]	248	0.826	0.054	0.233	0.398	2.014
	Co[ppb]	248	0.201	0.081	0.284	0.025	3.504
	Ag[ppb]	248	0.440	0.189	0.434	0.025	2.745
COLORECTAL CANCER	AGE	150	64.062	91.906	9.587	32.304	84.134
	Na[ppm]	150	3421.386	17443.712	132.075	3139.210	4008.909
	Mg[ppm]	150	22.782	5.380	2.319	14.698	29.098
	P[ppm]	150	123.527	223.340	14.945	79.558	171.941
	S[ppm]	150	1069.825	9021.091	94.979	815.302	1580.363
	K[ppm]	150	174.074	251.421	15.856	125.838	230.514
	Ca[ppm]	150	97.151	31.239	5.589	85.743	128.195
	Fe[ppb]	150	949.840	217978.072	466.881	125.507	2846.631
	Cu[ppb]	150	1106.018	56597.363	237.902	496.083	2107.212
	Zn[ppb]	150	818.594	16665.855	129.096	502.776	1366.125
	Se[ppb]	150	148.325	531.994	23.065	59.184	261.804
	Rb[ppb]	150	154.315	844.454	29.059	55.925	215.412
	Sr[ppb]	150	32.652	128.928	11.355	15.529	86.415
	As[ppb]	150	3.929	13.207	3.634	0.198	32.780
	Mo[ppb]	150	1.329	0.246	0.496	0.306	3.168
	Cs[ppb]	150	0.685	0.039	0.197	0.175	1.265
	Co[ppb]	150	0.233	0.095	0.308	0.056	3.237
	Ag[ppb]	150	0.652	0.713	0.844	0.069	5.805

FIG. 22 EXAMPLE 6 (COLORECTAL CANCER, FEMALE)

TABLE 53

VARIABLES CONTAINED IN DISCRIMINANT FUNCTION

VARIABLE	Wilks' lambda	F VALUE	DOF1	DOF2	P VALUE	*:P<0.05 **:P<0.01
AGE	0.9404	24.0141	1	379	p < 0.001	**
Na[ppm]	0.8904	46.6485	1	379	p < 0.001	**
Mg[ppm]	0.9927	2.7907	1	379	0.0956	
P[ppm]	0.9878	4.6959	1	379	0.0309	*
S[ppm]	0.8625	60.4283	1	379	p < 0.001	**
K[ppm]	0.9921	3.0238	1	379	0.0829	
Ca[ppm]	0.9898	3.9196	1	379	0.0484	*
Fe[ppb]	0.9887	4.3462	1	379	0.0378	*
Cu[ppb]	0.9754	9.5387	1	379	0.0022	**
Zn[ppb]	0.9448	22.1587	1	379	p < 0.001	**
Se[ppb]	0.9946	2.0755	1	379	0.1505	
Rb[ppb]	0.9981	0.7380	1	379	0.3908	
Sr[ppb]	0.9981	0.7159	1	379	0.3980	
As[ppb]	0.9846	5.9259	1	379	0.0154	*
Mo[ppb]	0.9965	1.3289	1	379	0.2497	
Cs[ppb]	0.9770	8.9265	1	379	0.0030	**
Co[ppb]	0.9979	0.7816	1	379	0.3772	
Ag[ppb]	0.9809	7.3706	1	379	0.0069	**

•DOF: Degree of Freedom

TABLE 54

DISCRIMINANT COEFFICIENTS

VARIABLE	FUNCTION 1
AGE	0.0374
Na[ppm]	0.0044
Mg[ppm]	-0.0731
P[ppm]	-0.0124
S[ppm]	-0.0089
K[ppm]	0.0114
Ca[ppm]	-0.0384
Fe[ppb]	0.0004
Cu[ppb]	0.0013
Zn[ppb]	0.0033
Se[ppb]	0.0055
Rb[ppb]	-0.0032
Sr[ppb]	-0.0064
As[ppb]	0.0589
Mo[ppb]	-0.1266
Cs[ppb]	-1.2615
Co[ppb]	0.2309
Ag[ppb]	0.3201
CONSTANT TERM	-5.7210

FIG. 23 EXAMPLE 6 (COLORECTAL CANCER, FEMALE)

