| Gene   | GeneBank       | Forward primer(5'-3')                        | Reverse primer(5'-3')                        | Product length(bp) | Ta(℃) |
|--------|----------------|---------------------------------------------|---------------------------------------------|--------------------|-------|
| RSAD2  | NM_001318443.1 | GAACGGTGTTCAAGAAGTA                        | GCAGATTTTCCACATGGTTC                        | 127                | 50    |
| TRPC5  | XM_420310.6    | AAATTGTCAGTCTGGTCTCC                       | GGA AAAAATAAGGCTGGCATC                      | 186                | 60    |
| RNF17  | XM_015279441.2 | TAGCCTTTGGTATCGAGGTA                       | CATGGTATGCAAAATGGAGG                       | 150                | 60    |
| RPE65  | NM_204884.1    | CTGAGACAAATGTACAGCCAG                      | CTGTGACGTGAGCAGTG                         | 102                | 60    |
| CH RN G| NM_001031568.2 | CCCC GATAAATACGATGACA                     | GTACACTAGCAGCAGTGAT                       | 130                | 60    |
| H B AA | NM_001004376.3 | CAC TCGATCTGCACACG                        | GGAGTTTGAAGTGGACAGG                       | 169                | 60    |
| T E RT | NM_001031007.1 | GGGATACTATGGAAC TGTACG                 | TCAAGTAGAGATGCTTTGAG                       | 188                | 55    |
| RGS7BP | XM_001234191.5 | CTGCATAAGGTTTTAGTGTT                     | ATATTCAGTGGGTGACACAT                      | 156                | 60    |
| V RTN  | XM_015287674.2 | CCTTGTACAGGGAGATCAG                      | CACACAGTACACTGGTATCC                      | 153                | 60    |
| G A PD H| NM_204305     | TGCTGCCCAGAACATCACC                    | ACGGCAGTCAGGTCAACAA                      | 142                | 60    |

Table S1. The primers sequences of 9 selected differentially expressed genes and 1 reference gene
Table S2. The details of those DEGs identified between the DBE and LBE group

| Ensembl_Gene_ID | Gene_Symbol | logFC(DBE/LBE) | p-value  |
|-----------------|-------------|----------------|----------|
| ENSGALG00000010722 |  | 8.274117105 | 6.81035E-07 |
| ENSGALG000000016400 | RSAD2 | 5.436570792 | 0.000664659 |
| ENSGALG000000027959 | . | 5.299780145 | 7.09145E-06 |
| ENSGALG000000007972 | TRPC5 | 5.113365682 | 0.00254842 |
| ENSGALG000000017149 | RNF17 | 5.017864242 | 5.50752E-05 |
| ENSGALG000000027989 | SBDSL | 4.804679262 | 0.007142291 |
| ENSGALG000000007208 | FCGBP | 4.779513306 | 6.07692E-06 |
| ENSGALG000000008910 | CERKL | 4.590746244 | 0.000510628 |
| ENSGALG000000021729 | MIR193B | 4.472101627 | 0.002499102 |
| ENSGALG000000011259 | RPE65 | 4.32575321 | 0.003368593 |
| ENSGALG000000007906 | CHRNG | 4.324201303 | 0.000102398 |
| ENSGALG000000025951 | . | 4.301354349 | 0.001606088 |
| ENSGALG000000022335 | . | 4.17997521 | 0.004767164 |
| ENSGALG000000012051 | STAC | 4.168785741 | 0.004100336 |
| ENSGALG000000028095 | HOXA1 | 4.14068934 | 0.00478647 |
| ENSGALG000000005254 | SGPP2 | 4.137917863 | 3.4053E-05 |
| ENSGALG000000006639 | CEP55 | 4.025983475 | 0.000441576 |
| ENSGALG000000018244 | MIR125B2 | 3.986411788 | 0.002861654 |
| ENSGALG0000000019141 | . | 3.978615748 | 0.00019869 |
| ENSGALG000000012053 | FAM83F | 3.978331281 | 0.002603208 |
| ENSGALG000000014634 | PMEL | 3.974678189 | 0.003821204 |
| ENSGALG000000018534 | . | 3.968640251 | 0.005940089 |
| ENSGALG000000004582 | MYL2 | 3.79187595 | 0.009805624 |
| ENSGALG000000018374 | . | 3.790375952 | 0.009811153 |
| ENSGALG000000027569 | CLDN4 | 3.789398276 | 0.009814775 |
| ENSGALG000000026276 | TCF15 | 3.762264684 | 0.009911099 |
| ENSGALG000000001282 | GABRD | 3.761721439 | 0.009912564 |
| ENSGALG000000006354 | GAL3ST2 | 3.758829649 | 0.007823598 |
| ENSGALG000000002466 | . | 3.756769314 | 0.009929925 |
| ENSGALG000000014729 | DEPDC1B | 3.724050325 | 0.002278938 |
| ENSGALG0000000016142 | MX1 | 3.692619816 | 0.00043737 |
| ENSGALG0000000013273 | OASL | 3.683025213 | 0.00027645 |
| ENSGALG0000000027661 | . | 3.610968676 | 0.00576531 |
| ENSGALG000000002557 | ADGRD1 | 3.532924422 | 0.008413416 |
| ENSGALG0000000015622 | EYA1 | 3.52702653 | 0.007567589 |
| ENSGALG0000000011727 | . | 3.526086923 | 0.008439457 |
| ENSGALG000000002097 | . | 3.524835755 | 0.007574479 |
| ENSGALG0000000029165 | . | 3.52347161 | 0.00757908 |
| ENSGALG0000000029117 | . | 3.52347161 | 0.00757908 |
| ENSGALG0000000016962 | . | 3.384519456 | 0.006511818 |
| ENSGALG000000006384 | . | 3.37060346 | 0.0060946 |
| ENSGALG0000000011360 | PRKAG3 | 3.288102817 | 0.007896345 |
| ENSGALG000000006202 | SCNN1B | 3.142307841 | 0.000216668 |
| ENSGALG0000000013575 | IFI6 | 3.087521626 | 0.000629848 |
| ENSGALG0000000016931 | BORA | 3.021721142 | 1.92147E-05 |
| ENSGALG0000000013057 | USP18 | 2.979152303 | 0.002291705 |
| ENSGALG0000000011275 | DEPDC1 | 2.884285352 | 0.000165574 |
| ENSGALG000000004897 | GTSE1 | 2.878498756 | 4.4517E-05 |
| ENSGALG000000007636 | PCK1 | 2.839523752 | 0.008642205 |
| ENSGALG000000005862 | SBSPON | 2.822526552 | 0.009758227 |
| ENSGALG0000000024628 | . | 2.809596141 | 0.008926324 |
| ENSGALG000000003868 | MMAB | 2.727204187 | 0.006092281 |
| ENSGALG0000000013143 | PDE3A | 2.68360125 | 0.007217287 |
| Gene | Expression | p-value | Log2FoldChange | Adj.p-value |
|------|------------|---------|----------------|-------------|
| KIF2C | 1.516896389 | 0.004936158 | | |
| UBE2T | 1.513830318 | 0.001929286 | | |
| UBE2L6 | 1.504932184 | 0.000135257 | | |
| NCAPG | 1.498560656 | 0.001671142 | | |
| SKA3 | 1.479787715 | 0.000592962 | | |
| GBP | 1.471998575 | 0.004659207 | | |
| ARRD2 | 1.465259344 | 0.001078797 | | |
| DUSP4 | 1.443050026 | 0.00747613 | | |
| NCLCA1 | 1.437425315 | 0.002785144 | | |
| AVDL | 1.430188723 | 0.002905899 | | |
| PKD4 | 1.413518361 | 0.003572965 | | |
| SLC25A15 | 1.408100391 | 0.0038592 | | |
| TLR3 | 1.405625489 | 0.002472536 | | |
| SLC2A15 | 1.404625735 | 0.008064271 | | |
| ETV7 | 1.394967411 | 0.004371918 | | |
| APH1D1 | 1.362899936 | 0.004805974 | | |
| PDK4 | 1.362878414 | 0.002042603 | | |
| SKA3 | 1.344870645 | 0.008004838 | | |
| INCENP | 1.333419713 | 0.005045577 | | |
| RBBP7 | 1.330669096 | 0.0041532 | | |
| MKI67 | 1.327310352 | 0.001506704 | | |
| BIRC5 | 1.311782713 | 0.004371918 | | |
| DDCBP2 | 1.308966882 | 0.005307204 | | |
| RNF19B | 1.283332797 | 0.00899956 | | |
| CTGF | 1.280852029 | 0.004613107 | | |
