

## LncRNA profiles in paired doxorubicin-resistant and sensitive osteosarcoma cell line

**Table S1.** HOX cluster profiling

| Probe Name    | type           | Seq. name       | Gene Symbol | product   |
|---------------|----------------|-----------------|-------------|---|
| ASHGA5P021981 | protein_coding | NM_014212       | HOXC11      | homeobox protein Hox-C11  |
| ASHGA5P033182 | protein_coding | ENST00000460041 | HOXB-AS3    | HOXB cluster antisense RNA 3 (non-protein coding) [Source: HGNC Symbol; Acc: 40283] |
| ASHGA5P053003 | protein_coding | NM_006735       | HOXA2       | homeobox protein Hox-A2   |
| ASHGA5P005899 | protein_coding | NM_024017       | HOXB9       | homeobox protein Hox-B9   |
| ASHGA5P032505 | protein_coding | NM_024015       | HOXB4       | homeobox protein Hox-B4   |
| ASHGA5P053007 | protein_coding | NM_152739       | HOXA9       | homeobox protein Hox-A9   |
| ASHGA5P036264 | protein_coding | NM_002148       | HOXD10      | homeobox protein Hox-D10  |
| ASHGA5P053006 | protein_coding | NM_006896       | HOXA7       | homeobox protein Hox-A7   |
| ASHGA5P036265 | protein_coding | NM_014213       | HOXD9       | homeobox protein Hox-D9   |
| ASHGA5P032508 | protein_coding | NM_032391       | PRAC        | small nuclear protein PRAC  |
| ASHGA5P032507 | protein_coding | NM_004502       | HOXB7       | homeobox protein Hox-B7   |
| ASHGA5P036262 | protein_coding | NM_021192       | HOXD11      | homeobox protein Hox-D11  |
| ASHGA5P042956 | protein_coding | NM_024014       | HOXA6       | homeobox protein Hox-A6   |
| ASHGA5P019589 | protein_coding | ENST00000576860 | AC103702.1  |   |
| ASHGA5P001267 | protein_coding | NM_018952       | HOXB6       | homeobox protein Hox-B6   |
| ASHGA5P055442 | protein_coding | NM_153693       | HOXC6       | homeobox protein Hox-C6 isoform 2   |
| ASHGA5P042958 | protein_coding | NM_005523       | HOXA11      | homeobox protein Hox-A11  |
| ASHGA5P053002 | protein_coding | NM_005522       | HOXA1       | homeobox protein Hox-A1 isoform a   |
| ASHGA5P032504 | protein_coding | NM_002145       | HOXB2       | homeobox protein Hox-B2   |
| ASHGA5P049731 | protein_coding | ENST00000239144 | HOXB8       | homeobox B8 [Source: HGNC Symbol; Acc: 5119]  |
| ASHGA5P032509 | protein_coding | NM_006361       | HOXB13      | homeobox protein Hox-B13  |
| ASHGA5P028031 | protein_coding | NM_173860       | HOXC12      | homeobox protein Hox-C12  |
| ASHGA5P028036 | protein_coding | NM_004503       | HOXC6       | homeobox protein Hox-C6 isoform 1   |
| ASHGA5P028034 | protein_coding | NM_022658       | HOXC8       | homeobox protein Hox-C8   |
| ASHGA5P032506 | protein_coding | NM_002147       | HOXB5       | homeobox protein Hox-B5   |
| ASHGA5P028032 | protein_coding | NM_017409       | HOXC10      | homeobox protein Hox-C10  |
| ASHGA5P042953 | protein_coding | NM_002141       | HOXA4       | homeobox protein Hox-A4   |
| ASHGA5P049726 | protein_coding | NM_002146       | HOXB3       | homeobox protein Hox-B3   |
| ASHGA5P013303 | protein_coding | NM_000523       | HOXD13      | homeobox protein Hox-D13  |
| ASHGA5P053009 | protein_coding | NM_018951       | HOXA10      | homeobox protein Hox-A10  |
| ASHGA5P019040 | protein_coding | ENST00000465846 | HOXB-AS3    | HOXB cluster antisense RNA 3 (non-protein coding) [Source: HGNC Symbol; Acc: 40283] |
| ASHGA5P050709 | protein_coding | ENST00000313173 | HOXD8       | homeobox D8 [Source: HGNC Symbol; Acc: 5139]  |
| ASHGA5P028037 | protein_coding | NM_018953       | HOXC5       | homeobox protein Hox-C5   |
| ASHGA5P009527 | protein_coding | NM_153620       | HOXA1       | homeobox protein Hox-A1 isoform b   |
| ASHGA5P020626 | noncoding      | ENST00000517723 | HOXA11-AS   |   |
| ASHGA5P022105 | noncoding      | ENST00000549329 | HOXD-AS1    |   |
| ASHGA5P027320 | noncoding      | ENST00000513533 | HOXC-AS2    |   |