TABLE 55
CENTROID OF EACH GROUP

STATISTICAL DATA	FUNCTION 1
CONTROL	-0.7885
COLORECTAL CANCER	1.3037

TABLE 56
DISCRIMINATION RESULT

		PREDICTED VALUE		PERCENTAGE OF CORRECT CLASSIFICATIONS
		CONTROL	COLORECTAL CANCER	
OBSERVED VALUE	CONTROL	212	36	85.48%
	COLORECTAL CANCER	21	129	86.00%
			OVERALL	85.68%

FIG. 24 EXAMPLES 1-3

ROC CURVES OF PANCREATIC CANCER, COLORECTAL CANCER,
AND PROSTATE CANCER (MALE)

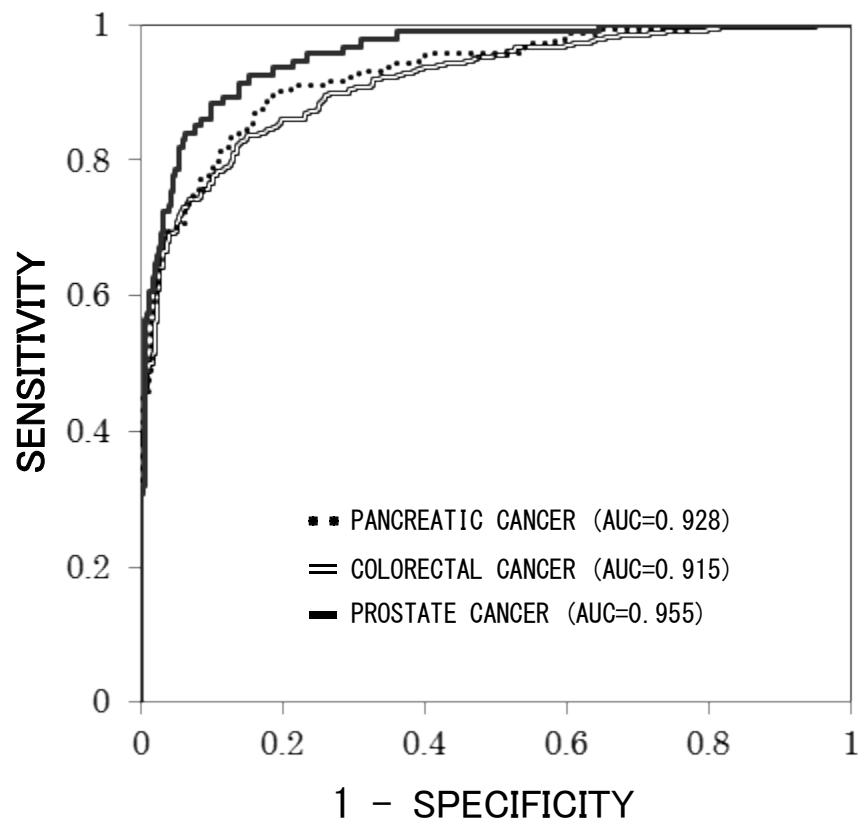


FIG. 25 EXAMPLES 4-6

ROC CURVES OF BREAST CANCER, ENDOMETRIAL CANCER,
AND COLORECTAL CANCER (FEMALE)