| NMReadyt3 | 1.277697825 | 2.14081E-05 | | |
| CDK1 | 1.263241511 | 0.001294227 | | |
| ARHGEF37 | 1.243027913 | 0.001273956 | | |
| ARRDC2 | 1.200032233 | 0.00040186 | | |
| NCLCA1 | 1.197890701 | 0.000208898 | | |
| NCAPH2 | 1.185238423 | 0.008697397 | | |
| GBP | 1.183913841 | 0.00294843 | | |
| AQP3 | 1.13074611 | 0.000590315 | | |
| AQP4 | 1.130458922 | 0.002087436 | | |
| BCNMO1 | 1.12302702 | 0.005546813 | | |
| APBB1IP | 1.120194581 | 0.009717239 | | |
| HIST1H2B7L2 | 1.103095294 | 0.006108384 | | |
| NHEJ1 | 1.096722942 | 2.85315E-07 | | |
| COQ10B | 1.093981426 | 0.006275806 | | |
| KLHL3 | 1.084758284 | 1.14895E-05 | | |
| APBB1IP | 1.07579136 | 0.000228123 | | |
| CSK1B | 1.070111748 | 0.003127764 | | |
| ASS1 | 1.062140181 | 0.003072612 | | |
| TPX2 | 1.048852426 | 0.005607343 | | |
| HIST1H2B7L2 | 1.04799773 | 0.007190948 | | |
| LTC4S | 1.038498077 | 0.005031542 | | |
| TCTC1 | 1.027343662 | 0.003365915 | | |
| NHEJ1 | 1.009177216 | 0.001932108 | | |
| NHEJ1 | 1.003948291 | 0.003259151 | | |
| STAT4 | 0.997845205 | 0.00083862 | | |
| ASS1 | 0.996747907 | 0.002131105 | | |
| ORM1 | 0.996486062 | 0.000369789 | | |
| GJB1 | 0.976986504 | 2.46091E-05 | | |
| RBBP7 | 0.958241208 | 0.00317511 | | |
| DNAEIL3 | 0.951524803 | 0.00415989 | | |
| DNAEIL3 | 0.945920653 | 0.00377097 | | |
| Gene ID | Gene Symbol | Value | P Value | q Value |
|--------|-------------|-------|---------|---------|
| | | 0.945455088 | 0.004602722 |
| ENSGALG000000006471 | SLCO2A1 | 0.941463119 | 0.009837302 |
| ENSGALG000000002540 | RGS2 | 0.933426282 | 0.000723771 |
| ENSGALG000000003899 | RAB17 | 0.910279901 | 0.000358128 |
| ENSGALG0000000027495 | CARML3 | 0.906282083 | 0.002447856 |
| ENSGALG0000000012200 | GCH1 | 0.893287332 | 0.002207536 |
| ENSGALG0000000006448 | IRE9 | 0.869407017 | 0.001775108 |
| ENSGALG0000000028529 | PTGDS | 0.826947834 | 0.000959573 |
| ENSGALG0000000004521 | GPX3 | 0.817625868 | 0.004705432 |
| ENSGALG0000000016289 | DST | 0.813917976 | 0.001041011 |
| ENSGALG0000000016224 | MAOA | 0.796962066 | 0.003712834 |
| ENSGALG0000000025842 | TPM2 | 0.787281167 | 0.009207519 |
| ENSGALG0000000024011 | LCN8 | 0.787203036 | 0.001628749 |
| ENSGALG0000000026269 | TAP1 | 0.770389091 | 0.002567089 |
| ENSGALG0000000020688 | CYP4B1L | 0.745910943 | 0.006526243 |
| ENSGALG0000000002832 | IFI35 | 0.745838166 | 0.006034872 |
| ENSGALG0000000000181 | | 0.731261787 | 0.002311727 |
| ENSGALG0000000026646 | C4 | 0.720305656 | 0.003482501 |
| ENSGALG0000000012285 | BAIA2P2L | 0.718067779 | 0.006989609 |
| ENSGALG0000000006283 | THAP4 | 0.706901369 | 0.006754698 |
| ENSGALG0000000022586 | HPX | 0.692610759 | 0.005837961 |
| ENSGALG0000000027402 | PRR15L | 0.681403662 | 0.003305444 |
| ENSGALG0000000005795 | CYP2H1 | 0.662196868 | 0.004195112 |
| ENSGALG0000000023608 | | 0.657563649 | 0.006172929 |
| ENSGALG0000000013303 | SLC27A1 | 0.653626388 | 0.00443613 |
| ENSGALG0000000028871 | SLC38A3 | 0.630430251 | 0.00247729 |
| ENSGALG0000000101769 | HPGD | 0.614648014 | 0.004034877 |
| ENSGALG0000000088022 | TAPBP | 0.608581243 | 0.00612755 |
| ENSGALG0000000008469 | SPINT1 | 0.587001580 | 0.007428629 |
| ENSGALG0000000027442 | TRAF3IP1 | -0.596554343 | 0.009257471 |
| ENSGALG0000000001220 | HERPUD1 | -0.669312893 | 0.00883981 |
| ENSGALG0000000004612 | MTHFR | -0.687809725 | 0.001871268 |
| ENSGALG000000005125 | LSM14B | -0.718914081 | 0.007637154 |
| ENSGALG0000000014190 | PNPLA3 | -0.752112765 | 0.001760285 |
| ENSGALG000000008152 | SPATS2L | -0.757853311 | 0.007562393 |
| ENSGALG0000000023576 | PIM3 | -0.769382877 | 0.001858762 |
| ENSGALG0000000013814 | IMPA2 | -0.775562962 | 0.003405974 |
| ENSGALG0000000008780 | CTBS | -0.780407964 | 0.007653276 |
| ENSGALG0000000003515 | PECA1 | -0.784603979 | 0.009913052 |
| ENSGALG0000000015342 | CEP97 | -0.811869716 | 0.008687416 |
| ENSGALG0000000016828 | GRTP1 | -0.821775345 | 0.00968665 |
| ENSGALG0000000015998 | PTDS1 | -0.829818496 | 0.008229714 |
| ENSGALG0000000016313 | GCLC | -0.832963407 | 0.003642823 |
| ENSGALG0000000001443 | PTPRU | -0.869615265 | 0.001843645 |
| ENSGALG0000000000227 | DPYSL2 | -0.891094529 | 0.003377546 |
| ENSGALG0000000027839 | | -0.9056844 | 0.009248124 |
| ENSGALG0000000008860 | LONRF3 | -0.912153791 | 0.003559901 |
| ENSGALG0000000025884 | NABP1 | -0.913578588 | 0.009678294 |
| ENSGALG0000000015792 | ADAMTS1 | -0.96828589 | 0.005054551 |
| ENSGALG0000000023435 | GATM | -0.970822673 | 0.009808984 |
| ENSGALG0000000001603 | NARF | -1.001021533 | 0.008032603 |
| ENSGALG0000000026250 | DOK2 | -1.013086365 | 0.005367396 |
| ENSGALG0000000026137 | CDKN2B | -1.017451129 | 0.001269176 |
| ENSGALG0000000016345 | KLHL15 | -1.04996732 | 0.005845998 |
| ENSGALG0000000021344 | | -1.078866007 | 0.005985484 |
| ENSGALG000000004033 | GALNT10 | -1.114618927 | 0.008001263 |
| ENSGALG0000000011285 | NUDT4 | -1.129676593 | 0.005831313 |
| Gene      | Score   | Fold Change | p-value  |
|-----------|---------|-------------|----------|
| ALDH18A1  | -1.167757092 | 0.007208007 |
| MTHFD2    | -1.190204004 | 0.0029656   |
| ANKRD9    | -1.213065618 | 0.008368805 |
| IARS      | -1.236055493 | 0.002088888 |
| TRPM5     | -1.246603882 | 0.006986694 |
| MYNN      | -1.262075547 | 0.009091016 |
| WDR66     | -1.304369839 | 0.001042404 |
| ZRANB3    | -1.310679052 | 0.005486975 |
| ST3GAL1   | -1.310985556 | 0.00608187  |
| GPAM      | -1.326425589 | 0.00572268  |
| THBD      | -1.339640336 | 0.009576954 |
| ASNS      | -1.348703323 | 0.006384616 |
| FAM65B    | -1.426764455 | 0.000996892 |
| JAG1      | -1.558685298 | 1.46358E-05 |
| AKR1B1L   | -1.609341933 | 0.005518215 |
| CA13      | -1.634213815 | 0.003273899 |
| SG5       | -1.708084092 | 0.000268256 |
| CA12      | -1.715143040 | 0.00312268  |
| AFAP1     | -1.734967008 | 0.005477097 |
| CNTN5     | -1.753222056 | 0.006448293 |
| TNFAIP2   | -1.785670979 | 0.000751431 |
| MMRN1     | -1.839975257 | 0.000667595 |
| XK        | -1.892906666 | 0.000939857 |
| FAM69B    | -1.901671995 | 0.00342469  |
| DCBLD1    | -1.928134624 | 0.000155627 |
| ARHGEF17  | -1.954450116 | 0.005708336 |
| G0S2      | -2.031395466 | 0.003163531 |
| ACVR1C    | -2.057012027 | 0.000396478 |
| DDO       | -2.115701746 | 0.001830483 |
| ISM1      | -2.168356834 | 0.002543493 |
| ANKRD22   | -2.232202876 | 7.0467E-05  |
| ROH      | -2.288910199 | 0.000502353 |
