

Supplementary Information for

Identification of *CCNB2* as A Potential Non-Invasive Breast Cancer Biomarker in Peripheral Blood Mononuclear Cells Using The Systems Biology Approach

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Table S1: qPCR primers for assessing *CCNB2* mRNA expression level using qRT-PCR

Primers	Primer sequence (5' - 3')
<i>CCNB2</i>	F: TTACTGCTCTGCTCTTGGCTTC R: TCTCGGATTTGGGAAGTGGTATAAG
<i>GAPDH</i>	F: ACATCAAGAAGGTGGTGAAGCAG R: GCGTCAAAGGTGGAGGAGTG

QRT-PCR; Quantitative reverse-transcription polymerase chain reaction.

Table S2: Power-law behavior of the node distribution of 187 cancer signature genes network, (10.9 KB docx)

Power-law distribution	Correlation coefficient of power-law fit (R)	R-squared of power-law fit*	R-squared of best line- fit
$y \approx 39.166x^{-1.028}$	0.961	0.82	0.413

*; R-Squared is computed on logarithmized values.

Table S3: Central cancer signatures genes are conclusive set of Hub genes combined with betweenness centrality (13.9 KB docx)

No.	Betweenness centrality	Hub	Betweenness centrality + Hub
1	<i>AURKA</i>	<i>AURKA</i>	<i>AURKA</i>
2	<i>PDIA6</i>	<i>PSMA7</i>	<i>PDIA6</i>
3	<i>CCT5</i>	<i>CCNB2</i>	<i>CCT5</i>
4	<i>NME1</i>	<i>NCL</i>	<i>NME1</i>
5	<i>PSMB8</i>	<i>NPM1</i>	<i>PSMB8</i>
6	<i>ACLY</i>	<i>PSMA4</i>	<i>ACLY</i>
7	<i>NCL</i>		<i>NCL</i>
8	<i>NPM1</i>		<i>NPM1</i>
9	<i>PSMA7</i>		<i>PSMA7</i>
10	<i>PSMB2</i>		<i>PSMB2</i>
11	<i>HNRNPK</i>		<i>HNRNPK</i>
12	<i>TUBA1B</i>		<i>TUBA1B</i>
13	<i>FKBP10</i>		<i>FKBP10</i>
14	<i>SNCA</i>		<i>SNCA</i>
15	<i>EIF2S2</i>		<i>EIF2S2</i>
16	<i>EIF2AK1</i>		<i>EIF2AK1</i>
17	<i>SPP1</i>		<i>SPP1</i>
18	<i>STAT1</i>		<i>STAT1</i>
19	<i>DTX3L</i>		<i>DTX3L</i>
20	<i>PSMA4</i>		<i>PSMA4</i>
21	<i>KDELRL3</i>		<i>KDELRL3</i>
22	<i>DNMT1</i>		<i>DNMT1</i>
23	<i>FBXO32</i>		<i>FBXO32</i>
24	<i>EPRS</i>		<i>EPRS</i>
25	<i>ALDH6A1</i>		<i>ALDH6A1</i>
26	<i>PLOD3</i>		<i>PLOD3</i>
			<i>CCNB2</i>

The top 20% of genes with highest betweenness value were selected. Conclusive set of Hub genes combination with betweenness centrality was named central cancer signatures genes.