Table S3: Breast Cancer Data pathway analysis results of metabolites. Ingenuity Pathway Analysis Canonical Pathways from Metabolites involved in Gene-Metabolite Pairs of the Tumor Correlated Cluster. P-values are all calculated from right-tailed Fisher's Exact Test.

Tumor Correlated Cluster			Tumor Anti-Correlated Cluster		
Name	*p-value*	*Overlap*	*Name*	*p-value*	*Overlap*
tRNA charging	1.33E-11	39.5% (17/43)	tRNA charging	1.09E-11	41.9% (18/43)
Purine Ribonucleosides Degradation to Ribose-1-phosphate	8.77E-07	58.3% (7/12)	Superpathway of Citrulline Metabolism	6.83E-05	33.3% (8/24)
Purine Nucleotides Degradation II (Aerobic)	1.71E-05	41.2% (7/17)	Urea Cycle	1.20E-04	42.9% (6/14)
Guanosine Nucleotides Degradation II	1.01E-04	50.0% (5/10)	Purine Nucleotides Degradation II (Aerobic)	4.22E-04	35.3% (6/17)
Adenosine Nucleotides Degradation III	1.78E-04	45.5% (5/11)	Purine Ribonucleosides Degradation to Ribose-1-phosphate	5.50E-04	41.7% (5/12)