| BRINP1    | -2.320079318 | 3.72603E-09 |
| KIAA0319  | -2.431868636 | 0.000807642 |
| CACNA1C   | -2.433000688 | 0.0017954  |
| SCN5A     | -2.551201049 | 0.00067938 |
| A5HUM9_CHICK | -2.568771126 | 0.00845907 |
| GFRAL     | -2.869000889 | 0.000161436 |
| Z2HC1A    | -2.925723111 | 5.5165E-05  |
| COLQ      | -2.956548145 | 0.00203076 |
| LRRRC4C   | -3.12709993 | 0.001716887 |
| NEK11     | -3.21191134  | 0.00412698 |
| MKX       | -3.294912111 | 0.001045803 |
| GCAT      | -3.482426232 | 0.005695969 |
| SLC7A11   | -3.565272239 | 0.006784804 |
| RAB23     | -3.580387788 | 0.002755109 |
| COLQ      | -3.704717087 | 0.00895871  |
| MIR1458   | -3.86538854  | 0.007169369 |
| VRTN      | -3.873076234 | 0.007183202 |
| MIR1658   | -3.952996868 | 0.008743843 |
| GLRA2     | -4.022947678 | 0.005127191 |
| Gene ID       | Gene Symbol | Log2 Fold Change | Statistical Significance |
|--------------|-------------|-----------------|--------------------------|
| ENSGALG00000015276 |             | -4.141259412    | 0.007931817              |
| ENSGALG000000004128 | CYSLTR1    | -4.215621078    | 0.004020725              |
| ENSGALG000000025564 |             | -4.2376472      | 0.007799682              |
| ENSGALG000000013183 | TERT       | -4.346597894    | 0.004386673              |
| ENSGALG000000005762 |             | -4.354632297    | 0.006354043              |
| ENSGALG000000018276 | MIR126     | -4.611976704    | 0.002454974              |
| ENSGALG000000020492 | MUC6       | -4.706841564    | 0.001103898              |
| ENSGALG000000011808 | CCR9       | -4.966768981    | 0.000437094              |
| ENSGALG000000007468 | HBAA       | -5.167195331    | 0.001282141              |
| KeggID      | KeggPathway                              | Number of Genes |
|------------|------------------------------------------|-----------------|
| path:gga01100 | Metabolic pathways                      | 24              |
| path:gga05168 | Herpes simplex infection                | 6               |
| path:gga05164 | Influenza A                              | 5               |
| path:gga04110 | Cell cycle                               | 5               |
| path:gga04371 | Apelin signaling pathway                 | 4               |
| path:gga04120 | Ubiquitin mediated proteolysis           | 4               |
| path:gga04080 | Neuroactive ligand-receptor interaction  | 4               |
| path:gga04514 | Cell adhesion molecules (CAMs)           | 4               |
| path:gga04530 | Tight junction                           | 4               |
| path:gga04218 | Cellular senescence                      | 4               |
| path:gga04068 | FoxO signaling pathway                   | 4               |
| path:gga00250 | Alanine, aspartate and glutamate metabolism | 3          |
| path:gga00590 | Arachidonic acid metabolism             | 3               |
| path:gga04261 | Adrenergic signaling in cardiomyocytes  | 3               |
| path:gga04910 | Insulin signaling pathway                | 3               |
| path:gga00564 | Glycerophospholipid metabolism           | 3               |
| path:gga00330 | Arginine and proline metabolism         | 3               |
| path:gga00910 | Nitrogen metabolism                     | 3               |
| path:gga03320 | PPAR signaling pathway                   | 3               |
| path:gga00670 | One carbon pool by folate               | 2               |
| path:gga04115 | p53 signaling pathway                    | 2               |
| path:gga04216 | Ferroptosis                              | 2               |
| path:gga00790 | Folate biosynthesis                      | 2               |
| path:gga04217 | Necroptosis                              | 2               |
| path:gga02010 | ABC transporters                         | 2               |
| path:gga04145 | Phagosome                                | 2               |
| path:gga00512 | Mucin type O-glycan biosynthesis         | 2               |
| path:gga03460 | Fanconi anemia pathway                   | 2               |
| path:gga00480 | Glutathione metabolism                   | 2               |
| path:gga04114 | Oocyte meiosis                           | 2               |
| path:gga00561 | Glycerolipid metabolism                  | 2               |
| path:gga00260 | Glycine, serine and threonine metabolism | 2               |
| path:gga00230 | Purine metabolism                        | 2               |
| path:gga00830 | Retinol metabolism                       | 2               |
| path:gga04144 | Endocytosis                              | 2               |
| path:gga01230 | Biosynthesis of amino acids              | 2               |
| path:gga04260 | Cardiac muscle contraction               | 2               |
| path:gga04621 | NOD-like receptor signaling pathway      | 2               |
| path:gga04920 | Adipocytokine signaling pathway          | 2               |
| path:gga00240 | Pyrimidine metabolism                    | 2               |
| path:gga04350 | TGF-beta signaling pathway               | 2               |
| path:gga04914 | Progesterone-mediated oocyte maturation  | 2               |
| path:gga04141 | Protein processing in endoplasmic reticulum | 1           |
| path:gga01200 | Carbon metabolism                        | 1               |
| path:gga00140 | Steroid hormone biosynthesis             | 1               |
| path:gga04933 | AGE-RAGE signaling pathway in diabetic complications | 1         |
| path:gga04620 | Toll-like receptor signaling pathway     | 1               |
| path:gga00600 | Sphingolipid metabolism                  | 1               |
| path:gga04060 | Cytokine-cytokine receptor interaction   | 1               |
| path:gga04672 | Intestinal immune network for IgA production | 1           |
| path:gga00533 | Glycosaminoglycan biosynthesis - keratan sulfate | 1         |
| path:gga00603 | Glycosphingolipid biosynthesis - globo and isoglobo series | 1        |
| path:gga00604 | Glycosphingolipid biosynthesis - ganglio series | 1        |
| Path | Description                                      | Count |
|------|--------------------------------------------------|-------|
| gga00270 | Cysteine and methionine metabolism               | 1     |
| gga00040 | Pentose and glucuronate interconversions         | 1     |