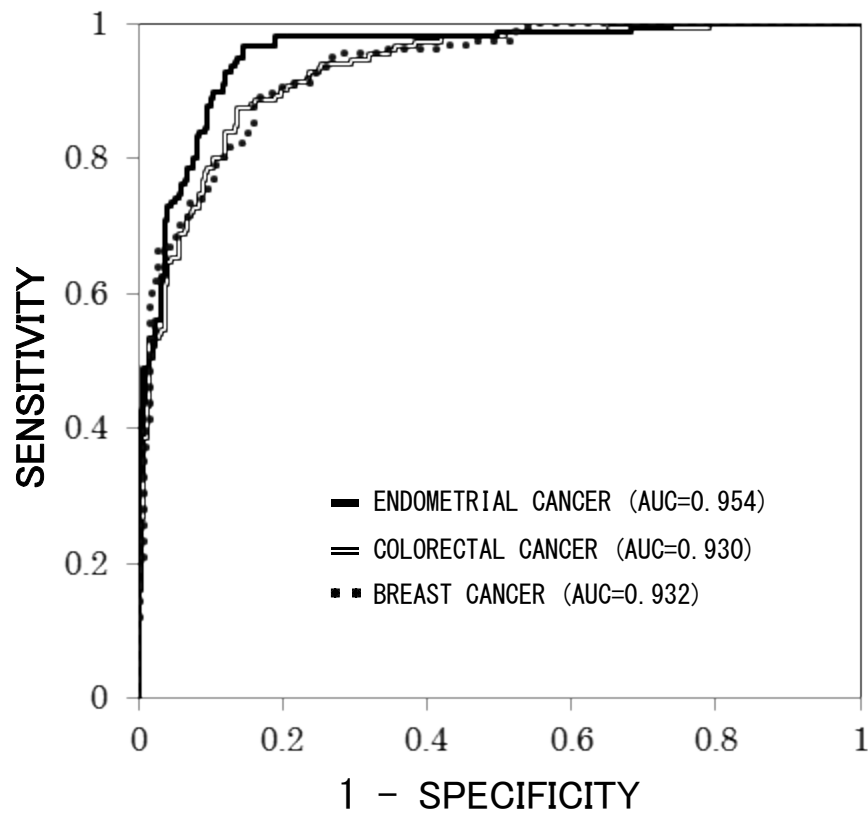


FIG. 26 EXAMPLE 1 (PANCREATIC CANCER, MALE)

