**SUPPLEMENTARY TABLES**

**Supplementary Table 1. Top-50 significant genes positively correlated with ZKSCAN1 (i.e. ZNF139) in BC.**

| NO. | Query          | Statistic | P-value   | FDR (BH)  | Event SD | Event TD |
|-----|----------------|-----------|-----------|-----------|----------|----------|
| 1   | ZKSCAN1        | 1         | 1.00E-87  | 1.00E-83  | 408      | 408      |
| 2   | MLL5           | 0.788332  | 1.13E-87  | 1.14E-83  | 408      | 408      |
| 3   | AKAP9          | 0.778419  | 4.03E-84  | 2.69E-80  | 408      | 408      |
| 4   | LMTK2          | 0.774001  | 1.35E-82  | 6.75E-79  | 408      | 408      |
| 5   | MYSM1          | 0.772319  | 5.01E-82  | 2.01E-78  | 408      | 408      |
| 6   | ZNF678         | 0.764579  | 1.85E-79  | 6.16E-76  | 408      | 408      |
| 7   | LOC100190986   | 0.750676  | 4.32E-75  | 1.24E-71  | 408      | 408      |
| 8   | MLL2           | 0.750307  | 5.59E-75  | 1.40E-71  | 408      | 408      |
| 9   | ZNF81          | 0.736745  | 5.40E-71  | 1.20E-67  | 408      | 408      |
| 10  | CHD6           | 0.734598  | 2.19E-70  | 4.39E-67  | 408      | 408      |
| 11  | KRT1           | 0.729158  | 7.17E-69  | 1.31E-65  | 408      | 408      |
| 12  | MLL3           | 0.727939  | 1.55E-68  | 2.59E-65  | 408      | 408      |
| 13  | UBN2           | 0.725239  | 8.40E-68  | 1.30E-64  | 408      | 408      |
| 14  | LCOR           | 0.724151  | 1.65E-67  | 2.36E-64  | 408      | 408      |
| 15  | TRRAP          | 0.718551  | 5.08E-66  | 6.79E-63  | 408      | 408      |
| 16  | SMG1           | 0.717804  | 7.98E-66  | 9.99E-63  | 408      | 408      |
| 17  | ZNF827         | 0.717087  | 1.23E-65  | 1.45E-62  | 408      | 408      |
| 18  | SHPRH          | 0.716103  | 2.21E-65  | 2.47E-62  | 408      | 408      |
| 19  | C12orf51       | 0.712749  | 1.62E-64  | 1.70E-61  | 408      | 408      |
| 20  | ZNF192         | 0.712677  | 1.69E-64  | 1.70E-61  | 408      | 408      |
| 21  | EIF2C4         | 0.711538  | 3.31E-64  | 3.16E-61  | 408      | 408      |
| 22  | FLJ10213       | 0.709187  | 1.30E-63  | 1.19E-60  | 408      | 400      |
| 23  | KIAA1109       | 0.70631  | 6.86E-63  | 5.98E-60  | 408      | 408      |
| 24  | EP300          | 0.70549  | 1.10E-62  | 9.17E-60  | 408      | 408      |
| 25  | C20orf94       | 0.703129  | 4.21E-62  | 3.37E-59  | 408      | 407      |
| 26  | HEATR5B        | 0.701856  | 8.63E-62  | 6.60E-59  | 408      | 408      |
| 27  | DPY19L3        | 0.701802  | 8.89E-62  | 6.60E-59  | 408      | 408      |
| 28  | ZNF791         | 0.701417  | 1.10E-61  | 7.83E-59  | 408      | 408      |
| 29  | LOC90834       | 0.701371  | 1.13E-61  | 7.83E-59  | 408      | 404      |
| 30  | NR2C2          | 0.701226  | 1.23E-61  | 8.11E-59  | 408      | 408      |
| 31  | CCNT2          | 0.70119  | 1.25E-61  | 8.11E-59  | 408      | 408      |
| 32  | ARID2          | 0.695761  | 2.56E-60  | 1.60E-57  | 408      | 408      |
| 33  | LOC646471      | 0.689137  | 9.23E-59  | 5.61E-56  | 408      | 408      |
