Data Article

Data on the expression of cellular IncRNAs in human adenovirus infected cells

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ABSTRACT

Expression of cellular long non-coding RNAs (IncRNAs) in human primary lung fibroblasts (IMR-90) during the course of adenovirus type 2 (Ad2) infection was studied by strand-specific whole transcriptome sequencing. In total, 645 cellular IncRNAs were expressed at a significant level and 398 of them were changed more than 2-fold. The changes in expression followed a distinct temporal pattern. Significantly, 80% of the changes occurred at the late phase and 80% of the de-regulated IncRNAs were up-regulated. The three largest groups of deregulated IncRNAs were 125 antisense RNAs, 111 pseudogenes and 85 long intergenic non-coding RNAs (lincRNAs). Lastly, more than 36% of IncRNAs have been shown to interact with RNA binding proteins.

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Specifications Table

| Subject area | Biology |
|--------------|---------|
| More specific subject area | Gene expression |
| Type of data | Tables |
| How data was acquired | LncRNA expression was measured by paired-end cDNA sequencing using an Illumina HiSeq 2000 sequencer. |
| Data format | Filtered, processed |
| Experimental factors | Human primary lung fibroblast cells were infected with Ad2 and RNA was extracted after 6, 12, 24, and 36 h. Uninfected cells were used as control. |
| Experimental features | Differentially expressed IncRNAs required that their expression level was more than 10 FPKM (Fragments per Kilobase of exon per Million fragments mapped) and that the minimal change was 2-fold |
| Data source location | Uppsala university, Sweden |
| Data accessibility | Data is presented within this article |

Value of the data

- Provide unique insights into the changes in IncRNA expression in human primary lung fibroblasts during an adenovirus infection.
- Provide a valuable and unique resource for studies of IncRNAs expression and regulation.
- Provide unique insights in the regulation of cellular gene expression mediated by IncRNAs.
- Provide clues to our understanding of IncRNA biological function.
- Since the effect of adenovirus on host cells in the early phase mimics tumorigenesis by promoting cell growth and inhibiting apoptosis, our data are applicable to cancer research.

1. Data

Using pair-end sequencing, 398 cellular IncRNAs were identified as differentially expressed more than 2-fold in IMR-90 cells during the course of Ad2 infection. According to GENCODE, 125 are antisense RNAs, 111 are pseudogenes and 85 are long intergenic non-coding RNAs (lincRNA). Based on their expression profiles, these IncRNAs fell into 10 major clusters. The list of differentially expressed IncRNAs, sequencing reads, fold change, biotypes, expression cluster as well as their lengths and location on the genome are included in Table S1. Among differentially expressed IncRNAs, 149 IncRNAs have been shown to interact with RNA binding proteins (RBPs) (Table 1). In total, 33 RBPs proteins have been proved to interact with these IncRNAs. Furthermore, we showed here that 21 and 15 out of 33 RBPs are detected at mRNA and protein level, respectively (Table 2).

2. Experimental design, materials and methods

2.1. Cell culture and Ad2 infection

Human primary lung fibroblast cells (IMR-90) were cultured in a complete Eagle’s minimum essential medium (10% fetal bovine serum, 100 U/ml penicillin and 100 μg/ml streptomycin). After reaching confluence, the cells were cultured for two more days to reach growth synchronization [1]. Cells were mock-infected or infected with Ad2 at a multiplicity of infection (MOI) of 100 fluorescence-
Table 1
LncRNAs interacting with RNA binding proteins.

