

Supplemental material S2: Integrative mixture of experts to combine clinical factors and gene markers

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Description of clinical factors

Table 1: Prostate clinical factors

Characteristic	No. of samples	class 0	class 1
	79	37	42
serum PSA level			
0-10	50	19	31
10-20	18	14	4
20+	11	4	7
Gleason stage			
4-6	17	3	14
7	44	20	24
8-10	18	14	4
Extra capsular extension			
Established	38	24	14
Focal	6	5	1
Invasive	18	6	12
None	17	2	15
Surgical Margin			
Negative	29	7	22
Positive	50	30	20
Seminal vesicle invasion			
No	69	28	41
Yes	10	9	1
Lymph node involmment			
Negative	76	34	41
Positive	3	3	0
TNM			
T1C	34	16	18
T2A2B	16	9	7
T2B	20	7	13
T2C	7	3	4
T3A	2	2	0
age			
55-	15	2	13
55-65	40	22	18
65 +	24	13	11

Table 2: Breast clinical factors

Characteristic	No. of samples	class 1	class 0
	256	181	75
Age			
< 40	59	33	26
40-44	24	18	6
45-49	82	59	23
≥ 50	91	71	20
No. Positive nodes			
0	33	18	15
1-3	88	71	17
≥ 4	135	92	43
Tumor diameter			
≤ 20 mm	135	109	26
>20 mm	121	72	49
Histological grade			
I (good)	65	58	7
II (intermediate)	80	58	22
III (poor)	111	65	46
Estrogen-receptor status			
Negative	63	37	26
Positive	193	144	49
Surgery			
Breast-conserving therapy	139	105	34
Masectomy	117	76	41
Chemotherapy			
No	156	106	50
Yes	100	75	25
Hormonal therapy			
No	229	157	72
Yes	27	24	3

Table 3: CNS clinical factors

Characteristic	No. of samples	class 0	class 1
	60	21	39
type			
Classic	46	18	28
Desmoplastic	14	3	11
Chang stage			
M0	8	4	4
M+	2	2	0
T1M0	2	1	1
T2M0	8	3	5
T2M+	4	2	2
T3bM0	6	1	5
T3bM+	3	2	1
T3M0	12	1	11
T3M+	6	3	3
T4M0	6	1	5
T4M+	3	1	2
gender			
Female	21	7	14
Male	39	14	25
Age (months)			
< 100	38	13	25
100-200	17	4	13
\geq 200	5	4	1
Chemo Cx			
0	8	5	3
1	52	16	36
Chemo VP			
0	45	14	31
1	15	7	8

Table 4: Location variables for each data set

Characteristic	No. of samples	class 0	class 1
Breast			
No. Positive Nodes * Chemotherapy	256	181	75
	5	2	3
	28	16	12
	22	16	6
	66	55	11
	129	88	41
	6	4	2
Prostate			
Seminal vesicle invasion * Lymph node involmnet	79	37	42
	69	28	41
	7	6	1
	3	3	0
CNS			
Age * Cx	60	21	39
	2	1	
	36	12	24
	2	1	1
	15	3	12
	5	4	1