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|               |           |                 |               |
|---------------|-----------|-----------------|---------------|
| ASHGA5P053008 | noncoding | ENST00000523790 | HOXA-AS4      |
| ASHGA5P043567 | noncoding | ENST00000521159 | HOXA-AS2      |
| ASHGA5P018465 | noncoding | ENST00000453875 | HOTAIR        |
| ASHGA5P035444 | noncoding | uc002ukl.1      | AX747372      |
| ASHGA5P027317 | noncoding | ENST00000512916 | HOXC-AS5      |
| ASHGA5P014844 | noncoding | NR_033979       | HOXD-AS1      |
| ASHGA5P015699 | noncoding | NR_024103       | HOXB-AS5      |
| ASHGA5P043571 | noncoding | ENST00000519694 | HOXA-AS4      |
| ASHGA5P015895 | noncoding | NR_047517       | HOTAIR        |
| ASHGA5P023235 | noncoding | ENST00000575202 | CTD-2377D24.8 |
| ASHGA5P053004 | noncoding | ENST00000517635 | HOXA-AS2      |
| ASHGA5P020372 | noncoding | ENST00000512427 | HOXC-AS1      |
| ASHGA5P055441 | noncoding | ENST00000509870 | HOXC-AS3      |
| ASHGA5P048470 | noncoding | TCONS_00013751  | XLOC_006390   |
| ASHGA5P027319 | noncoding | ENST00000567780 | HOXC-AS3      |
| ASHGA5P053012 | noncoding | NR_002795       | HOXA11-AS     |
| ASHGA5P049725 | noncoding | ENST00000504972 | HOXB-AS1      |
| ASHGA5P033186 | noncoding | ENST00000478824 | CTD-2377D24.6 |
| ASHGA5P015972 | noncoding | ENST00000425358 | HOTAIRM1      |
| ASHGA5P043566 | noncoding | ENST00000517641 | HOXA-AS2      |
| ASHGA5P015897 | noncoding | uc009zne.3      | HOTAIR        |
| ASHGA5P022204 | noncoding | ENST00000552156 | HOXD-AS1      |
| ASHGA5P019948 | noncoding | ENST00000505700 | HOXC-AS1      |
| ASHGA5P043570 | noncoding | ENST00000524304 | HOXA-AS3      |
| ASHGA5P015991 | noncoding | ENST00000425595 | HOTAIR        |
| ASHGA5P035445 | noncoding | NR_038435       | HOXD-AS2      |
| ASHGA5P043574 | noncoding | ENST00000520395 | HOXA11-AS     |
| ASHGA5P020493 | noncoding | ENST00000514702 | HOXC-AS3      |
| ASHGA5P050711 | noncoding | ENST00000447538 | HOXD-AS1      |
| ASHGA5P019075 | noncoding | NR_033201       | HOXB-AS3      |
| ASHGA5P036267 | noncoding | ENST00000426615 | AC009336.24   |
| ASHGA5P053010 | noncoding | ENST00000522863 | HOXA11-AS     |
| ASHGA5P016594 | noncoding | ENST00000432056 | HOXB-AS5      |
| ASHGA5P050710 | noncoding | uc002uku.3      | LOC401022     |
| ASHGA5P043576 | noncoding | uc022aat.1      | AF071167      |
| ASHGA5P018724 | noncoding | ENST00000456876 | HOXD-AS1      |
| ASHGA5P020414 | noncoding | ENST00000513165 | HOXC-AS3      |
| ASHGA5P042959 | noncoding | ENST00000523331 | RP1-170019.14 |
| ASHGA5P022004 | noncoding | ENST00000546798 | HOXD-AS1      |