| Tracking_id         | Locus          | Length       | IncRNA    | Biotype       | No. of Interacted RBP |
|---------------------|----------------|--------------|-----------|---------------|-----------------------|
| ENSG00000188206     | 1:244840637-244846903 | 6267         | HNRNPU-AS1 | antisense     | 31                    |
| ENSG00000255717     | 11:62851987-62855914  | 3928         | SNHG1    | processed_transcript | 31                    |
| ENSG00000260032     | 20:36045621-36050960  | 5340         | LINC00657 | lincRNA       | 31                    |
| ENSG00000229807     | X:73820650-73825735  | 32,104       | XIST     | lincRNA       | 29                    |
| ENSG00000247556     | 15:41283989-41309737  | 25,749       | OIP5-AS1 | processed_transcript | 29                    |
| ENSG00000163597     | 17:76557765-76565348  | 7584         | SNHG16   | processed_transcript | 27                    |
| ENSG00000203875     | 6:85660949-85678736   | 17,788       | SNHG5    | processed_transcript | 27                    |
| ENSG00000242125     | 1:28505979-28510892   | 4914         | SNHG3    | sense_intrinsic | 25                    |
| ENSG00000245532     | 11:65422773-65445540  | 22,768       | NEAT1    | lincRNA       | 25                    |
| ENSG00000245910     | 8:66921683-66923698    | 4716         | SNHG6    | processed_transcript | 24                    |
| ENSG00000245694     | 16:54918862-54921989   | 10,328       | CRNDE    | lincRNA       | 23                    |
| ENSG00000233016     | 9:136721365-136728184  | 6820         | SNHG7    | antisense     | 22                    |
| Tracking_id | Locus | Length | lncRNA | Biotype       | No. of Interacted RBP |
|-------------|-------|--------|--------|---------------|-----------------------|
| ENSG00000259001 | 14:20343047-20343685 | 639 | RPPH1 | antisense     | 20 HuR,PTB,TNRC6,ef4AIII,DGCR8,FMRP,FXR2,FUS,LIN28A,LIN28B,ALKBH5, C17orf85,C2orf28,CA41IP1,NCAPG,FAT15,TFAP2B,EFIP1,PTBP1,DIP3, |
| ENSG00000232956 | 7:4498322-44986961 | 3940 | SNHG15 | lincRNA       | 20 HuR,ef4AIII,DGCR8,FMRP,FXR2,FUS,LIN28A,LIN28B,CA41IP1,NCAPG,FAT15, NCAPG,FAT15,PTBP1,PTBP1,DIP3, |
| ENSG00000231607 | 13:4998255-50125720 | 143,170 | DLEU2 | antisense     | 19 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,ELF28F1,FMRP,FXR2,FUS,LIN28A,LIN28B, |
| ENSG00000269893 | 4:118278708-118279823 | 1116 | SNHG8 | lincRNA       | 19 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,ELF28F1,FMRP,FXR2,FUS,LIN28A,LIN28B, |
| ENSG00000258441 | 14:21200078-21206900 | 6823 | LINC00641 | processed_transcript | 19 PTB,IGF2BP1,IGF2BP2,IGF2BP3,ef4AIII,DGCR8,FMRP,FXR2,FUS,LIN28B, |
| ENSG00000243960 | 1:111438637-11441364 | 2728 | RP11-552M11.4 | sense_overlapping | 19 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000215417 | 13:91347819-91354579 | 6761 | MIR17HG | processed_transcript | 18 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000197989 | 1:2857837-28582983 | 4447 | SNHG12 | antisense     | 18 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000226950 | 4:52712403-52720351 | 7949 | DANC4 | processed_transcript | 18 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000177410 | 20:49278177-49295738 | 17,562 | ZFAS1 | antisense     | 18 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000276232 | 12:6510274-6510522 | 249 | SCARNA10 | sense_intrinsic | 18 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000170846 | 4:6673450-6676047 | 2598 | AC093323.3 | lincRNA       | 17 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000179818 | 2:6996226-70088846 | 126,585 | PCBP1-A51 | antisense     | 16 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000267575 | 19:27793462-27981863 | 125,402 | CTC-459F4.3 | processed_transcript | 16 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000270066 | 1:109100192-109100619 | 428 | SCARNA2 | lincRNA       | 15 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000251022 | 4:82893008-82900960 | 7953 | THAP9-A51 | antisense     | 15 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000261553 | 13:75549772-75807120 | 257,349 | RP11-29G8.3 | processed_transcript | 15 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000254911 | 11:93721512-93721865 | 354 | SCARNA9 | antisense     | 14 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| ENSG00000260035 | 19:45200324-45200632 | 309 | CTD-2651B20.6 | sense_intrinsic | 14 TIAL1,hnRNPC,IGF2BP3,FUS,FUS-mutant,U2AF65,PTBP1,PTBP1,PTBP1,DIP3, |
| Gene ID       | Chromosome | Start Base Pair | End Base Pair | Type         | Expression Factors | Functions                                                                 |
|--------------|------------|----------------|---------------|--------------|-------------------|---------------------------------------------------------------------------|
| ENSG00000230590 | X:73963954-74293574 | 329,621 FTX lincRNA | 14 | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, DGR8, FUS, ZC3H7B, SFR51, U2AF65, TIA1, TIAL1, hnRNPC, UPF1, TDP43, |
| ENSG00000126005 | 20:35216461-35278131 | 61,671 MMP24-AS1 antisense | 13 | HuR, IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, DGR8, FMRP, FUS, LIN28A, ZC3H7B, U2AF65, TIA1, UPF1, |
| ENSG00000267321 | 17:35568119-35574792 | 6674 RP11-1004M14.11 lincRNA | 13 | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, FRMR, FUS, LIN28A, LIN28B, ZC3H7B, FUS-mutant, TAF15, U2AF65, UPF1, |
| ENSG00000226688 | 10:95753205-96090238 | 337,034 ENTPD1-AS1 antisense | 12 | HuR, RTB, eIF4AIII, DGR8, FUS, LIN28B, EWSR1, U2AF65, TIA1, TIAL1, hnRNPC, UPF1, |
| ENSG00000264112 | 17:35568119-35574792 | 5813 RP11-159D12.2 lincRNA | 12 | HuR, RTB, IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, DGR8, FUS, ZC3H7B, TAF15, U2AF65, hnRNPC, |
| ENSG00000233429 | 7:27095646-27100265 | 4620 HOTAIRM1 antisense | 12 | PTB, IGF2BP1, eIF4AIII, DGR8, FUS, LIN28A, CAPRIN1, SFRS1, U2AF65, TIA1, hnRNPC, UPF1, |
| ENSG000002323427 | 17:5111467-5115004 | 3538 ACO12146.7 processed_transcript | 12 | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, DGR8, LIN28B, EWSR1, FUS-mutant, TAF15, SFRS1, U2AF65, TIA1, |