| 34  | ZNF518A        | 0.688392  | 1.37E-58  | 8.10E-56  | 408      | 408      |
| 35  | CCNT1          | 0.687117  | 2.71E-58  | 1.55E-55  | 408      | 408      |
| 36  | ADNP           | 0.687013  | 2.86E-58  | 1.59E-55  | 408      | 408      |
| 37  | LOC100271836   | 0.685722  | 5.65E-58  | 3.06E-55  | 408      | 408      |
| 38  | GPATCH8        | 0.684815  | 9.11E-58  | 4.81E-55  | 408      | 408      |
| 39  | NCOA2          | 0.684468  | 1.09E-57  | 5.62E-55  | 408      | 408      |
| 40  | ANKIB1         | 0.684213  | 1.25E-57  | 6.26E-55  | 408      | 408      |
| 41  | TAF1           | 0.684072  | 1.34E-57  | 6.57E-55  | 408      | 408      |
|   | Gene       | p-value  | Log2 Fold Change | q-value  | Length | Length |
|---|------------|----------|-----------------|----------|--------|--------|
| 42| RALGAPA2   | 0.68289  | 2.49E-57        | 1.19E-54 | 408    | 408    |
| 43| KIAA1267   | 0.681432 | 5.32E-57        | 2.48E-54 | 408    | 408    |
| 44| REST       | 0.681275 | 5.77E-57        | 2.63E-54 | 408    | 408    |
| 45| CHD2       | 0.679689 | 1.31E-56        | 5.83E-54 | 408    | 408    |
| 46| KLHL11     | 0.679388 | 1.53E-56        | 6.65E-54 | 408    | 407    |
| 47| SRRM2      | 0.678389 | 2.55E-56        | 1.09E-53 | 408    | 408    |
| 48| BTAF1      | 0.677899 | 3.27E-56        | 1.37E-53 | 408    | 408    |
| 49| ATAD2B     | 0.676497 | 6.68E-56        | 2.73E-53 | 408    | 408    |
| 50| ZNF292     | 0.675971 | 8.73E-56        | 3.50E-53 | 408    | 408    |

ZNF139/ZKSCAN1, zinc finger with KRAB and SCAN domains 1; BC, bladder cancer.
| NO. | Query        | Statistic | P-value     | FDR (BH)   | Event SD | Event TD |
|-----|--------------|-----------|-------------|------------|----------|----------|
| 1   | AP2S1        | -0.65333  | 5.13E-51    | 1.45E-48   | 408      | 408      |
| 2   | SNRPC        | -0.61244  | 2.29E-43    | 2.91E-41   | 408      | 408      |
| 3   | NCRNA00152   | -0.61084  | 4.35E-43    | 5.22E-41   | 408      | 408      |
| 4   | SEC61B       | -0.60979  | 6.59E-43    | 7.72E-41   | 408      | 408      |
| 5   | PSMB7        | -0.60599  | 2.94E-42    | 3.31E-40   | 408      | 408      |
| 6   | PFN1         | -0.60308  | 9.06E-42    | 9.82E-40   | 408      | 408      |
| 7   | PSMC3        | -0.60046  | 2.48E-41    | 2.58E-39   | 408      | 408      |
| 8   | C16orf42     | -0.59934  | 3.81E-41    | 3.94E-39   | 408      | 408      |
| 9   | ATOX1        | -0.59884  | 4.61E-41    | 4.74E-39   | 408      | 408      |
| 10  | PSMD9        | -0.59757  | 7.48E-41    | 7.42E-39   | 408      | 408      |
| 11  | POMP         | -0.595    | 1.97E-40    | 1.89E-38   | 408      | 408      |
| 12  | RDBP         | -0.59466  | 2.24E-40    | 2.12E-38   | 408      | 408      |
| 13  | C1orf212     | -0.59384  | 3.05E-40    | 2.83E-38   | 408      | 408      |
| 14  | NAA10        | -0.58779  | 2.86E-39    | 2.42E-37   | 408      | 408      |