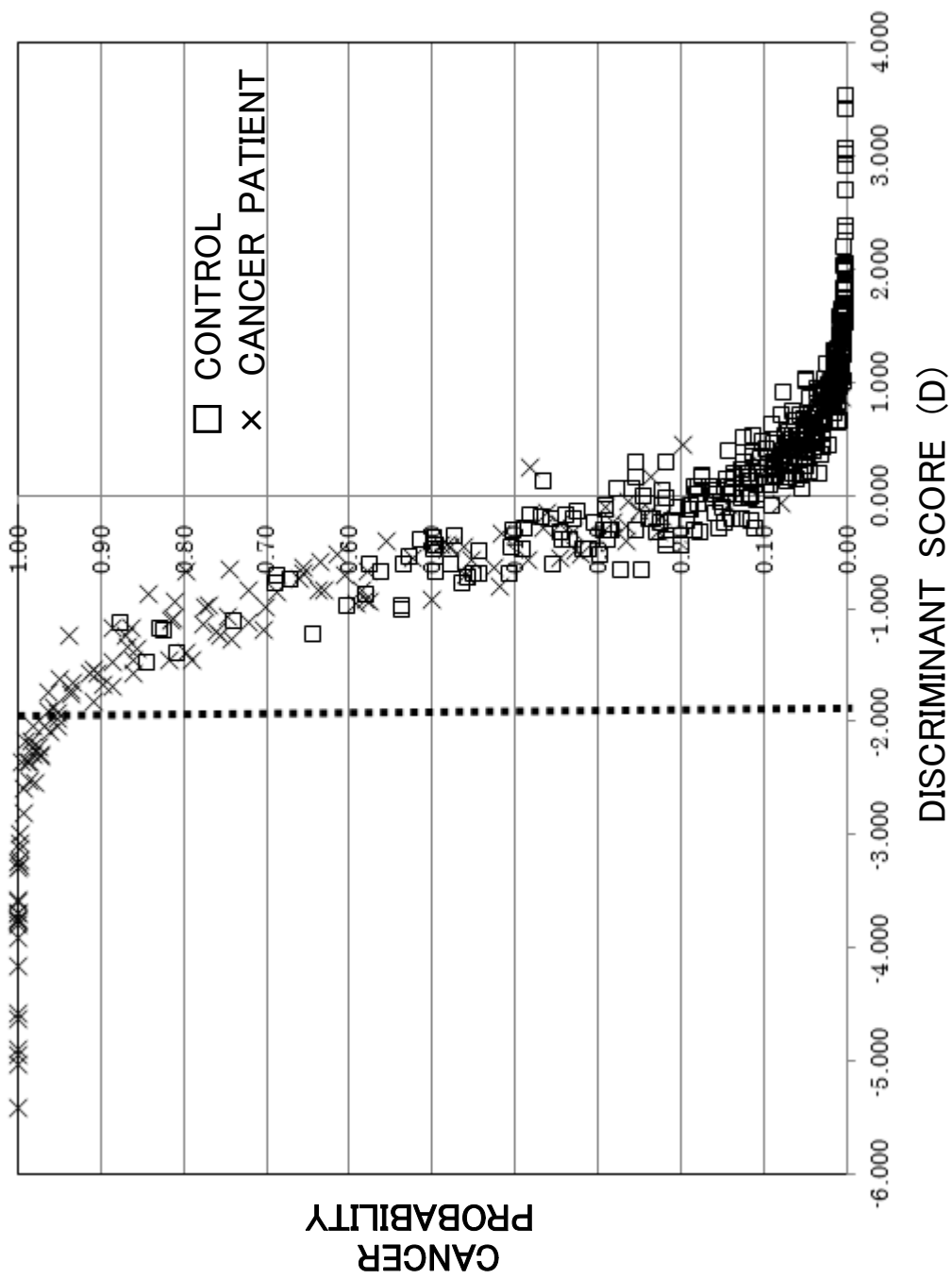


FIG. 27 EXAMPLE 2 (PROSTATE CANCER, MALE)