| ENSG00000223546 | X:102769160-102885406 | 116,247 LINC00630 lincRNA | 11 | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, DGR8, FMRP, FUS, LIN28B, U2AF65, TIA1, hnRNPC, UPF1, |
| ENSG00000186594 | 17:1711492-1717174 | 5863 MIR220G lincRNA | 11 | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, DGR8, FUS, LIN28B, ZC3H7B, U2AF65, UPF1, |
| ENSG00000247828 | 5:88268894-88436685 | 167,792 TMEM161B-AS1 antisense | 10 | PTB, IGF2BP3, eIF4AIII, DGR8, FUS, SFR51, U2AF65, TIA1, hnRNPC, UPF1, |
| ENSG00000247092 | 14:95532296-95534872 | 2577 SNHG10 antisense | 10 | U2AF65, hnRNPC, FUS, LIN28B, U2AF65, IGF2BP1, TIA1, TIAL1, hnRNPC, UPF1, |
| ENSG00000142396 | 19:58305318-58315663 | 10,346 ERVK3-1 processed_transcript | 10 | PTB, eIF4AIII, DGR8, FMRP, FUS, LIN28A, LIN28B, U2AF65, TIA1, UPF1, |
| ENSG00000261889 | 16:3156735-3157483 | 749 RP11-473M20.16 lincRNA | 10 | eIF4AIII, DGR8, FMRP, FXR2, LIN28A, LIN28B, EWSR1, TIA1, TIAL1, UPF1, |
| ENSG00000196295 | 7:30513608-30594809 | 78,502 AC005154.6 processed_transcript | 10 | PTB, eIF4AIII, DGR8, FUS, LIN28B, EWSR1, U2AF65, TIA1, hnRNPC, UPF1, |
| ENSG00000261061 | 16:81030679-81031485 | 717 RP11-303E16.2 sense_intronic | 10 | HuR, PTB, IGF2BP1, IGF2BP2, IGF2BP3, TNRC6, eIF4AIII, DGR8, U2AF65, UPF1, |
| ENSG00000255198 | 16:1964958-1965509 | 552 SNHG9 lincRNA | 9 | CAPRIN1, U2AF65, FUS, HuR, DGR8, FMRP, UPF1, eIF4AIII, C22orf28, |
| ENSG00000231312 | 2:39436636-39665343 | 228,708 AC007246.3 antisense | 9 | PTB, eIF4AIII, DGR8, FUS, U2AF65, TIA1, TIAL1, UPF1, TDP43, |
| ENSG00000258297 | 11:66666035-6668374 | 2340 RP11-658F2.8 antisense | 8 | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, FUS, ZC3H7B, U2AF65, UPF1, |
| ENSG00000234608 | 12:111839763-111842902 | 3140 MAPKAPK3-AS1 lincRNA | 8 | IGF2BP1, IGF2BP3, eIF4AIII, FMRP, FUS, LIN28A, U2AF65, UPF1, |
| ENSG00000230844 | X:46545492-46548408 | 2917 ZNF674-AS1 lincRNA | 8 | HuR, PTB, eIF4AIII, FMRP, LIN28B, U2AF65, hnRNPC, UPF1, |
| ENSG00000258486 | 14:49586578-49586878 | 301 RN7SL1 known_ncrna | 8 | DGR8, FMRP, FXR2, LIN28A, LIN28B, MOV10, hnRNPC, TDP43, |
| ENSG00000228549 | 1:16870944-16874092 | 3149 RP11-108M9.3 lincRNA | 8 | PTB, DGR8, LIN28A, U2AF65, TIA1, TIAL1, hnRNPC, UPF1, |
| Tracking_id | Locus               | Length   | lncRNA  | Biotype            | No. of Interacted RBP | RBP                                                                 |
|------------|---------------------|----------|---------|--------------------|-----------------------|----------------------------------------------------------------------|
| ENSG00000224078 | 15:24978582-25056565 | 77,984  | SNHG14  | processed_transcript | 8                     | PTB, eIF4AIIIDGCR8, FUS, LIN28, TIAL1, UPF1, TDP43,                  |
| ENSG00000229152 | 13:110894638-110899172 | 4535    | ANKR10- | sense_intronic     | 7                     | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, FUS, U2AF65, hnRNPC,          |
| ENSG00000253552 | 7:27107776-27134302  | 26,527   | HOXA-AS2 | antisense          | 7                     | eIF4AIII, DGCR8, FMRP, FUS, U2AF65, UPF1, TDP43,                     |
| ENSG00000240498 | 9:21994777-22121097  | 126,321  | CDKN2B- | antisense          | 7                     | PTB, eIF4AIII, DGCR8, FUS, LIN28A, U2AF65, UPF1,                    |
| ENSG00000261526 | 19:1874870-1876169   | 1300     | CTB-31020.2 | lincRNA            | 7                     | IGF2BP1, eIF4AIII, DGCR8, FMRP, FUS, U2AF65, hnRNPC,               |
| ENSG00000222041 | 2:8745367-87606805   | 151,439  | LINC00152 | lincRNA            | 7                     | PTB, eIF4AIII, FUS, U2AF65, TIAL1, TIAL1, UPF1,                    |
| ENSG00000236088 | 17:13756477-14069495 | 313,019  | COX10-AS1 | processed_transcript | 6                     | PTB, eIF4AIII, U2AF65, TIAL1, hnRNPC, UPF1,                        |
| ENSG00000269825 | 19:52650436-52653284 | 2849     | CTD-3099C6.9 | sense_intronic     | 6                     | PTB, IGF2BP2, eIF4AIII, FMRP, LIN28B, UPF1,                         |
| ENSG00000268388 | 16:86474528-86509099  | 34,572   | FENDRR   | lincRNA            | 6                     | PTB, eIF4AIII, DGCR8, FUS, hnRNPC, UPF1,                           |
| ENSG00000236824 | 2:47331059-47344517   | 13,459   | BCYRN1   | lincRNA            | 6                     | eIF4AIII, FUS, U2AF65, TIAL1, UPF1, TDP43,                         |
| ENSG00000255248 | 11:122028354-122116323 | 87,970   | RP11-166D19.1 | sense_overlapping | 6                     | eIF4AIII, DGCR8, FUS, U2AF65, hnRNPC, UPF1,                        |
| ENSG00000255090 | 11:122155421-122422871 | 267,451  | RP11-820L6.1 | lincRNA            | 6                     | eIF4AIII, U2AF65, TIAL1, hnRNPC, UPF1,                             |
| ENSG00000233461 | 1:231522387-231528556  | 6170     | RP11-295G20.2 | antisense          | 5                     | IGF2BP1, IGF2BP2, IGF2BP3, eIF4AIII, UPF1,                         |
| ENSG00000255135 | 11:76441337-76444656  | 3320     | RP11-111M22.3 | lincRNA            | 5                     | eIF4AIII, LIN28, U2AF65, TIAL1, UPF1,                              |
| ENSG00000261094 | 9:122937622-122940333 | 2712     | RP11-35501.11 | sense_overlapping | 5                     | PTB, eIF4AIII, U2AF65, hnRNPC, UPF1,                              |
| ENSG00000232442 | 20:63627226-63628824  | 1599     | CTD-3184A7.4 | antisense          | 5                     | eIF4AIII, DGCR8, FUS, U2AF65, UPF1,                                |
| ENSG00000233421 | 1:16533885-16536172   | 2288     | RP5-875013.1 | lincRNA            | 5                     | eIF4AIII, DGCR8, FMRP, LIN28, U2AF65,                              |
| ENSG00000214548 | 14:100779409-100861031 | 81,623   | MEG3     | lincRNA            | 5                     | PTB, eIF4AIII, DGCR8, FUS, TDP43,                                 |
| ENSG00000247137 | 11:83184490-83193794   | 9305     | RP11-727A23.5 | processed_transcript | 5                     | eIF4AIII, DGCR8, U2AF65, TIAL1, hnRNPC,                            |
| Gene ID          | Chromosome | Start Location | End Location | Feature        | Length | Associated Proteins                                |