| gga00051 | Fructose and mannose metabolism                  | 1     |
| gga00052 | Galactose metabolism                             | 1     |
| gga00860 | Porphyrin and chlorophyll metabolism             | 1     |
| gga00340 | Histidine metabolism                             | 1     |
| gga00350 | Tyrosine metabolism                              | 1     |
| gga00360 | Phenylalanine metabolism                         | 1     |
| gga00380 | Tryptophan metabolism                            | 1     |
| gga00982 | Drug metabolism - cytochrome P450                 | 1     |
| gga00562 | Inositol phosphate metabolism                    | 1     |
| gga04070 | Phosphatidylinositol signaling system             | 1     |
| gga04330 | Notch signaling pathway                          | 1     |
| gga00760 | Nicotinate and nicotinamide metabolism           | 1     |
| gga00220 | Arginine biosynthesis                            | 1     |
| gga04146 | Peroxisome                                       | 1     |
| gga00970 | Aminoacyl-tRNA biosynthesis                      | 1     |
| gga03030 | DNA replication                                  | 1     |
| gga04510 | Focal adhesion                                   | 1     |
| gga04810 | Regulation of actin cytoskeleton                 | 1     |
| gga00010 | Glycolysis / Gluconeogenesis                     | 1     |
| gga00020 | Citrate cycle (TCA cycle)                        | 1     |
| gga00620 | Pyruvate metabolism                              | 1     |
| gga04020 | Calcium signaling pathway                        | 1     |
| gga04210 | Apoptosis                                        | 1     |
| gga04622 | RIG-I-like receptor signaling pathway            | 1     |
| gga04540 | Gap junction                                     | 1     |
Table S4. The edge details in protein-protein interaction network

| shared name     | coexpression | cooccurrence | databases | experiments | fusion | neighborhood | score | textmining |
|-----------------|--------------|--------------|-----------|-------------|--------|---------------|-------|------------|
| SGPP2 (pp) CERKL | 0.086        | 0.163        | 0.07      | 0.713       | 0.645  |               |       |            |
| MX1 (pp) TLR3   | 0.736        | 0.096        |           | 0.932       | 0.739  |               |       |            |
| MX1 (pp) EPSTI1 | 0.828        |              |           | 0.858       | 0.209  |               |       |            |
| MX1 (pp) RSAD2  | 0.774        |              |           | 0.959       | 0.827  |               |       |            |
| DDO (pp) PCK1   | 0.058        | 0.8          | 0.069     | 0.84        | 0.196  |               |       |            |
| USP18 (pp) RSAD2| 0.817        |              |           | 0.925       | 0.606  |               |       |            |
| USP18 (pp) MX1  | 0.835        | 0.122        |           | 0.948       | 0.67   |               |       |            |
| USP18 (pp) OASL | 0.825        | 0.38         |           | 0.954       | 0.616  |               |       |            |
| TTK (pp) CKS1B  | 0.781        | 0.562        |           | 0.918       | 0.214  |               |       |            |
| TTK (pp) MKI67  | 0.903        |              |           | 0.908       | 0.084  |               |       |            |
| TTK (pp) CDK1   | 0.997        | 0.367        |           | 0.998       | 0.253  |               |       |            |
| TTK (pp) UBE2C  | 0.835        |              |           | 0.846       | 0.103  |               |       |            |
| TTK (pp) TPX2   | 0.894        |              |           | 0.911       | 0.193  |               |       |            |
| TTK (pp) NUF2   | 0.895        | 0.369        |           | 0.976       | 0.665  |               |       |            |
| TTK (pp) BIRC5  | 0.847        |              |           | 0.868       | 0.176  |               |       |            |
| TTK (pp) CKAP2  | 0.958        |              |           | 0.958       |        |               |       |            |
| TTK (pp) BORA   | 0.726        |              |           | 0.727       | 0.046  |               |       |            |
| TTK (pp) PBK    | 0.903        |              |           | 0.938       | 0.392  |               |       |            |
| STOML1 (pp) RNF17| 0.16         |              |           | 0.828       | 0.803  |               |       |            |
| BIRC5 (pp) CKS1B| 0.935        |              |           | 0.941       | 0.134  |               |       |            |
| BIRC5 (pp) MKI67| 0.777        |              |           | 0.849       | 0.35   |               |       |            |
| BIRC5 (pp) CDK1 | 0.959        | 0.9          | 0.16      | 0.997       | 0.341  |               |       |            |
| BIRC5 (pp) UBE2C| 0.891        | 0.252        |           | 0.943       | 0.366  |               |       |            |
| BIRC5 (pp) TPX2 | 0.906        |              |           | 0.931       | 0.292  |               |       |            |
| BIRC5 (pp) APITD1| 0.328        | 0.9          |           | 0.93        |        |               |       |            |
| BIRC5 (pp) NUF2 | 0.859        |              |           | 0.888       | 0.236  |               |       |            |
| PECAM1 (pp) MKI67|             |              |           | 0.792       | 0.792  |               |       |            |
| ASPM (pp) CKS1B | 0.748        |              |           | 0.754       | 0.065  |               |       |            |
| ASPM (pp) MKI67 | 0.959        |              |           | 0.969       | 0.281  |               |       |            |
| ASPM (pp) CDK1  | 0.996        | 0.042        |           | 0.997       | 0.481  |               |       |            |
| ASPM (pp) UBE2C | 0.844        |              |           | 0.858       | 0.132  |               |       |            |
| ASPM (pp) CCNB3 | 0.805        |              |           | 0.823       | 0.13   |               |       |            |
| ASPM (pp) TPX2  | 0.981        |              |           | 0.982       | 0.056  |               |       |            |
| ASPM (pp) NUF2  | 0.744        |              |           | 0.773       | 0.15   |               |       |            |