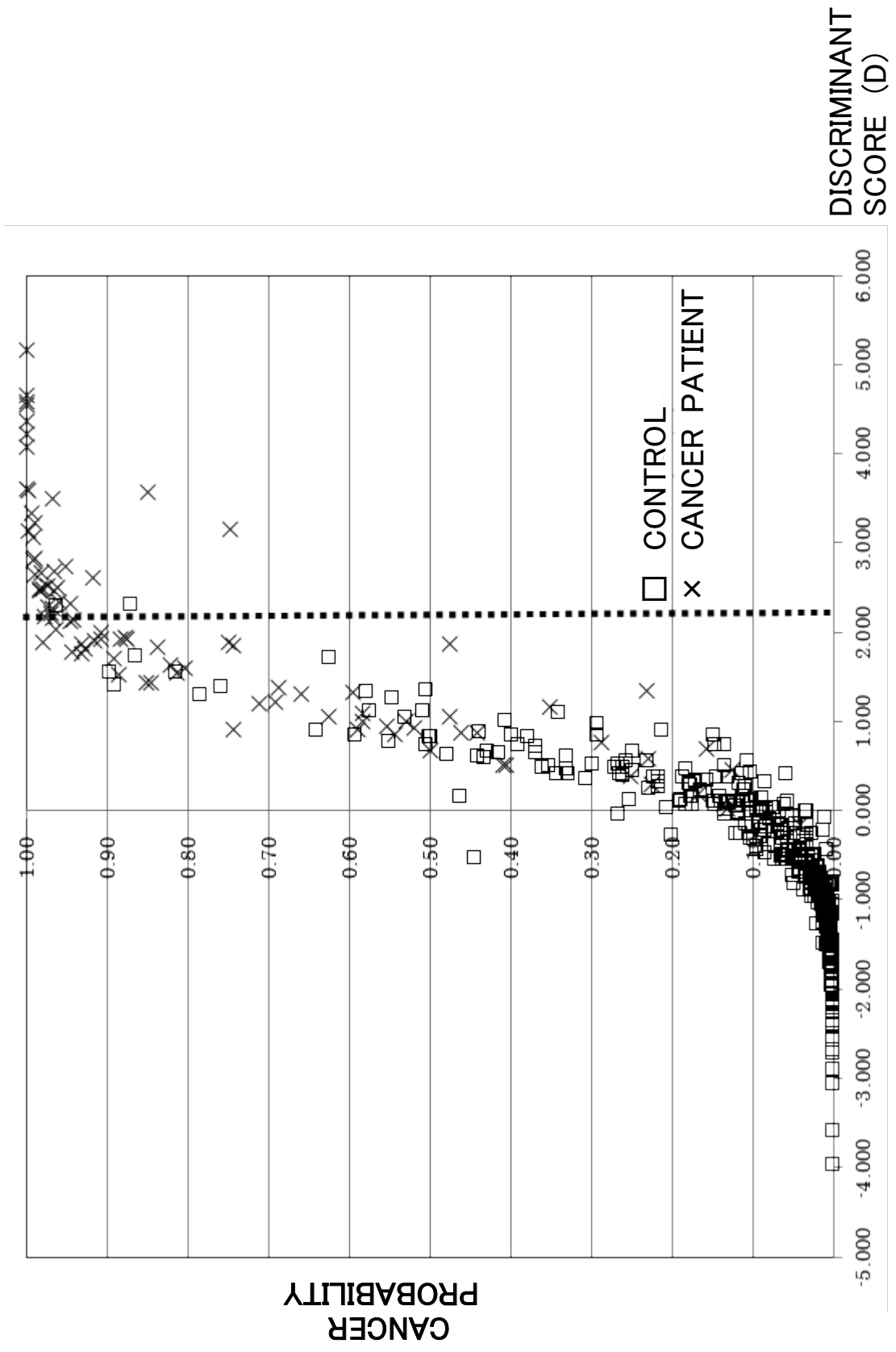


FIG. 28 EXAMPLE 3 (COLORECTAL CANCER, MALE)

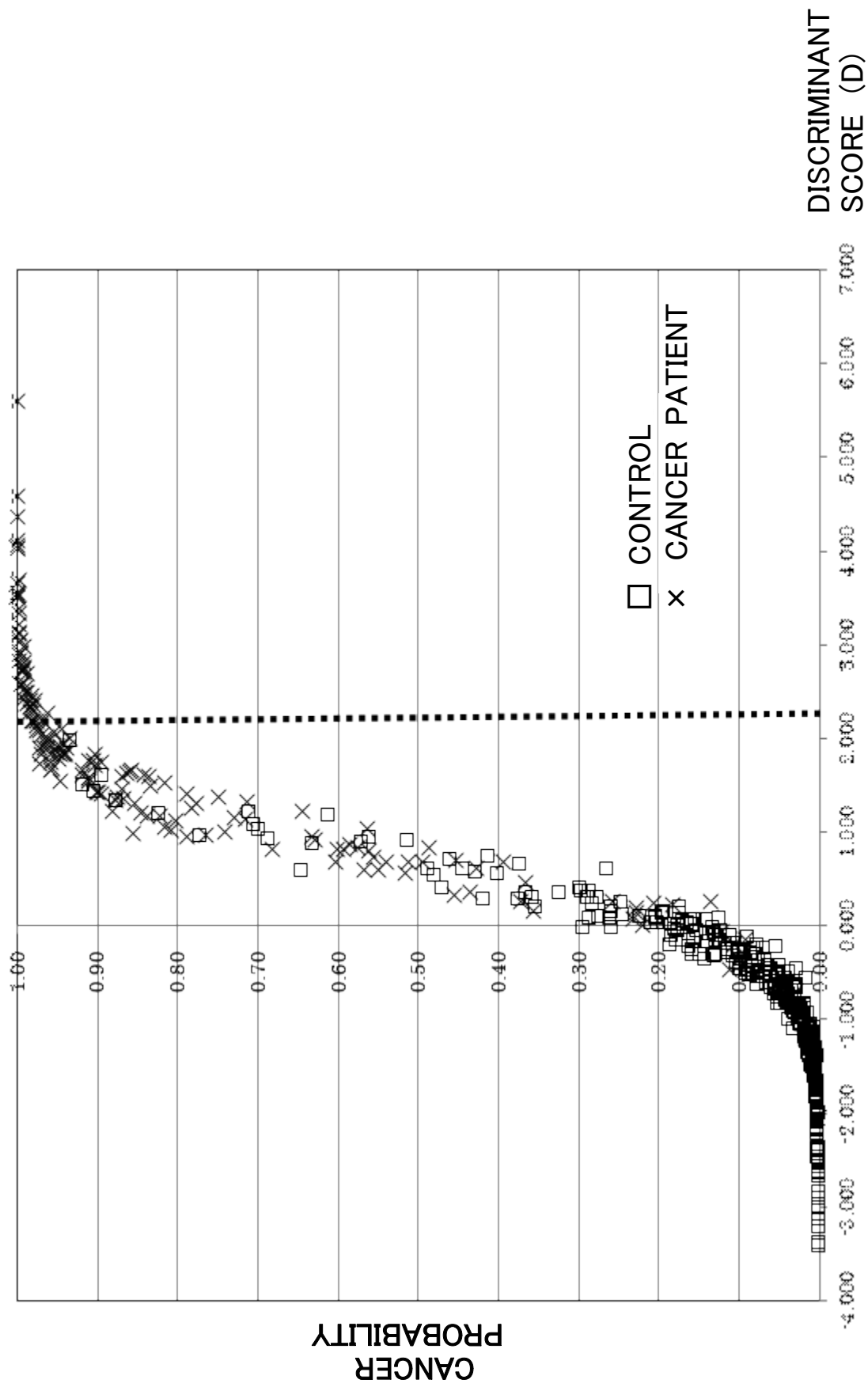


FIG. 29 EXAMPLE 4 (ENDOMETRIAL CANCER, FEMALE)

