

Table S1. Power of different methods for “TNFR2 Signaling Pathway” (pattern 1)

Relative Risk	FPC-AIC	FPC-BIC	FPC-FULL	AML	MSS	RTP_5	RTP_10
	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value
1.00* ERRs	0.94 (0.92,0.96) <0.001	0.90 (0.88,0.93) NA	0.86 (0.83,0.89) 0.007	0.72 (0.68,0.76) <0.001	0.81 (0.78,0.84) <0.001	0.85 (0.82,0.88) <0.001	0.83 (0.80,0.87) <0.001
0.99* ERRs	0.83 (0.79,0.86) 0.001	0.78 (0.75,0.82) NA	0.75 (0.72,0.79) 0.085	0.59 (0.55,0.64) <0.001	0.70 (0.66,0.74) <0.001	0.74 (0.70,0.78) <0.001	0.69 (0.65,0.73) <0.001
0.98* ERRs	0.70 (0.66,0.74) 0.003	0.65 (0.61,0.69) NA	0.61 (0.57,0.65) 0.028	0.43 (0.39,0.48) <0.001	0.54 (0.49,0.58) <0.001	0.55 (0.51,0.60) <0.001	0.52 (0.47,0.56) <0.001
0.97* ERRs	0.57 (0.52,0.61) <0.001	0.50 (0.46,0.55) NA	0.49 (0.45,0.54) 0.633	0.29 (0.25,0.33) <0.001	0.40 (0.36,0.44) <0.001	0.42 (0.38,0.46) <0.001	0.37 (0.33,0.41) <0.001
0.96* ERRs	0.44 (0.40,0.49) <0.001	0.37 (0.33,0.42) NA	0.35 (0.31,0.40) 0.291	0.21 (0.17,0.24) <0.001	0.29 (0.25,0.33) <0.001	0.32 (0.28,0.36) <0.001	0.27 (0.23,0.31) <0.001

Note: For each method, we list the power, the 95% confidence interval of all estimated probabilities, the p-value of McNemar's test for the difference between FPC_BIC with any other methods. The power is calculated on the basis of 500 replicates at significance level 0.05.

Table S2. Power of different methods for “Fructose and mannose metabolism” (pattern 2)

Relative Risk	FPC-AIC	FPC-BIC	FPC-FULL	AML	MSS	RTP_5	RTP_10
	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value
1.00* ERRs	0.66 (0.62,0.71) 0.040	0.63 (0.58,0.67) NA	0.53 (0.49,0.58) <0.001	0.44 (0.40,0.49) <0.001	0.43 (0.38,0.47) <0.001	0.52 (0.48,0.57) <0.001	0.50 (0.46,0.55) <0.001
0.99* ERRs	0.53 (0.48,0.57) 0.008	0.47 (0.43,0.52) NA	0.42 (0.37,0.46) 0.013	0.32 (0.28,0.36) <0.001	0.30 (0.26,0.34) <0.001	0.37 (0.33,0.42) <0.001	0.35 (0.31,0.39) <0.001
0.98* ERRs	0.39 (0.35,0.44) 0.396	0.38 (0.33,0.42) NA	0.32 (0.28,0.36) 0.009	0.25 (0.21,0.29) <0.001	0.23 (0.19,0.27) <0.001	0.28 (0.24,0.32) <0.001	0.25 (0.21,0.28) <0.001
0.97* ERRs	0.29 (0.25,0.33) 0.420	0.28 (0.24,0.32) NA	0.23 (0.20,0.27) 0.022	0.17 (0.13,0.20) <0.001	0.15 (0.12,0.18) <0.001	0.18 (0.15,0.21) <0.001	0.18 (0.15,0.21) <0.001
0.96* ERRs	0.20 (0.18,0.24) 0.440	0.19 (0.15,0.22) NA	0.18 (0.14,0.21) 0.648	0.11 (0.08,0.14) <0.001	0.11 (0.09,0.14) <0.001	0.12 (0.09,0.15) <0.001	0.11 (0.08,0.14) <0.001

Table S3. Power of different methods for “Cytokine-cytokine receptor interaction” (pattern 3)

Relative Risk	FPC-AIC	FPC-BIC	FPC-FULL	AML	MSS	RTP_5	RTP_10
	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value	Power (95% CI) P-value
1.00* ERRs	0.97 (0.96,0.99) 0.194	0.96 (0.94,0.97) NA	0.92 (0.90,0.95) 0.016	0.93 (0.91,0.95) 0.069	0.80 (0.77,0.84) <0.001	0.88 (0.85,0.91) <0.001	0.90 (0.88,0.93) <0.001
0.99* ERRs	0.88 (0.86,0.91) 0.741	0.88 (0.85,0.91) NA	0.79 (0.75,0.82) <0.001	0.79 (0.76,0.83) <0.001	0.66 (0.62,0.70) <0.001	0.74 (0.70,0.78) <0.001	0.78 (0.74,0.82) <0.001
0.98* ERRs	0.76 (0.72,0.80) 0.111	0.79 (0.76,0.83) NA	0.62 (0.58,0.67) <0.001	0.59 (0.55,0.63) <0.001	0.49 (0.45,0.53) <0.001	0.57 (0.53,0.62) <0.001	0.59 (0.55,0.64) <0.001
0.97* ERRs	0.58 (0.54,0.62) 0.458	0.60 (0.55,0.64) NA	0.45 (0.41,0.50) <0.001	0.38 (0.34,0.43) <0.001	0.31 (0.27,0.35) <0.001	0.38 (0.34,0.43) <0.001	0.40 (0.46,0.45) <0.001
0.96* ERRs	0.44 (0.40,0.49) 0.057	0.48 (0.44,0.53) NA	0.34 (0.30,0.38) <0.001	0.24 (0.20,0.28) <0.001	0.25 (0.21,0.29) <0.001	0.28 (0.24,0.32) <0.001	0.26 (0.22,0.29) <0.001