| ASPM (pp) BIRC5 | 0.729        |              |           | 0.763       | 0.162  |               |       |            |
| ASPM (pp) CKAP2 | 0.989        |              |           | 0.993       | 0.399  |               |       |            |
| ASPM (pp) PBK   | 0.891        |              |           | 0.907       | 0.19   |               |       |            |
| ASPM (pp) TTK   | 0.996        |              |           | 0.996       | 0.192  |               |       |            |
| ASPM (pp) NDC80 | 0.99         |              |           | 0.99        | 0.055  |               |       |            |
| ASPM (pp) CDCA3 | 0.962        |              |           | 0.965       | 0.121  |               |       |            |
| ASPM (pp) NCAPG | 0.995        |              |           | 0.996       | 0.345  |               |       |            |
| ASPM (pp) FOXM1 | 0.787        |              |           | 0.79        | 0.055  |               |       |            |
| ASPM (pp) CENPE | 0.996        | 0.042        |           | 0.997       | 0.389  |               |       |            |
| ASPM (pp) KIF15 | 0.918        | 0.042        |           | 0.969       | 0.636  |               |       |            |
| ASPM (pp) DEPDC1| 0.886        |              |           | 0.915       | 0.29   |               |       |            |
| ASPM (pp) KIF23 | 0.981        | 0.042        |           | 0.99        | 0.512  |               |       |            |
| ASPM (pp) CEP55 | 0.986        |              |           | 0.988       | 0.212  |               |       |            |
| ASPM (pp) RACGAP1|             |              |           | 0.76        | 0.159  |               |       |            |
| ASPM (pp) KNTC1 | 0.738        | 0.237        |           | 0.814       | 0.147  |               |       |            |
| ASPM (pp) KIF4A | 0.884        | 0.042        |           | 0.947       | 0.56   |               |       |            |
| ASPM (pp) KIF20A| 0.926        | 0.042        |           | 0.954       | 0.41   |               |       |            |
| TAPBP (pp) GBP  | 0.784        |              |           | 0.784       |       |               |       |            |
| TAPBP (pp) TAP1 | 0.123        | 0.9          |           | 0.908       |       |               |       |            |
| Gene 1 (pp) | Gene 2 | Value 1 | Value 2 | Value 3 | Value 4 |
|-----------|--------|---------|---------|---------|---------|
| CKAP2     | MKI67  | 0.9     | 0.903   | 0.066   |
| CKAP2     | CDK1   | 0.93    | 0.933   | 0.086   |
| CKAP2     | UBE2C  | 0.829   | 0.161   | 0.85    | 0.042   |
| CKAP2     | TPX2   | 0.867   | 0.87    | 0.068   |
| CKAP2     | NUF2   | 0.828   | 0.837   | 0.09    |
| CKAP2     | BIRC5  | 0.781   | 0.781   |         |
| OASL      | TLR3   | 0.362   | 0.704   | 0.533   |
| OASL      | UBE2L6 | 0.057   | 0.737   | 0.327   |
| OASL      | GBP    | 0.723   | 0.781   | 0.241   |
| OASL      | EPSTI1 | 0.793   | 0.851   | 0.311   |
| OASL      | RSAD2  | 0.697   | 0.922   | 0.754   |
| OASL      | MX1    | 0.999   | 0.999   | 0.824   |
| FOXM1     | MKI67  | 0.893   | 0.93    | 0.356   |
| FOXM1     | CDK1   | 0.785   | 0.994   | 0.679   |
| FOXM1     | UBE2C  | 0.684   | 0.859   | 0.546   |
| FOXM1     | TPX2   | 0.792   | 0.815   | 0.148   |
| FOXM1     | BIRC5  | 0.669   | 0.791   | 0.393   |
| FOXM1     | PBK    | 0.695   | 0.744   | 0.128   |
| FOXM1     | TTK    | 0.76    | 0.778   | 0.112   |
| FOXM1     | NDC80  | 0.839   | 0.856   | 0.134   |
| FOXM1     | CDCA3  | 0.779   | 0.831   | 0.267   |
| FOXM1     | NCAFPG | 0.813   | 0.818   | 0.065   |
| IARS      | ASNS   | 0.222   | 0.766   | 0.184   |
| CDK1      | CKS1B  | 0.998   | 0.999   | 0.6     |
| CDK1      | MKI67  | 0.819   | 0.94    | 0.637   |
| KIF4A     | CKS1B  | 0.527   | 0.768   | 0.53    |
| KIF4A     | MKI67  | 0.767   | 0.825   | 0.269   |
| KIF4A     | CDK1   | 0.935   | 0.971   | 0.509   |
| KIF4A     | UBE2C  | 0.864   | 0.897   | 0.237   |
| KIF4A     | TPX2   | 0.953   | 0.963   | 0.256   |
| KIF4A     | NUF2   | 0.83    | 0.868   | 0.155   |
| KIF4A     | BIRC5  | 0.865   | 0.916   | 0.399   |
| KIF4A     | SKA3   | 0.765   | 0.767   | 0.049   |
| KIF4A     | CKAP2  | 0.806   | 0.861   | 0.313   |
| KIF4A     | PBK    | 0.851   | 0.877   | 0.141   |
| KIF4A     | TTK    | 0.776   | 0.806   | 0.143   |
| KIF4A     | NDC80  | 0.895   | 0.931   | 0.279   |
| KIF4A     | CDCA3  | 0.99    | 0.991   | 0.133   |
| KIF4A     | NCAFPG | 0.695   | 0.759   | 0.234   |
| KIF4A     | CENPE  | 0.89    | 0.991   | 0.275   |
| KIF4A     | KIF15  | 0.561   | 0.967   | 0.308   |
| KIF4A     | KIF2C  | 0.825   | 0.985   | 0.234   |
| KIF4A     | KIF23  | 0.916   | 0.994   | 0.393   |
| KIF4A     | INCENP | 0.903   | 0.977   | 0.769   |
| KIF4A     | CEP55  | 0.568   | 0.724   | 0.359   |
| KIF4A     | RACGAP1| 0.807   | 0.991   | 0.499   |
| KIF4A     | GTSE1  | 0.618   | 0.725   | 0.311   |
| UBE2T     | CDK1   | 0.757   | 0.805   | 0.121   |
| UBE2T     | APITD1 | 0.544   | 0.963   | 0.264   |
| UBE2T     | BIRC5  | 0.646   | 0.783   | 0.106   |
| UBE2T     | PTTG1  | 0.753   | 0.76    | 0.068   |
| KIF18B    | MKI67  | 0.844   | 0.846   |         |
| KIF18B    | UBE2C  | 0.725   | 0.765   | 0.14    |
| KIF18B    | NDC80  | 0.452   | 0.772   | 0.393   |
| KIF18B    | FOXM1  | 0.728   | 0.733   |         |
| Protein Pair          | Pearson Correlation | p-value | Pearson Correlation | p-value |
|----------------------|---------------------|---------|---------------------|---------|
| KIF18B (pp) CENPE    | 0.384               | 0.9     | 0.249               | 0.959   |
| KIF18B (pp) KIF15    | 0.635               | 0.9     | 0.258               | 0.953   |
| KIF18B (pp) KIF2C    | 0.282               | 0.9     | 0.9                 | 0.235   |
| KIF18B (pp) KIF23    | 0.421               | 0.9     | 0.959               | 0.194   |
| KIF18B (pp) RACGAP1  | 0.305               | 0.9     | 0.227               | 0.955   |
| KIF18B (pp) KIF4A    | 0.62                | 0.9     | 0.966               | 0.189   |
| KIF18B (pp) KIF20A   | 0.738               | 0.9     | 0.974               | 0.085   |
| KIF18B (pp) ASPM     | 0.72                | 0.042   | 0.751               | 0.049   |
| NDC80 (pp) CKS1B     | 0.697               | 0.9     | 0.798               | 0.362   |