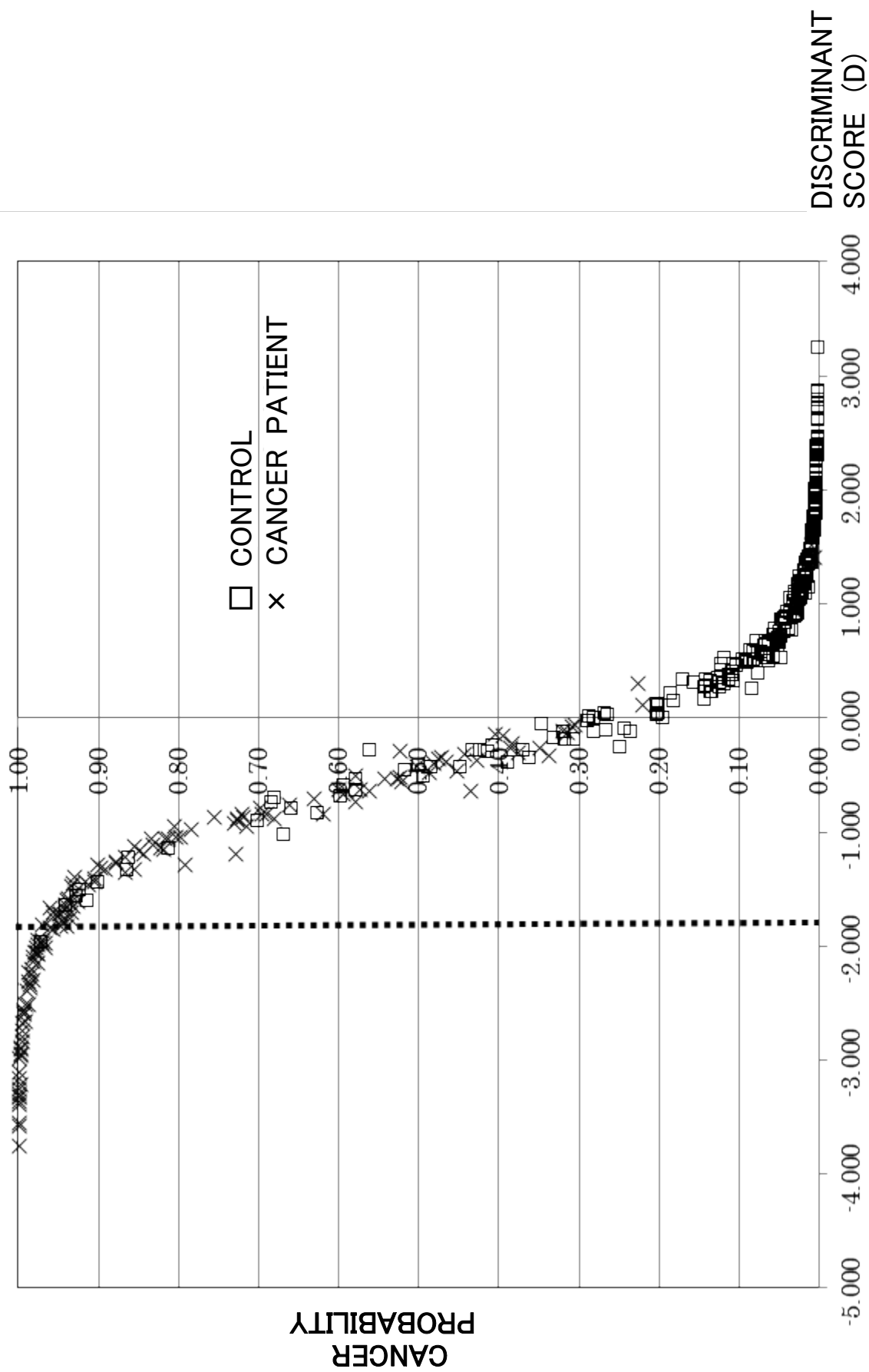


FIG. 30 EXAMPLE 5 (BREAST CANCER, FEMALE)