|-----------------|------------|----------------|--------------|----------------|--------|---------------------------------------------------|
| ENSG00000248690 | 8:121639292-121644693 | 5402 | HAS2-AS1 antisense | 4 | PTB, eIF4AIII, FUS, UPF1, |
| ENSG00000237491 | 1:778769-810060 | 31,292 | RP11-206L10.9 lincRNA | 4 | eIF4AIII, FUS, SFRS1, U2AF65, |
| ENSG00000224505 | 17:45150399-45161510 | 11,112 | AC002117.1 antisense | 4 | eIF4AIII, FUS, U2AF65, UPF1, |
| ENSG00000269926 | 10:72274914-72275980 | 1067 | RP11-442H21.2 antisense | 3 | eIF4AIII, DGCR8, UPF1, |
| ENSG00000256813 | 17:48549629-48606414 | 56,786 | HOXB-A53 antisense | 3 | PTB, LIN28A, LIN28B, |
| ENSG00000269243 | 19:16123660-16139892 | 16,233 | CTD-2349P21.9 lincRNA | 3 | eIF4AIII, FUS, UPF1, |
| ENSG00000267008 | 22:46761893-46762563 | 21,851 | RP11-32422.4 antisense | 3 | eIF4AIII, FUS, UPF1, |
| ENSG00000271335 | 10:35314551-35336401 | 2976 | RP11-602.4 antisense | 3 | HuR, eIF4AIII, FUS, |
| ENSG00000261054 | 15:99128831-99131806 | 463 | CTD-2349P21.9 lincRNA | 3 | eIF4AIII, FUS, UPF1, |
| ENSG00000266490 | 17:30792371-30792833 | 803 | RP11-572017.1 lincRNA | 3 | eIF4AIII, FUS, U2AF65, |
| ENSG00000219665 | 19:11987616-12046275 | 58,660 | CTD-2006C1.2 processed_transcript | 3 | IGF2BP1, IGF2BP2, eIF4AIII, |
| ENSG00000223343 | 3:48850484-48899988 | 4941 | RP13-131K19.2 antisense | 3 | eIF4AIII, FUS, UPF1, |
| ENSG00000261220 | 8:133573182-133573861 | 680 | RP11-62901.2 lincRNA | 3 | PTB, eIF4AIII, UPF1, |
| ENSG00000269051 | 19:53197110-53197110 | 13,906 | CTD-2245P17.3 lincRNA | 3 | eIF4AIII, FUS, SFRS1, |
| ENSG00000225511 | 9:92141297-92160114 | 18,818 | LIN00475 antisense | 3 | PTB, eIF4AIII, FUS, |
| ENSG00000245573 | 11:27506837-27698174 | 191,338 | BDNF-AS antisense | 3 | eIF4AIII, FUS, UPF1, |
| ENSG00000224959 | 2:111491942-111494811 | 2870 | AC017002.2 lincRNA | 3 | eIF4AIII, FUS, TIAL1, |
| ENSG00000249669 | 5:149406688-149428678 | 21,991 | MIR143HG lincRNA | 3 | FUS, TIAL1, hnRNPC, |
| ENSG00000230606 | 2:97416164-97433527 | 17,364 | AC159540.1 lincRNA | 3 | eIF4AIII, FUS, |
| ENSG00000258399 | 14:100894769-100935999 | 41,231 | MEG8 lincRNA | 2 | TDP43, FUS, |
| Tracking_id     | Locus                   | Length | IncRNA   | Biotype          | No. of Interacted RBP | RBP                      |
|----------------|-------------------------|--------|----------|------------------|-----------------------|--------------------------|
| ENSG00000256940 | 11:64245963-64248217    | 2255   | RP11-783K16.5 | antisense         | 2                     | eIF4AIII,UPF1,           |
| ENSG00000269604 | 19:4791744-4795559      | 3816   | AC005523.2 | antisense         | 2                     | FUS,UPF1,               |
| ENSG00000267776 | 19:56376703-56377284    | 582    | AC006116.24 | sense_intronic    | 2                     | FUS,EWSR1,              |
| ENSG00000267458 | 19:12944117-12944487    | 371    | CTC-425F1.4 | antisense         | 2                     | FUS,UPF1,               |
| ENSG00000257553 | 12:56104613-56113905    | 9293   | RP11-603J24.17 | antisense       | 2                     | eIF4AIII,UPF1,          |
| ENSG00000238045 | 16:29808635-29821252    | 12,618 | AC009133.12 | antisense         | 2                     | eIF4AIII,U2AF65,         |
| ENSG00000259952 | 16:29806495-29807732    | 1238   | AC009133.15 | antisense         | 2                     | eIF4AIII,LIN28B,         |
| ENSG00000228109 | 3:196999459-19700474     | 5286   | MFI2-AS1   | antisense         | 2                     | eIF4AIII,U2AF65,         |
| ENSG00000261822 | 15:42567030-42569994    | 2965   | RP11-265N6.2 | antisense       | 2                     | eIF4AIII,UPF1,          |
| ENSG00000260934 | 16:19501688-19502286    | 599    | CTA-363E6.7 | antisense         | 2                     | eIF4AIII,FUS,            |
| ENSG00000240801 | 11:2129120-2129964      | 845    | AC132217.4 | 3prime_overlapping_ncrna | 2                     | eIF4AIII,FUS,           |
| ENSG00000227896 | 10:86521944-86525101     | 3158   | RP11-77P6.2 | antisense         | 2                     | eIF4AIII,FUS,           |
| ENSG00000254452 | 11:66276778-66277492    | 715    | RP11-867G23.4 | antisense       | 2                     | FUS,UPF1,               |
| ENSG00000259357 | 1:15096524-150966256     | 1013   | RP11-31GM1.12 | antisense       | 2                     | eIF4AIII,UPF1,          |
| ENSG00000269968 | 12:6537793-6538370      | 578    | RPS-940J5.9 | antisense         | 2                     | eIF4AIII,UPF1,          |
| ENSG00000260923 | 16:90185996-90222678     | 36,683 | AC137934.1 | lincRNA           | 2                     | eIF4AIII,FUS,            |
| ENSG00000269439 | 19:17488989-17511889     | 22,901 | CTD-3131K8.2 | lincRNA          | 2                     | eIF4AIII,FUS,           |
| ENSG00000261602 | 16:69709873-69710583     | 711    | CTD-203A16.1 | antisense         | 2                     | eIF4AIII,UPF1,          |
| ENSG00000234961 | 10:17233324-17234833     | 1510   | RP11-124N14.3 | antisense       | 2                     | FUS,UPF1,               |
| Gene Symbol | Chromosome | Start Position | End Position | Strand | Description | Number of antisense | Other Genes |
|-------------|------------|----------------|--------------|--------|-------------|---------------------|-------------|
| ENSG00000258377 | 14:49620814-49623480 | 2667 | RP11-649E7.5 | antisense | 2 | FUS,UPF1 |
| ENSG00000249786 | 3:15436170-15431602 | 15,433 | EAF1-AS1 | antisense | 2 | eIF4AIII,UPF1 |
| ENSG00000263424 | 18:67506588-67514030 | 7443 | CTD-2541J13.2 | antisense | 2 | DGCR8,UPF1 |
| ENSG00000267257 | 18:58535414-58538552 | 3139 | RP11-1151B14.4 | antisense | 2 | DGCR8,FUS |
| ENSG00000255864 | 12:24213255-2456290 | 349,336 | RP11-444D3.1 | lincRNA | 2 | eIF4AIII,FUS |
| ENSG00000227112 | 6:128505124-128506276 | 1153 | RP1-86D1.4 | antisense | 1 | FUS |
| ENSG00000258908 | 14:20474788-20477089 | 2302 | RP11-203M5.8 | lincRNA | 1 | UPF1 |
| ENSG00000263065 | 16:15741150-15741791 | 642 | AF001548.6 | antisense | 1 | FUS |
| ENSG00000249835 | 5:83541476-83581320 | 39,845 | VCAN-AS1 | antisense | 1 | eIF4AIII |