| NDC80 (pp) MKI67     | 0.879               | 0.9     | 0.882               | 0.067   |
| NDC80 (pp) CDK1      | 0.996               | 0.9     | 0.999               | 0.552   |
| NDC80 (pp) UBE2C     | 0.845               | 0.052   | 0.868               | 0.172   |
| NDC80 (pp) CCNB3     | 0.639               | 0.096   | 0.703               | 0.162   |
| NDC80 (pp) TPX2      | 0.92                | 0.9     | 0.936               | 0.232   |
| NDC80 (pp) APITD1    | 0.178               | 0.9     | 0.973               | 0.708   |
| NDC80 (pp) NUF2      | 0.878               | 0.72    | 0.963               | 0.999   |
| NDC80 (pp) BIRC5     | 0.838               | 0.9     | 0.986               | 0.251   |
| NDC80 (pp) SKA3      | 0.795               | 0.9     | 0.947               | 0.751   |
| NDC80 (pp) CKAP2     | 0.93                | 0.9     | 0.93                | 0.043   |
| NDC80 (pp) PBK       | 0.933               | 0.9     | 0.935               | 0.075   |
| NDC80 (pp) TTK       | 0.995               | 0.59    | 0.999               | 0.635   |
| ASNS (pp) ASS1       | 0.629               | 0.9     | 0.16                | 0.045   |
| UBE2C (pp) CKS1B     | 0.908               | 0.042   | 0.932               | 0.299   |
| UBE2C (pp) MKI67     | 0.796               | 0.9     | 0.856               | 0.321   |
| UBE2C (pp) CDK1      | 0.976               | 0.136   | 0.998               | 0.521   |
| ARHGEF37 (pp) RHOB   | 0.057               | 0.9     | 0.308               | 0.933   |
| ARHGEF37 (pp) ROH    | 0.9                | 0.308   | 0.932               | 0.252   |
| LOC431660 (pp) PCK1  | 0.785               | 0.9     | 0.888               | 0.671   |
| SMYD1 (pp) MYL2      | 0.723               | 0.066   | 0.794               | 0.269   |
| SOCS1 (pp) STAT4     | 0.153               | 0.9     | 0.844               | 0.823   |
| CCNB3 (pp) CKS1B     | 0.547               | 0.693   | 0.9                 | 0.341   |
| CCNB3 (pp) CDK1      | 0.989               | 0.8     | 0.791               | 0.002   |
| CCNB3 (pp) UBE2C     | 0.663               | 0.16    | 0.8                 | 0.351   |
| BORA (pp) CDK1       | 0.38                | 0.9     | 0.976               | 0.644   |
| IGFBP1 (pp) C4       | 0.058               | 0.9     | 0.904               | 0.07    |
| KNTC1 (pp) CDK1      | 0.776               | 0.9     | 0.977               | 0.071   |
| KNTC1 (pp) APITD1    | 0.145               | 0.9     | 0.923               | 0.172   |
| KNTC1 (pp) NUF2      | 0.521               | 0.9     | 0.722               | 0.444   |
| KNTC1 (pp) BIRC5     | 0.586               | 0.9     | 0.96                | 0.132   |
| KNTC1 (pp) TTK       | 0.713               | 0.9     | 0.741               | 0.134   |
| KNTC1 (pp) NDC80     | 0.654               | 0.9     | 0.985               | 0.602   |
| KNTC1 (pp) CENPE     | 0.713               | 0.9     | 0.99                | 0.693   |
| KNTC1 (pp) KIF15     | 0.692               | 0.9     | 0.701               | 0.068   |
| KNTC1 (pp) KIF2C     | 0.381               | 0.9     | 0.941               | 0.124   |
| KNTC1 (pp) KIF23     | 0.668               | 0.9     | 0.701               | 0.138   |
| KNTC1 (pp) INCENP    | 0.488               | 0.9     | 0.962               | 0.334   |
| KNTC1 (pp) CENPI     | 0.379               | 0.9     | 0.959               | 0.394   |
| KNTC1 (pp) C15ORF23  | 0.505               | 0.9     | 0.718               | 0.453   |
| PTTG1 (pp) CDK1      | 0.926               | 0.161   | 0.985               | 0.783   |
| PTTG1 (pp) UBE2C     | 0.93                | 0.9     | 0.996               | 0.574   |
| PTTG1 (pp) TPX2      | 0.881               | 0.9     | 0.894               | 0.145   |
| PTTG1 (pp) NUF2      | 0.746               | 0.9     | 0.83                | 0.359   |
| PTTG1 (pp) BIRC5     | 0.899               | 0.9     | 0.917               | 0.215   |
| PTTG1 (pp) PBK       | 0.879               | 0.9     | 0.887               | 0.102   |
| PTTG1 (pp) TTK       | 0.759               | 0.9     | 0.803               | 0.214   |
| Gene1 | Gene2   | p1  | p2  | p3  |
|-------|---------|-----|-----|-----|
| PTTG1 | NDC80   | 0.786 | 0.848 | 0.317 |
| PTTG1 | CDCA3   | 0.925 | 0.933 | 0.133 |
| PTTG1 | NDC80   | 0.757 | 0.804 | 0.225 |
| PTTG1 | FOXM1   | 0.419 | 0.748 | 0.583 |
| PTTG1 | CENPE   | 0.476 | 0.723 | 0.493 |
| PTTG1 | CENPE   | 0.657 | 0.717 | 0.208 |
| PTTG1 | KIF4A   | 0.697 | 0.91  | 0.715 |
| PTTG1 | KIF20A  | 0.873 | 0.885 | 0.135 |
| PTTG1 | ASPM    | 0.711 | 0.796 | 0.324 |
| CYSLTR1| LTC4S   | 0.823 | 0.823 |     |
| RNF19B| UBE2C   | 0.055 | 0.9   | 0.238 |
| RNF19B| USP18   | 0.055 | 0.729 | 0.725 |
| RNF19B| RNF213  | 0.057 | 0.9   | 0.689 |
| RNF19B| KLHL3   | 0.057 | 0.9   | 0.901 |
| CENPE | CDK1    | 0.425 | 0.9   | 0.206 |
| CENPE | CDK1    | 0.204 | 0.9   | 0.863 |
| CENPE | NUF2    | 0.481 | 0.904 | 0.823 |
| CENPE | BIRC5   | 0.428 | 0.94  | 0.046 |
| CENPE | NDC80   | 0.596 | 0.9   | 0.167 |
| CENPE | NCAPG   | 0.658 | 0.787 | 0.403 |
| CENPE | CENPE   | 0.409 | 0.9   | 0.694 |
| CENPE | KIF2C   | 0.365 | 0.9   | 0.442 |
| CENPE | INCENP  | 0.396 | 0.958 | 0.372 |
| CENPE | RACGAP1 | 0.436 | 0.722 | 0.528 |
| APITD1| CDK1    | 0.339 | 0.945 | 0.241 |
| APITD1| HIST1H2B7| 0.092 | 0.9   | 0.045 |
| CENPE | MKI67   | 0.91  | 0.055 | 0.936 |
| CENPE | CDK1    | 0.962 | 0.9   | 0.574 |
| CENPE | UBE2C   | 0.786 | 0.087 | 0.874 |
| CENPE | TPX2    | 0.882 | 0.943 | 0.537 |
| CENPE | APITD1  | 0.092 | 0.972 | 0.717 |
| CENPE | NUF2    | 0.805 | 0.247 | 0.97  |
| CENPE | BIRC5   | 0.718 | 0.9   | 0.205 |
| CENPE | SKA3    | 0.738 | 0.908 | 0.662 |
| CENPE | CKAP2   | 0.937 | 0.042 | 0.951 |
| CENPE | PBK     | 0.839 | 0.112 | 0.863 |
| CENPE | TTK     | 0.997 | 0.068 | 0.998 |
| CENPE | NDC80   | 0.937 | 0.369 | 0.999 |
| CENPE | CDC3    | 0.902 | 0.91  | 0.128 |
| CENPE | NDC80   | 0.992 | 0.052 | 0.994 |
| CENPE | NUF2    | 0.723 | 0.062 | 0.752 |
| KLHL3 | UBE2C   | 0.058 | 0.9   | 0.111 |
| KLHL3 | RNF213  | 0.056 | 0.9   | 0.901 |
| ISG12-2| TLR3   | 0.738 | 0.848 | 0.444 |
| ISG12-2| GBP    | 0.783 | 0.803 | 0.13  |
| ISG12-2| EPSTI1 | 0.775 | 0.875 | 0.471 |
| ISG12-2| RSAD2  | 0.361 | 0.786 | 0.68  |
| ISG12-2| MX1    | 0.884 | 0.959 | 0.666 |
| ISG12-2| OASL   | 0.999 | 0.999 | 0.815 |
| KIF2C | CDK1    | 0.8  | 0.9   | 0.159 |