## LncRNA profiles in paired doxorubicin-resistant and sensitive osteosarcoma cell line

|               |           |                 |             |
|---------------|-----------|-----------------|-------------|
| ASHGA5P033178 | noncoding | ENST00000435312 | HOXB-AS1    |
| ASHGA5P020875 | noncoding | ENST00000521231 | HOXA-AS3    |
| ASHGA5P028035 | noncoding | ENST00000562848 | AC012531.25 |
| ASHGA5P016768 | noncoding | NR_038367       | HOTAIRM1    |
| ASHGA5P019549 | noncoding | ENST00000491264 | HOXB-AS3    |
| ASHGA5P016351 | noncoding | NR_038366       | HOTAIRM1    |
| ASHGA5P043573 | noncoding | ENST00000519935 | HOXA-AS4    |
| ASHGA5P050712 | noncoding | ENST00000417086 | HOXD-AS1    |
| ASHGA5P015937 | noncoding | ENST00000425005 | HOXD-AS1    |
| ASHGA5P033181 | noncoding | ENST00000466037 | HOXB-AS3    |
| ASHGA5P043562 | noncoding | ENST00000428939 | HOTAIRM1    |
| ASHGA5P053005 | noncoding | uc003syl.3      | BC035889    |
| ASHGA5P019766 | noncoding | ENST00000502764 | HOXB-AS1    |
| ASHGA5P049728 | noncoding | ENST00000476204 | HOXB-AS3    |

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## LncRNA profiles in paired doxorubicin-resistant and sensitive osteosarcoma cell line

**Table S2.** The 31 pathways that corresponded to under-regulated transcripts

| Pathway ID | Definition   | Fisher-P value | FDR       | Enrichment_Score |
|------------|--|----------------|-----------|------------------|
| hsa00480   | Glutathione metabolism-Homo sapiens (human)                        | 0.001081854    | 0.2988957 | 2.965831         |
| hsa04151   | PI3K-Akt signaling pathway-Homo sapiens (human)                    | 0.003193819    | 0.2988957 | 2.49569          |
| hsa04512   | ECM-receptor interaction-Homo sapiens (human)                      | 0.004178322    | 0.2988957 | 2.378998         |
| hsa03320   | PPAR signaling pathway-Homo sapiens (human)                        | 0.004496584    | 0.2988957 | 2.347117         |
| hsa00120   | Primary bile acid biosynthesis-Homo sapiens (human)                | 0.00655458     | 0.2988957 | 2.183455         |
| hsa00980   | Metabolism of xenobiotics by cytochrome P450-Homo sapiens (human)  | 0.007978069    | 0.2988957 | 2.098102         |
| hsa04270   | Vascular smooth muscle contraction-Homo sapiens (human)            | 0.008055417    | 0.2988957 | 2.093912         |
| hsa05205   | Proteoglycans in cancer-Homo sapiens (human)                       | 0.008859225    | 0.2988957 | 2.052604         |
| hsa04672   | Intestinal immune network for IgA production-Homo sapiens (human)  | 0.01051194     | 0.2988957 | 1.978317         |
| hsa00982   | Drug metabolism-cytochrome P450-Homo sapiens (human)               | 0.01105685     | 0.2988957 | 1.956369         |
| hsa04978   | Mineral absorption-Homo sapiens (human)                            | 0.01194941     | 0.2988957 | 1.922654         |
| hsa04974   | Protein digestion and absorption-Homo sapiens (human)              | 0.01276423     | 0.2988957 | 1.894005         |
| hsa04015   | Rap1 signaling pathway-Homo sapiens (human)                        | 0.01498147     | 0.3238302 | 1.824446         |
| hsa01040   | Biosynthesis of unsaturated fatty acids-Homo sapiens (human)       | 0.01683499     | 0.3379022 | 1.773787         |
| hsa05323   | Rheumatoid arthritis-Homo sapiens (human)                          | 0.01810872     | 0.3392366 | 1.742112         |
| hsa00604   | Glycosphingolipid biosynthesis-ganglio series-Homo sapiens (human) | 0.02144133     | 0.3765634 | 1.668748         |
| hsa05322   | Systemic lupus erythematosus-Homo sapiens (human)                  | 0.02519406     | 0.3824459 | 1.598702         |
| hsa05034   | Alcoholism-Homo sapiens (human)                                    | 0.02596149     | 0.3824459 | 1.58567          |
| hsa00380   | Tryptophan metabolism-Homo sapiens (human)                         | 0.02646644     | 0.3824459 | 1.577304         |
| hsa00640   | Propanoate metabolism-Homo sapiens (human)                         | 0.02849546     | 0.3824459 | 1.545224         |
| hsa00730   | Thiamine metabolism-Homo sapiens (human)                           | 0.03003075     | 0.3824459 | 1.522434         |
| hsa05146   | Amoebiasis-Homo sapiens (human)                                    | 0.03085572     | 0.3824459 | 1.510664         |
| hsa04510   | Focal adhesion-Homo sapiens (human)                                | 0.03218423     | 0.3824459 | 1.492357         |
| hsa05204   | Chemical carcinogenesis-Homo sapiens (human)                       | 0.03393482     | 0.3824459 | 1.469354         |
| hsa05416   | Viral myocarditis-Homo sapiens (human)                             | 0.03535065     | 0.3824459 | 1.451603         |
| hsa05218   | Melanoma-Homo sapiens (human)                                      | 0.03639635     | 0.3824459 | 1.438942         |
| hsa04146   | Peroxisome-Homo sapiens (human)                                    | 0.03674747     | 0.3824459 | 1.434773         |
| hsa00360   | Phenylalanine metabolism-Homo sapiens (human)                      | 0.04027689     | 0.4042073 | 1.394944         |
| hsa05161   | Hepatitis B-Homo sapiens (human)                                   | 0.04294515     | 0.4161237 | 1.367086         |
| hsa04810   | Regulation of actin cytoskeleton-Homo sapiens (human)              | 0.04878714     | 0.4498575 | 1.311695         |
| hsa05410   | Hypertrophic cardiomyopathy (HCM)-Homo sapiens (human)             | 0.04962841     | 0.4498575 | 1.30427          |