| ENSG00000268309 | 19:16551772-16552328 | 557 | CTD-3222D19.11 | antisense | 1 | UPF1 |
| ENSG00000236498 | 2:6188431-61886082 | 17,652 | AC107081.5 | antisense | 1 | UPF1 |
| ENSG00000264558 | 17:47682416-47682683 | 268 | RP11-138C9.1 | antisense | 1 | FUS |
| ENSG00000250186 | 17:49404080-49405197 | 1118 | RP11-1079K10.4 | antisense | 1 | UPF1 |
| ENSG00000253174 | 8:4154380-41545044 | 4665 | RP11-360L9.7 | antisense | 1 | UPF1 |
| ENSG00000254682 | 11:71448673-71452157 | 3485 | RP11-660L16.2 | antisense | 1 | U2AF65 |
| ENSG00000234883 | 21:25561908-25575168 | 13,261 | MIR155HG lincRNA | antisense | 1 | PTB |
| ENSG00000267886 | 19:23075200-23100361 | 19,23075200 | CTD-229D10.4 | lincRNA | 1 | DGCR8 |
| ENSG00000269292 | 19:46609276-46610779 | 19,46609276 | CTD-12A17.3 | antisense | 1 | UPF1 |
| ENSG00000268854 | 19:50480118-50483351 | 3234 | CTD-2545M3.2 | antisense | 1 | UPF1 |
| ENSG00000262831 | 17:81843164-81843958 | 795 | RP11-498C9.2 | antisense | 1 | UPF1 |
| ENSG00000267512 | 19:13139616-13141147 | 1532 | CTC-250I14.3 | antisense | 1 | UPF1 |
| ENSG00000203279 | 9:97200474-97238700 | 38,227 | RP11-498P14.5 | lincRNA | 1 | eIF4AIII |
| Tracking_id     | Locus             | Length   | IncRNA   | Biotype   | No. of Interacted RBP | RBP   |
|-----------------|-------------------|----------|----------|-----------|-----------------------|-------|
| ENSG00000232527 | 1:144227029-144250288 | 23,260   | RP11-14N7.2 | lincRNA   | 1                     | eIF4AIII, |
| ENSG00000257181 | 12:68841287-68843237 | 1951     | RP11-611O2.5 | antisense | 1                     | UPF1, |
| ENSG00000236886 | 2:216694463-216994079 | 299,617  | AC007563.5 | antisense | 1                     | FUS,  |
| ENSG00000259627 | 15:63070024-63071911 | 1888     | RP11-244F12.2 | antisense | 1                     | DGCR8,|
| ENSG00000260349 | 16:9105833-9107174 | 1342     | RP11-473I1.5 | antisense | 1                     | UPF1, |
| ENSG00000265784 | 17:38918800-38921769 | 2970     | RP1-56K13.3 | antisense | 1                     | UPF1, |
| ENSG00000261295 | X:100673329-100673981 | 653      | RP11-524D16_A.3 | antisense | 1                     | eIF4AIII, |
| ENSG00000236581 | 13:33271378-33281334 | 9957     | STARD13-A5 | processed_transcript | 1     | eIF4AIII, |
| ENSG00000279753 | 19:1038726-1039064 | 339      | AC011558.5 | TEC       | 1                     | UPF1, |
| ENSG00000259498 | 15:63046033-63049387 | 3355     | RP11-244F12.3 | antisense | 1                     | FUS,  |
| ENSG00000227248 | 13:10778341-107835451 | 47,111   | FAM155A-IT1 | sense_intronic | 1     | FUS,  |
| RBP    | Number of lncRNA interacted with | The list of lncRNAs that interact with RBP                                                                 | RNA seq Reads (FPKM) | Fold change at mRNA level | Fold changes of RBP at protein level |
|--------|----------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------|--------------------------|-------------------------------------|
|        |                                  |                                                                                                                                                          | **Mock**          | **Ad2-6 hpi** | **Ad2-12 hpi** | **Ad2-24 hpi** | **Ad2-36 hpi** | **Ad2-6 hpi/M** | **Ad2-12 hpi/M** | **Ad2-24 hpi/M** | **Ad2-36 hpi/M** |
| elf4AIII | 112                              | NEAT1, DLEU2, SNHG10, SNHG1, SNHG5, SNHG6, SNHG12, XIST, SHG7, MIR17HG, SNHG9, CTD-2033A16.1, RP11-552M11.4, BCYRN1, CTA-3636E6.7, ENTPD1-A51, RP11-32422.4, EAF1-A51, RP11-524D16.2, A3, AC012146.7, RP11-14N7.2, CTD-2349P21.9, AC007246.3, ERVKE-1, RP11-442H21.2, SNHG3, RP11-727A23.5, RP11-166D19.1, AC002117.1, AC017002.2, RP11-603J24.17, RP11-629O1.2, RP11-295G20.2, RP11-44D3.1, HNRNPUS-A51, AC009133.15, RP11-783K16.5, SNORA71A, RP11-111M22.3, CTA-29F11.1, RP11-29G8.3, TMEM161B-A51, CTD-2231E14.8, HAS2-A51, RP11-303E16.2, RP11-820L6.1, SNHG8, CTD-2245F17.3, LINC00641.41, RP11-473M20.16, SNHG15, MIR22HG, FTX, HOXA-A52, SNHG14, AC132217.4, LINC00152, AC093323.3, STARD13-A51, MF12-A51, CRNDE, CTC-459F7.6, LINC00657, MEG3, RP11-602.4, RP11-206L10.9, VCAN-A51, ZFAS1, MMP24-A51, THAP9-A51, RP11-77P6.2, RP5-94059.5, CTD-2651B20.6, RP11-159D12.2, RP11-316M11,2, ANKRD10-FT1, CDKN2B-A51, CTD-3099C6.9, RP11-1094M14.11, RPPH1-A51, RP11-572017.1, CTD-3131K2.8, RP5-875O13.1, RP11-498P14.5, DANC, FENDRR, RP11-355011.1, AC009133.12, RP11-265N2, LINC00630, CTD-3102O2.2, BDNF-A51, CTD-3184A7.4, SCARNA10, SCARNA9, AC159540.1, SCARNA2, HOTAIRM1, ZNF674-A51, OIP5-A51, SNHG16, LINC00475, RP11-658F2.8, RP11-131K19.2, AC137934.1, RN4UATGAC, RN11U1, MAPKAPK3-A51, PCBP1-A51, COX10-A51, AC005154.6, CTD-2006C1.2, SNHG5, NEAT1, SNHG9, SNHG1, MIR17HG, SNHG6, SNHG10, SNHG7, SNHG12, DLEU2, XIST, CTD-3222D19.11, CTD-2033A16.1, RP11-552M11.4, RP11-498E9.2, BCYRN1, CTD-12A173, ENTPD1-A51, RP11-32422.4, EAF1-A51, CTD-2349P21.9, RP11-6102.5, AC007246.3, ERVKE-1, RP11-442H21.2, SNHG3, RP11-473I1.5, RP11-166D19.1, AC002117.1, RP11-804A23.4, RP11-603J24.17, RP11-629O1.2, RP11-295G20.2, RNU6-2, HNRNPUS-A51, RP11-783K16.5, CTD-2545M3.2, SNORA71A, RP11-111M22.3, AC015558.5, RP11-29G8.3, RP11-124N14.3, TMEM161B-A51, CTD-2231E14.8, HAS2-A51, RP11-303E16.2, RP11-820L6.1, SNHG8, RP11-1079K10.4, LINC00641, RP11-473M20.16, SNHG15, MIR22HG, FTX, HOXA-A52, SNHG14, AC093323.3, LINC00152, RP11-56K13.3, CTC-425F1.4, CRNDE, RP11-108M9.3, CTC-459F4.3, LINC00657, RP11-203M5.8, RP11-649E7.5, AC107081.5, ZFAS1, MMP24-A51, THAP9-A51, CTD-2541J13.2, RP11-867G23.4, RP5-94059.5, RP11-360I9.7, CTD-2651B20.6, RP11-316M11,2, CDKN2B-A51, CTD-3099C6.9, CTC-250114.3, RP11-1094M14.11, RPPH1, DANC, FENDRR, RP11-355011.1, RP11-265N2, LINC00630, BDNF-A51, CTD-3184A7.4, SCARNA10, SCARNA9, SCARNA2, HOTAIRM1, ZNF674-A51, OIP5-A51, | 21.5 | 24.3 | 29.2 | 49.7 | 34.6 | 2.3 | 1.6 | 1.3 | 1.6 |
| UPF1   | 104                              |                                                                                                                                                          | 11.6               | 11.8          | 12.9          | 24.5          | 24.1          | 2.1            | 2.1            | 1.5            | 1.9 |