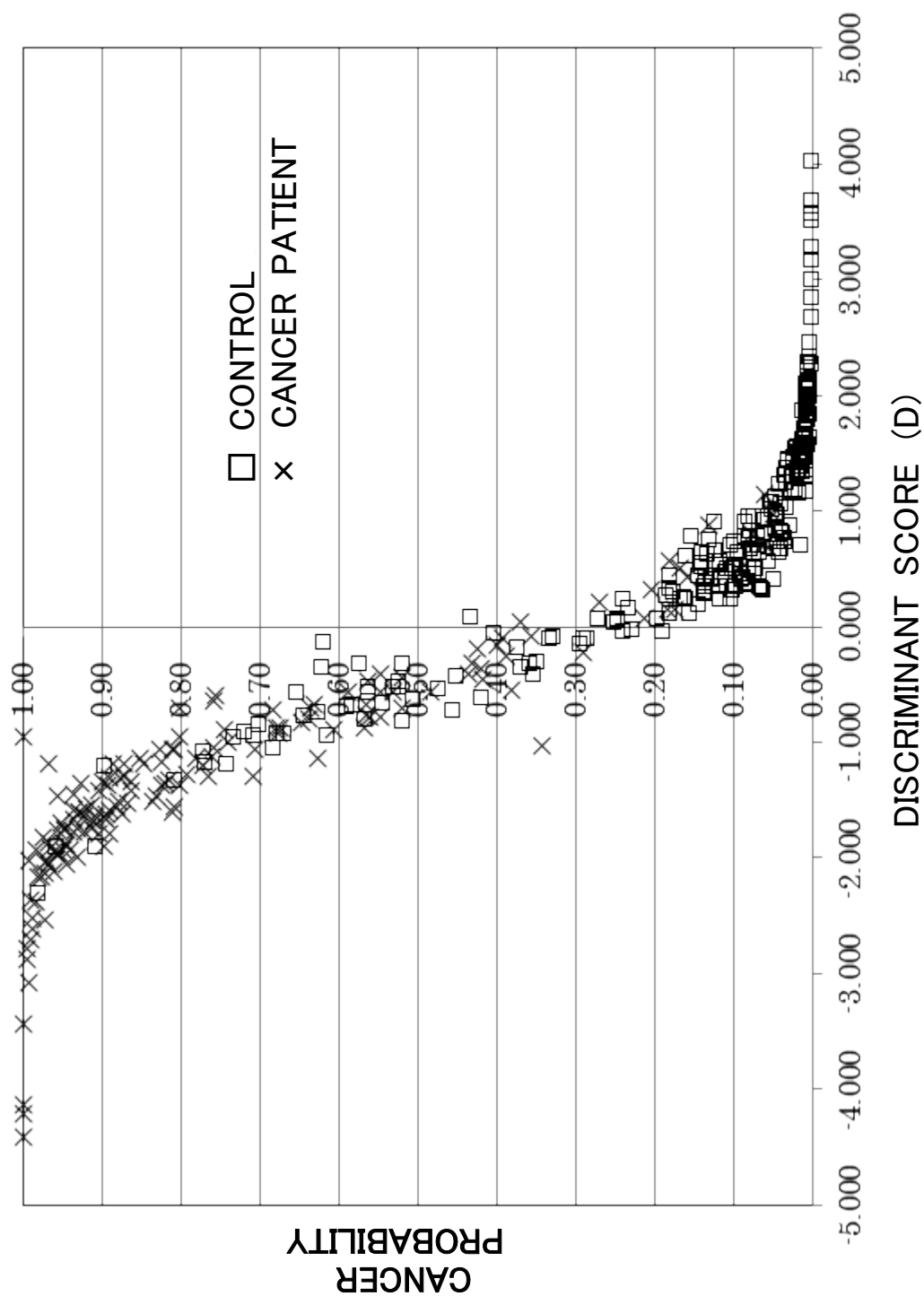


FIG. 31 EXAMPLE 6 (COLORECTAL CANCER, FEMALE)