| KIF2C | UBE2C   | 0.824 | 0.087 | 0.863 |
| KIF2C | TPX2    | 0.826 | 0.868 | 0.271 |
| KIF2C | APITD1  | 0.099 | 0.9   | 0.96  |
| KIF2C | NUF2    | 0.688 | 0.16  | 0.823 |
| Gene       | Gene       | Gene       | Gene       | Gene       |
|------------|------------|------------|------------|------------|
| KIF2C (pp) BIRC5 | 0.615 0.9 0.047 | 0.962 0.097 |
| KIF2C (pp) SKA3  | 0.528 0.9 0.112 | 0.744 0.479 |
| KIF2C (pp) CKAP2 | 0.788 0.9 0.097 | 0.788 0.788 |
| KIF2C (pp) PBK   | 0.791 0.112 0.068 | 0.809 0.052 |
| KIF2C (pp) TTK   | 0.728 0.068 0.112 | 0.776 0.187 |
| KIF2C (pp) NDC80 | 0.671 0.068 0.164 | 0.992 0.758 |
| KIF2C (pp) CDCA3 | 0.827 0.068 0.145 | 0.841 0.065 |
| KIF2C (pp) CENPE | 0.819 0.068 0.145 | 0.988 0.321 |
| KIF2C (pp) KIF15 | 0.44 0.068 0.187 | 0.953 0.234 |
| DEPDC1 (pp) MKI67 | 0.755 0.047 0.097 | 0.755 0.755 |
| DEPDC1 (pp) CDK1 | 0.792 0.047 0.097 | 0.795 0.056 |
| DEPDC1 (pp) CKAP2 | 0.811 0.047 0.097 | 0.819 0.084 |
| DEPDC1 (pp) PBK | 0.72 0.047 0.097 | 0.774 0.227 |
| DEPDC1 (pp) TTK  | 0.819 0.047 0.097 | 0.851 0.21  |
| DEPDC1 (pp) NDC80 | 0.836 0.047 0.097 | 0.838 0.053 |
| DEPDC1 (pp) CDCA3 | 0.369 0.047 0.097 | 0.792 0.684 |
| DEPDC1 (pp) NCAPG | 0.704 0.047 0.097 | 0.713 0.068 |
| DEPDC1 (pp) CENPE | 0.799 0.047 0.097 | 0.84 0.236  |
| DEPDC1 (pp) KIF15 | 0.76 0.047 0.097 | 0.816 0.268 |
| INCENP (pp) CDK1 | 0.864 0.047 0.097 | 0.998 0.87  |
| INCENP (pp) TPX2 | 0.774 0.047 0.097 | 0.918 0.651 |
| INCENP (pp) APITD1 | 0.233 0.047 0.097 | 0.973 0.681 |
| INCENP (pp) NUF2 | 0.543 0.047 0.097 | 0.779 0.536 |
| INCENP (pp) BIRC5 | 0.54 0.047 0.097 | 0.989 0.699 |
| INCENP (pp) CKAP2 | 0.758 0.047 0.097 | 0.813 0.26  |
| INCENP (pp) PBK | 0.753 0.047 0.097 | 0.791 0.189 |
| INCENP (pp) TTK | 0.68 0.047 0.097 | 0.773 0.322 |
| INCENP (pp) NDC80 | 0.724 0.047 0.097 | 0.995 0.844 |
| INCENP (pp) CENPE | 0.826 0.047 0.097 | 0.996 0.826 |
| INCENP (pp) KIF15 | 0.194 0.047 0.097 | 0.74 0.682 |
| INCENP (pp) KIF2C | 0.708 0.047 0.097 | 0.993 0.785 |
| INCENP (pp) KIF23 | 0.842 0.047 0.097 | 0.963 0.749 |
| RHOB (pp) SPEG | 0.677 0.047 0.097 | 0.715 0.155 |
| RHOB (pp) ARHGEF17 | 0.085 0.047 0.097 | 0.924 0.175 |
| KIF23 (pp) CDK1 | 0.992 0.047 0.097 | 0.998 0.787 |
| KIF23 (pp) UBE2C | 0.733 0.047 0.097 | 0.781 0.173 |
| KIF23 (pp) CCNB3 | 0.84 0.047 0.097 | 0.883 0.226 |
| KIF23 (pp) TPX2 | 0.853 0.047 0.097 | 0.913 0.432 |
| KIF23 (pp) NUF2 | 0.768 0.047 0.097 | 0.819 0.147 |
| KIF23 (pp) BIRC5 | 0.62 0.047 0.097 | 0.745 0.341 |
| KIF23 (pp) SKA3  | 0.737 0.047 0.097 | 0.737 0.737 |
| KIF23 (pp) CKAP2 | 0.667 0.047 0.097 | 0.777 0.358 |
| KIF23 (pp) PBK | 0.857 0.047 0.097 | 0.874 0.092 |
| KIF23 (pp) TTK | 0.852 0.047 0.097 | 0.872 0.151 |
| KIF23 (pp) NDC80 | 0.923 0.047 0.097 | 0.941 0.161 |
| KIF23 (pp) CDCA3 | 0.841 0.047 0.097 | 0.86 0.152 |
| KIF23 (pp) NCAPG | 0.846 0.047 0.097 | 0.874 0.208 |
| KIF23 (pp) FOXM1 | 0.808 0.047 0.097 | 0.832 0.159 |
| KIF23 (pp) CENPE | 0.836 0.047 0.097 | 0.988 0.33 |
| KIF23 (pp) KIF15 | 0.723 0.047 0.097 | 0.98 0.336 |
| KIF23 (pp) KIF2C | 0.731 0.047 0.097 | 0.976 0.21 |
| RHOB (pp) SPEG | 0.677 0.047 0.097 | 0.715 0.155 |
| RHOB (pp) ARHGEF17 | 0.074 0.047 0.097 | 0.906 0.074 |
| RHOB (pp) DEPDC1B | 0.055 0.047 0.097 | 0.901 0.074 |
| Gene          | p-value 1 | p-value 2 | p-value 3 | p-value 4 |
|--------------|-----------|-----------|-----------|-----------|
| WDR31 (pp) OASL | 0.192     | 0.605     | 0.711     | 0.168     |
| SBSPON (pp) ADAMTS1 | 0.9       |           |           |           |
| CEP55 (pp) MKI67 | 0.858     | 0.917     | 0.439     |           |
| CEP55 (pp) CDK1  | 0.936     | 0.957     | 0.277     |           |
| CEP55 (pp) UBE2C | 0.804     | 0.873     | 0.381     |           |
| CEP55 (pp) TPX2  | 0.781     | 0.805     | 0.148     |           |
| CEP55 (pp) NUF2  | 0.762     | 0.839     | 0.349     |           |
| CEP55 (pp) BIRC5 | 0.7       | 0.76      | 0.233     |           |
| CEP55 (pp) CKAP2 | 0.79      | 0.884     | 0.47      |           |
| CEP55 (pp) PBK   | 0.888     | 0.909     | 0.227     |           |
| CEP55 (pp) TTK   | 0.948     | 0.959     | 0.235     |           |
| CEP55 (pp) NDC80 | 0.851     | 0.859     | 0.093     |           |
| CEP55 (pp) NCAPG | 0.867     | 0.883     | 0.152     |           |
| CEP55 (pp) FOXM1 | 0.719     | 0.858     | 0.515     |           |
| CEP55 (pp) CENPE | 0.802     | 0.879     | 0.388     |           |
| CEP55 (pp) KIF15 | 0.852     | 0.902     | 0.337     |           |
| CEP55 (pp) DEPDC1| 0.825     | 0.889     | 0.393     |           |
| CEP55 (pp) KIF23 | 0.79      | 0.963     | 0.778     |           |
| CCR9 (pp) GGCL1  | 0.9       | 0.921     | 0.14      |           |
| PBK (pp) MKI67  | 0.854     | 0.861     | 0.077     |           |
| PBK (pp) CDK1   | 0.986     | 0.995     | 0.483     |           |
| PBK (pp) UBE2C  | 0.901     | 0.917     | 0.084     |           |
| PBK (pp) TPX2   | 0.923     | 0.933     | 0.143     |           |
| PBK (pp) NUF2   | 0.913     | 0.925     | 0.179     |           |
| PBK (pp) BIRC5  | 0.903     | 0.935     | 0.186     |           |
| PBK (pp) SKA3   | 0.768     | 0.768     |           |           |
| PBK (pp) CKAP2  | 0.844     | 0.848     | 0.066     |           |
| NUF2 (pp) CKS1B | 0.785     | 0.795     | 0.084     |           |
| NUF2 (pp) MKI67 | 0.733     | 0.761     | 0.144     |           |
| NUF2 (pp) CDK1  | 0.957     | 0.969     | 0.303     |           |
| NUF2 (pp) UBE2C | 0.773     | 0.816     | 0.225     |           |
| NUF2 (pp) TPX2  | 0.891     | 0.932     | 0.406     |           |
| IMPA2 (pp) ANKRD22 | 0.79      | 0.79      |           |           |
| KIF15 (pp) MKI67 | 0.855     | 0.906     | 0.291     |           |
| KIF15 (pp) CDK1  | 0.747     | 0.917     | 0.64      |           |
| KIF15 (pp) UBE2C | 0.71      | 0.726     | 0.05      |           |
| KIF15 (pp) TPX2  | 0.748     | 0.944     | 0.79      |           |
| KIF15 (pp) NUF2  | 0.629     | 0.816     | 0.458     |           |
| KIF15 (pp) BIRC5 | 0.677     | 0.724     | 0.175     |           |
| KIF15 (pp) CKAP2 | 0.812     | 0.814     | 0.052     |           |
| KIF15 (pp) PBK   | 0.753     | 0.794     | 0.136     |           |
| KIF15 (pp) TTK   | 0.906     | 0.925     | 0.208     |           |