Table 2
RNA and protein expression of RNA binding proteins of lncRNAs identified in this study.
| RBP     | Number of lncRNA interacted with | The list of lncRNAs that interact with RBP | RNA seq Reads (FPKM) | Fold change at mRNA level | Fold-changes of RBP at protein level |
|---------|-------------------------------|---------------------------------|---------------------|--------------------------|---------------------------------|
|         |                               |                                 | Mock                | Ad2-6 hpi                | Ad2-12 hpi                     | Ad2-24 hpi                     | Ad2-36 hpi                     | Ad2-24 hpi/M | Ad2-36 hpi/M | Ad2-24 hpi/M | Ad2-36 hpi/M |
| FUS     | 96                            | SNHG16,RP11-658F2.8,RP13-131K19.2,RNU4ATAC,AC005523.2,RNU11,MAPKAPK5-AS1,PCBP1-AS1,Cox10-AS1,AC005154.6, | 5.3                 | 3.8                      | 5.7                        | 8.4                          | 9.3                          | 1.6          | 1.8          | 1.5          | 1.5          |
|         |                               | SNHG12,DLEU2,SNHG1,MIR17HG,SNHG6,SNHG10,SNHG9,NEAT1,SNHG7,SNHG5,MEG8,XIST,RP11-552MI1.4,BCYRN1,CTA-3636.7,AC007563.5,RP11-138C9.1,ENTPD1-AS1,RP11-32422.4,CBD-2349P19.1,AC007246.3,ERVK3-1,SNHG3,RP11-166DI19.1,RP11-86D1.4,AC00217.1,RP11-804A23.4,AC017002.2,RP11-444D3.1,HRNRNU-AS1,CTA-29F11.1,RP11-29G8.3,RP11-124N14.3,TMEM161B-AS1,CBD-2231E14.8,HAS2-AS1,SNHG8,CBD-2245F17.3,LINC06041,RP11-244F12.3,SNHG15,MIR22HG,FXA,AP001548.6,HOXA-AS2,SNHG14,AC132217.4,AC093323.3,LINC00152,CBD-425F1.4,MIR143HG,CRNDE,CBD-459F4.3,LINC00657,MEG3,RP11-602.4,RP11-649F7.5,FAM155A-IT1,RP11-206L10.9,ZFAS1,MMPP24-AS1,THAP9-AS1,RP11-77P6.2,RP11-867G23.4,RP11-1151B14.4,RP11-159D12.2,ANKRD10-IT1,CDKN2B-AS1,RP11-1094M14.11,RPPH1,RP11-572017.1,CBD-3131K8.2,DCNCR,PEFDR,LINC00630,CTB-31020.2,BDNF-AS,AC006116.24,CBD-3184A7.4,SCARNA10,SCARNA9,AC159540.1,SCARNA2,HOTAIRM1,OIP5-AS1,SNHG16,LU000475,RP11-658F2.8,RP13-131K19.2,AC137934.1,RNU4ATAC,AC005523.2,RNU11,MAPKAPK5-AS1,PCBP1-AS1,AC005154.6, | –                   | –                        | –                      | –                          | –                               | –                               | –                               | –                               | –                               |
| U2AF65  | 72                            | SNHG10,SNHG9,DLEU2,SNHG12,SNHG1,SNHG7,MIR17HG,NEAT1,SNHG5,RP11-552MI1.4,BCYRN1,ENTPD1-AS1,AC012146.7,AC007246.3,ERVK3-1,SNHG3,RP11-727A23.5,RP11-166D19.1,AC00217.1,RNRNU-AS1,RP11-111M22.3,CBD-29F11.1,RP11-29G8.3,TMEM161B-AS1,RP11-303E16.2,RP11-8206L1.5,SNHG8,RP11-666L16.2,LINC00641,SNHG15,MIR22HG,FXA,HOXA-AS2,AC093323.3,LINC00152,MF22-AS1,CRNDE,RP11-108M9.3,CBD-459F4.3,LINC00657,RP11-206L10.9,ZFAS1,MMPP24-AS1,THAP9-AS1,RP11-159D12.2,ANKRD10-IT1,CDKN2B-AS1,RP11-1094M14.11,RPPH1,RP11-572017.1,CBD-3131K8.2,DCNCR,PEFDR,LINC00630,CTB-31020.2,CBD-3184A7.4,SCARNA10,SCARNA9,HOTAIRM1,ZNF674-AS1,OIP5-AS1,SNHG16,RP11-658F2.8,RNU4ATAC,RNU11,MAPKAPK5-AS1,PCBP1-AS1,Cox10-AS1,AC005154.6, | –                   | –                        | –                      | –                          | –                               | –                               | –                                 | –                               |
| DGC8R   | 64                            | SNHG12,SNHG1,MIR17HG,NEAT1,SNHG9,DLEU2,SNHG7,XIST,SNHG5,SNHG6,SN751L,AC012146.7,AC007246.3,ERVK3-1,RP11-442H21.2,SNHG3,RP11-727A23.5,RP11-166D19.1,RP11-804A23.4,HRNRNU-AS1,SNORA17A,RP11-29G8.3,TMEM161B-AS1,RP11-303E16.2,SNHG8,LINC00641,RP11-473M20.16,SNHG15,MIR22HG,FXA,HOXA-AS2,SNHG14,AC093323.3,RP11-244F12.2,CRNDE,RP11-108M9.3,CBD-459F4.3,LINC00657,MEG3,MMPP24-AS1,THAP9-AS1,CBD-2541J13.2,RP11-1151B14.4,CTD- | 9.4                 | 11.1                      | 10.5                     | 8.9                        | 2.7                          | –                               | –                               | –                               | –                               |
| Gene Name | Value | Value | Value | Value | Value |
|-----------|-------|-------|-------|-------|-------|
| hnRNPC    | 50    | 157.8 | 169.3 | 181.6 | 289.6 |
| FMRP      | 49    | 1.8   | 3     | 1.1   | 1.1   |
| TIAL1     | 48    | 14.8  | 8.7   | 9.1   | 6.3   |
| PTB       | 47    | 13.5  | 12.7  | 1.6   | 1.5   |
| LIN28B    | 39    | 8.3   | 8.2   | 7.9   | 13.5  |
| LIN28A    | 38    | 12.7  | 1.6   | 1.5   | 1.1   |
| IGF2BP1   | 34    | 12.7  | 1.6   | 1.5   | 1.1   |
| RBP          | Number of lncRNA interacted with | The list of lncRNAs that interact with RBP                                                                 | RNA seq Reads (FPKM) | Fold change at mRNA level | Fold-changes of RBP at protein level |