| 15  | GUK1         | -0.5872   | 3.55E-39    | 2.98E-37   | 408      | 408      |
| 16  | LOC541471    | -0.58705  | 3.75E-39    | 3.13E-37   | 408      | 408      |
| 17  | BRMS1        | -0.58684  | 4.05E-39    | 3.36E-37   | 408      | 408      |
| 18  | CCDC85B      | -0.58508  | 7.68E-39    | 6.21E-37   | 408      | 408      |
| 19  | EDF1         | -0.58428  | 1.02E-38    | 8.22E-37   | 408      | 408      |
| 20  | DRAP1        | -0.58403  | 1.12E-38    | 8.98E-37   | 408      | 408      |
| 21  | PSMB3        | -0.5813   | 3.00E-38    | 2.28E-36   | 408      | 408      |
| 22  | PSMD13       | -0.58042  | 4.11E-38    | 3.09E-36   | 408      | 408      |
| 23  | MRPL14       | -0.57993  | 4.89E-38    | 3.62E-36   | 408      | 408      |
| 24  | MYL6         | -0.57916  | 6.45E-38    | 4.74E-36   | 408      | 408      |
| 25  | POLR2L       | -0.57579  | 2.12E-37    | 1.47E-35   | 408      | 408      |
| 26  | SNF8         | -0.57375  | 4.33E-37    | 2.96E-35   | 408      | 408      |
| 27  | CLIC1        | -0.57339  | 4.91E-37    | 3.33E-35   | 408      | 408      |
| 28  | PSMB6        | -0.57339  | 4.92E-37    | 3.33E-35   | 408      | 408      |
| 29  | DPM2         | -0.57085  | 1.18E-36    | 7.81E-35   | 408      | 408      |
| 30  | RNASEK       | -0.57047  | 1.35E-36    | 8.88E-35   | 408      | 408      |
| 31  | ORAI1        | -0.57039  | 1.39E-36    | 9.10E-35   | 408      | 408      |
| 32  | SSSCA1       | -0.56773  | 3.47E-36    | 2.21E-34   | 408      | 408      |
| 33  | NUDC         | -0.56509  | 8.50E-36    | 5.26E-34   | 408      | 408      |
| 34  | RHOG         | -0.56358  | 1.41E-35    | 8.64E-34   | 408      | 408      |
| 35  | C12orf44     | -0.56282  | 1.83E-35    | 1.11E-33   | 408      | 408      |
| 36  | MED27        | -0.55808  | 8.90E-35    | 5.08E-33   | 408      | 408      |
| 37  | MRPS24       | -0.55754  | 1.06E-34    | 5.99E-33   | 408      | 408      |
| 38  | YIF1A        | -0.55694  | 1.29E-34    | 7.19E-33   | 408      | 408      |
| 39  | METTL11A     | -0.55583  | 1.87E-34    | 1.02E-32   | 408      | 408      |
| 40  | FAM176B      | -0.55518  | 2.31E-34    | 1.26E-32   | 408      | 408      |
| 41  | PSMC1        | -0.55472  | 2.68E-34    | 1.45E-32   | 408      | 408      |
| 42  | AURKAIP1     | -0.55419  | 3.19E-34    | 1.71E-32   | 408      | 408      |
| 43  | ARL2         | -0.55193  | 6.67E-34    | 3.52E-32   | 408      | 408      |
|   | Gene   | P-value | q-value | Log2 FC | Count | N1 | N2 |
|---|--------|---------|---------|---------|-------|----|----|
| 44| PSMB1  | -0.55185| 6.83E-34| 3.59E-32| 408   | 408|
| 45| PTRH1  | -0.55159| 7.44E-34| 3.88E-32| 408   | 408|
| 46| CSNK2B | -0.55129| 8.18E-34| 4.25E-32| 408   | 408|
| 47| RHOC   | -0.54884| 1.80E-33| 9.21E-32| 408   | 408|
| 48| C9orf89| -0.54758| 2.69E-33| 1.36E-31| 408   | 408|
| 49| CLTA   | -0.54696| 3.28E-33| 1.63E-31| 408   | 408|
| 50| MRPL17 | -0.54665| 3.63E-33| 1.79E-31| 408   | 408|

ZNF139/ZKSCAN1, zinc finger with KRAB and SCAN domains 1; BC, bladder cancer.