| KIF15 (pp) NDC80 | 0.896     | 0.944     | 0.411     |           |
| KIF15 (pp) CDCA3 | 0.684     | 0.716     | 0.137     |           |
| KIF15 (pp) NCAPG | 0.993     | 0.995     | 0.379     |           |
| KIF15 (pp) FOXM1 | 0.752     | 0.757     | 0.058     |           |
| KIF15 (pp) CENPE | 0.925     | 0.993     | 0.258     |           |
| ORM1 (pp) AOC1   | 0.547     | 0.801     | 0.578     |           |
| ORM1 (pp) HPX    | 0.9       | 0.903     | 0.074     |           |
| ALDH18A1 (pp) CKS1B | 0.064   | 0.869     | 0.872     |           |
| ALDH18A1 (pp) ASS1 | 0.095    | 0.439     | 0.912     | 0.84     |
| ALDH18A1 (pp) MTHFD2 | 0.206    | 0.428     | 0.829     | 0.653     |
| TPX2 (pp) MKI67  | 0.849     | 0.864     | 0.132     |           |
| TPX2 (pp) CDK1   | 0.921     | 0.997     | 0.698     |           |
| PAIR                        | SIMILARITY | PROXIMITY | EFFICACY | FOCUS | COVARIANCE |
|-----------------------------|------------|-----------|----------|-------|------------|
| TPX2 (pp) UBE2C             | 0.929      | 0.065     | 0.956    | 0.396 |
| MTHFR (pp) MTHFD2           | 0.138      | 0.9       | 0.221    | 0.966 |
| MTHFR (pp) GCH1             | 0.088      | 0.169     | 0.704    | 0.642 |
| NCAPH2 (pp) HIST1H2B7       | 0.9        | 0.9       | 0.789    | 0.725 |
| NCAPG                      | 0.229      | 0.086     | 0.945    | 0.541 |
| RACGAP1 (pp) CDK1           | 0.87       | 0.16      | 0.35     | 0.289 |
| RACGAP1 (pp) TPX2           | 0.815      | 0.068     | 0.789    | 0.092 |
| RACGAP1 (pp) BIRC5          | 0.684      | 0.725     | 0.566    | 0.266 |
| RACGAP1 (pp) PBK            | 0.77       | 0.068     | 0.789    | 0.092 |
| RACGAP1 (pp) RHOB           | 0.673      | 0.167     | 0.95     | 0.457 |
| RACGAP1 (pp) TTK            | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) NDC80          | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) NCAPG          | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| RACGAP1 (pp) TPX2           | 0.759      | 0.805     | 0.085    | 0.224 |
| RACGAP1 (pp) CDK1           | 0.762      | 0.776     | 0.094    |       |
| Protein 1          | Protein 2          | Correlation 1 | Correlation 2 | Correlation 3 | Correlation 4 |
|-------------------|-------------------|---------------|---------------|---------------|---------------|
| KIF20A (pp) TPX2  | 0.956             |               |               |               |               |
| KIF20A (pp) NUF2  | 0.726             | 0.16          | 0.867         | 0.471         |
| KIF20A (pp) SKA3  | 0.763             |               |               |               |               |
| KIF20A (pp) CKAP2 | 0.851             |               |               |               |               |
| KIF20A (pp) PBK   | 0.949             | 0.112         | 0.958         | 0.145         |
| KIF20A (pp) TTK   | 0.91              | 0.068         | 0.925         | 0.182         |
| KIF20A (pp) NDC80 | 0.92              | 0.164         | 0.936         | 0.122         |
| KIF20A (pp) CDC3A | 0.893             |               | 0.941         | 0.47          |
| KIF20A (pp) NCApG | 0.925             | 0.052         | 0.934         | 0.146         |
| KIF20A (pp) FOXM1 | 0.768             | 0.043         | 0.88          | 0.506         |
| KIF20A (pp) CENPE | 0.951             | 0.9           | 0.996         | 0.252         |
| KIF20A (pp) KIF15 | 0.888             | 0.9           | 0.99         | 0.182         |
| KIF20A (pp) DEPDC1| 0.775             |               | 0.826         | 0.257         |
| KIF20A (pp) KIF2C | 0.639             | 0.9           | 0.967         | 0.159         |
| KIF20A (pp) KIF23 | 0.79              | 0.9           | 0.983         | 0.28          |
| KIF20A (pp) INCENP| 0.469             | 0.143         | 0.883         | 0.763         |
| KIF20A (pp) CEP55 | 0.951             | 0.16          | 0.973         | 0.394         |
| KIF20A (pp) RACGAP1| 0.781          | 0.9           | 0.995         | 0.554         |
| KIF20A (pp) GTSE1 | 0.686             |               | 0.829         | 0.477         |
| KIF20A (pp) KIF4A | 0.873             | 0.9           | 0.991         | 0.359         |
| MYL2 (pp) TFM2    | 0.186             | 0.9           | 0.955         | 0.46          |
| DEPDC1B (pp) RHOB |                  |               |               |               |
|                   | 0.9               |               |               |               |
| GCAT (pp) GATM    |                   |               | 0.901         | 0.053         |
| C15ORF23 (pp) CDK1| 0.689             |               | 0.749         | 0.228         |
| C15ORF23 (pp) NUF2| 0.422             |               | 0.811         | 0.686         |
| C15ORF23 (pp) CENPE| 0.327            | 0.042         | 0.823         | 0.748         |
| GTSE1 (pp) MKI67  | 0.67              |               | 0.721         | 0.189         |
| GTSE1 (pp) CDK1   | 0.671             | 0.9           | 0.978         | 0.401         |
| GTSE1 (pp) TPX2   | 0.801             |               | 0.829         | 0.179         |
| GTSE1 (pp) BIRC5  | 0.738             |               | 0.764         | 0.136         |
| GTSE1 (pp) CENPE  | 0.685             |               | 0.726         | 0.166         |
| GTSE1 (pp) KIF2C  | 0.756             |               | 0.799         | 0.212         |
| CEP97 (pp) CDK1   | 0.075             | 0.9           | 0.92          | 0.094         |
| EPSTI1 (pp) TLR3  | 0.742             |               | 0.781         | 0.188         |
| EPSTI1 (pp) GBP   | 0.784             |               | 0.784         |               |
| DHX58 (pp) TLR3   | 0.475             |               | 0.868         | 0.759         |
| DHX58 (pp) GBP    | 0.701             |               | 0.734         | 0.147         |
| DHX58 (pp) EPSTI1 | 0.795             |               | 0.795         |               |
| DHX58 (pp) RSAD2  | 0.707             |               | 0.912         | 0.714         |
| DHX58 (pp) MX1    | 0.676             |               | 0.843         | 0.537         |
| DHX58 (pp) OASL   | 0.764             | 0.362         | 0.908         | 0.443         |
| DHX58 (pp) ISG12-2| 0.784             |               | 0.854         | 0.355         |
| DHX58 (pp) USP18  | 0.678             |               | 0.746         | 0.244         |