|-------------|----------------------------------|----------------------------------------------------------------------------------------------------------|---------------------|--------------------------|-------------------------------------|
|             |                                  | AS1,LINC00641,RP11-658F2.8,SNHG3,FTX,MAPKAP5-AS1,RP11-159D12.2,AC093323.3,RP11-295G20.2,CTD-2006C1.2,ANKRD10-IT1,SNHG7,DLEU2,SNHG1,SNHG6,NEAT1,SNHG5,XIST,HRNRPU-AS1,RP11-1094M14.11,RP11-552M11.4,DANCR,CRNDE,CTC-459F4.3,LINC00657,RP11-29G8.3,LINC00630,AC012146.7,ZFAS1,RP11-303E16.2,OP5-AS1,SNHG16,LINC00641,RP11-658F2.8,SNHG3,FTX,CTD-2651B20.6,RP11-159D12.2,AC093323.3,RP11-295G20.2,CTD-2006C1.2,ANKRD10-IT1,CTD-309RC6.9,IGF2BP2 | 33 | 19.9 16.9 8.3 9.5 9.8 2.1 2.0 1.2 1.1 |
| IGF2BP3     | 31                               | SNHG1,DLEU2,SNHG7,NEAT1,SNHG6,XIST,SNHG5,HRNRPU-AS1,RP11-1094M14.11,RP11-552M11.4,DANCR,CRNDE,CTC-459F4.3,LINC00657,LINC00630,AC012146.7,TMEM161B-AS1,ZFAS1,RP11-303E16.2,OP5-AS1,MMP24-AS1,SNHG16,LINC00641,RP11-658F2.8,SNHG3,FTX,MAPKAP5-AS1,RP11-159D12.2,AC093323.3,RP11-295G20.2,ANKRD10-IT1 | 28.7 25.7 28.1 17.1 16 | –1.7 1.8 1.1 1.2 |
| ZC3H7B      | 31                               | SNHG6,SNHG1,DLEU2,NEAT1,SNHG7,SNHG10,SNHG5,XIST,MIR17HG,RP11-552M11.4,SNHG3,HRNRPU-AS1,SNHG8,LINC00641,SNHG15,MIR22HG,FTX,RP11-1094M14.11,RP11-552M11.4,DANCR,CRNDE,CTC-459F4.3,LINC00657,LINC00630,AC012146.7,TMEM161B-AS1,ZFAS1,RP11-303E16.2,OP5-AS1,MMP24-AS1,SNHG16,LINC00641,RP11-658F2.8,SNHG3,FTX,MAPKAP5-AS1,RP11-159D12.2,AC093323.3,RP11-295G20.2,ANKRD10-IT1 | 9.7 13.7 10.5 9.1 7.8 | –1.1 –1.2 –1.2 –1.2 |
| TDP43       | 30                               | SNHG12,NEAT1,SNHG1,SNHG6,SNHG5,MEG8,SNHG7,XIST,RP11-552M11.4,BCYRN1,RN75L,AC007246.3,SNHG3,SNHG8,LINC00641,SNHG15,FTX,HOXA-AS2,SNHG14,LINC00657,MEG3,CTD-2651B20.6,RP1PH1,SCARNA10,SCARNA9,SCARNA2,OP5-AS1,SNHG16,RNU11,PCBP1-AS1,SNHG12,NEAT1,SNHG1,SNHG6,SNHG5,MEG8,SNHG7,XIST,RP11-552M11.4,BCYRN1,RN75L,AC007246.3,SNHG3,SNHG8,LINC00641,SNHG15,FTX,HOXA-AS2,SNHG14,LINC00657,MEG3,CTD-2651B20.6,RP1PH1,SCARNA10,SCARNA9,SCARNA2,OP5-AS1,SNHG16,RNU11,PCBP1-AS1 | – – – – – – – – – – – – – – | – – – – – – – – – – – – – – |
| HuR         | 30                               | SNHG1,SNHG6,DLEU2,SNHG9,MIR17HG,SNHG7,SNHG10,SNHG12,SNHG5,XIST,RP11-303E16.2,HRNRPU-AS1,ZFAS1,SNHG8,LINC00641,SNHG15,RP11-552M11.4,DANCR,CRNDE,SNHG3,SNHG15,MIR22HG,ENTPD1-AS1,LINC00657,RP11-29G8.3,RP11-159D12.2,AC093323.3,RP11-602.4,ZFAS1,SNHG1,SNHG6,DLEU2,SNHG9,MIR17HG,SNHG7,SNHG10,SNHG12,SNHG5,XIST,RP11-303E16.2,HRNRPU-AS1,ZFAS1,SNHG8,LINC00641,SNHG15,RP11-552M11.4,DANCR,CRNDE,SNHG3,SNHG15,MIR22HG,ENTPD1-AS1,LINC00657,RP11-29G8.3,RP11-159D12.2,AC093323.3,RP11-602.4,ZFAS1 | – – – – – – – – – – – – – – | – – – – – – – – – – – – – – |
| TIA1        | 29                               | MIR17HG,SNHG1,DLEU2,NEAT1,SNHG6,XIST,RP11-552M11.4,ENTPD1-AS1,AC007246.3,SNHG3,HRNRPU-AS1,RP11-820L6.1,SNHG8,RP11-473M20.16,SNHG15,FTX,AC093323.3,LINC00152,CRNDE,RP11-108M9.3,LINC00657,MMP24-AS1,THAP9-AS1,CTD-2651B20.6,DANCR,OP5-AS1,SNHG16,RNU11,PCBP1-AS1,SNHG12,MIR17HG,SNHG1,DLEU2,NEAT1,SNHG7,SNHG5,XIST,RP11-552M11.4,ENTPD1-AS1,AC007246.3,SNHG3,HRNRPU-AS1,RP11-820L6.1,SNHG8,RP11-473M20.16,SNHG15,FTX,AC093323.3,LINC00152,CRNDE,RP11-108M9.3,LINC00657,MMP24-AS1,THAP9-AS1,CTD-2651B20.6,DANCR,OP5-AS1,SNHG16,RNU11,PCBP1-AS1 | 45.1 31 40.2 34 23.9 | –1.3 –1.9 –1.3 –1.5 |
| EWSR1       | 25                               | SNHG12,MIR17HG,SNHG1,DLEU2,NEAT1,SNHG7,SNHG5,XIST,ENTPD1-AS1,AC012146.7,SNHG3,HRNRPU-AS1,SNHG8,LINC00641,RP11-473M20.16,SNHG15,CRNDE,LINC00657,AC006116.24,SCARNA10,SCARNA9,OP5-AS1,SNHG16,RNU11,AC005154.6,SNHG12,MIR17HG,SNHG1,DLEU2,NEAT1,SNHG7,SNHG5,XIST,RP11-552M11.4,ENTPD1-AS1,AC007246.3,SNHG3,HRNRPU-AS1,RP11-820L6.1,SNHG8,RP11-473M20.16,SNHG15,FTX,AC093323.3,LINC00152,CRNDE,RP11-108M9.3,LINC00657,MMP24-AS1,THAP9-AS1,CTD-2651B20.6,DANCR,OP5-AS1,SNHG16,RNU11,PCBP1-AS1 | 133.3 143.5 118.2 69.6 94.2 | –1.9 –1.4 –1.3 –1.5 |
| Gene   | Fold Change (a) | Expression (b) |
|--------|-----------------|----------------|
| SFRS1  |                 |                |
| LIN28  |                 |                |
| TAF15  |                 |                |
| FXR2   |                 |                |
| C22ORF28 |               |                |
| FUS-mutant |             |                |
| CAPRIN1|                 |                |
| MOV10  |                 |                |
| TNRC6  |                 |                |
| C17ORF85|                |                |
| PUM2   |                 |                |
| ALKBH5 |                 |                |
| QKI    |                 |                |
| FXR1   |                 |                |