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**Table S3.** The 25 pathways that corresponded to over-regulated transcripts

| Pathway ID | Definition  | Fisher-P value | FDR        | Enrichment_Score |
|------------|---|----------------|------------|------------------|
| hsa05202   | Transcriptional misregulation in cancer-Homo sapiens (human)                    | 6.82879E-05    | 0.01918891 | 4.165656         |
| hsa04064   | NF-kappa B signaling pathway-Homo sapiens (human)                               | 0.001120459    | 0.1574246  | 2.950604         |
| hsa05132   | Salmonella infection-Homo sapiens (human)                                       | 0.001836438    | 0.172013   | 2.736024         |
| hsa05134   | Legionellosis-Homo sapiens (human)  | 0.003541405    | 0.1795156  | 2.450824         |
| hsa00500   | Starch and sucrose metabolism-Homo sapiens (human)                              | 0.004056035    | 0.1795156  | 2.391898         |
| hsa04621   | NOD-like receptor signaling pathway-Homo sapiens (human)                        | 0.004628008    | 0.1795156  | 2.334606         |
| hsa05200   | Pathways in cancer-Homo sapiens (human)   | 0.004709438    | 0.1795156  | 2.327031         |
| hsa04210   | Apoptosis-Homo sapiens (human)  | 0.005110765    | 0.1795156  | 2.291514         |
| hsa04668   | TNF signaling pathway-Homo sapiens (human)                                      | 0.007308707    | 0.2281941  | 2.136159         |
| hsa05323   | Rheumatoid arthritis-Homo sapiens (human)                                       | 0.009042837    | 0.2541037  | 2.043695         |
| hsa03440   | Homologous recombination-Homo sapiens (human)                                   | 0.01005647     | 0.2568971  | 1.997554         |
| hsa00780   | Biotin metabolism-Homo sapiens (human)  | 0.01326363     | 0.3053296  | 1.877338         |
| hsa00410   | beta-Alanine metabolism-Homo sapiens (human)                                    | 0.01412557     | 0.3053296  | 1.849994         |
| hsa04530   | Tight junction-Homo sapiens (human)   | 0.01934797     | 0.3883413  | 1.713365         |
| hsa04010   | MAPK signaling pathway-Homo sapiens (human)                                     | 0.02657269     | 0.4977951  | 1.575564         |
| hsa05222   | Small cell lung cancer-Homo sapiens (human)                                     | 0.03079572     | 0.508126   | 1.51151          |
| hsa04062   | Chemokine signaling pathway-Homo sapiens (human)                                | 0.03195033     | 0.508126   | 1.495525         |
| hsa00983   | Drug metabolism-other enzymes-Homo sapiens (human)                              | 0.03447574     | 0.508126   | 1.462486         |
| hsa05034   | Alcoholism-Homo sapiens (human)   | 0.03674111     | 0.508126   | 1.434848         |
| hsa00230   | Purine metabolism-Homo sapiens (human)  | 0.03830597     | 0.508126   | 1.416734         |
| hsa05120   | Epithelial cell signaling in Helicobacter pylori infection-Homo sapiens (human) | 0.0398969      | 0.508126   | 1.399061         |
| hsa00260   | Glycine, serine and threonine metabolism-Homo sapiens (human)                   | 0.04159039     | 0.508126   | 1.381007         |
| hsa05219   | Bladder cancer-Homo sapiens (human)   | 0.04159039     | 0.508126   | 1.381007         |
| hsa04622   | RIG-I-like receptor signaling pathway-Homo sapiens (human)                      | 0.04677067     | 0.5476066  | 1.330026         |
| hsa05142   | Chagas disease (American trypanosomiasis)-Homo sapiens (human)                  | 0.04942994     | 0.5555925  | 1.30601          |