(a) Fold change in lncRNA, mRNA or protein expression between adenovirus infected and uninfected cells (mock).

(b) Expression was not detected or low sequencing reads (< 10 FPKM).
forming units (FFU) per cell in serum-free medium. After 1 h adsorption at 37 °C, the medium was replaced with complete medium and incubated at 37 °C. Infected cells were collected at 6, 12, 24, and 36 hours post-infection (hpi). Mock-infected cells were collected at 6 hpi.

2.2. RNA extraction, cDNA library preparation, and sequencing

Total RNAs were extracted using TRIZOL Reagent (Invitrogen). The quality of the input RNA was controlled by the Agilent 2100 Bioanalyzer (Agilent Technologies). Purified RNAs were treated with RiboZero (Epicenter) to remove ribosomal RNAs and cDNA libraries were constructed using Script-Seq™ v2 RNA-Seq library preparation kit according to the manufacturer’s protocol (Epicenter). The cDNA libraries were sequenced using Illumina HiSeq 2000.

2.3. Bioinformatics analysis

After data cleaning, the reads were aligned to human genome sequences (GRCh38, Ensembl) with TopHat2 software [2]. TopHat2 incorporates Bowtie2 (http://bowtie-bio.sourceforge.net/bowtie2/index.shtml) algorithm to perform the alignment. We used default parameters which allowed a maximum of two mismatches when mapping the reads to the human genome. Cufflinks was then used to profile gene expression at each time point based on human gene annotation by Ensembl [3]. Differentially expressed IncRNAs were identified by three statistical values. 1), fold change was calculated by the FPKM (Fragments per Kilobase of exon per Million fragments mapped) values between Ad2-infected to uninfected cells; 2), based on Poison distribution, p-values were used to present the significances of differentially expressed IncRNAs [4]; 3), using the NOIseq package, the probability of a differentially expressed IncRNA was calculated [5]. The hierarchical IncRNAs with different expression patterns were analyzed with uncentered correlation and centroid linkage method by Cluster and Tree View software.

2.4. Expression of IncRNA binding proteins

All the proteins that interacted with IncRNAs were downloaded from starBase v2.0 which is based on CHIP-Seq analysis (http://starbase.sysu.edu.cn) [6]. mRNA expression data was extracted from the current data. Whereas the protein expression data was obtained by SILAC-MS using the same cell culture and infection condition (manuscript in preparation). Briefly, IMR-90 cells were cultured in cell culture medium for stable isotope labeling by amino acids in cell culture (SILAC) for at least six population doublings. Cells labeled with heavy or light amino acids were then infected with Ad2 or mock infected, respectively. A biological replicate with swapped labeling was also performed. Mock- and Ad2-infected lysates of different labeling were combined in a 1:1 protein ratio. Proteins were fractionated using SDS-PAGE and each lane was cut into ten pieces. Following in-gel tryptic digestion, peptides were extracted and analyzed using QExactive Orbitrap Plus Mass spectrometer (Thermo-Fisher Scientific, Bremen, Germany) Acquired data (raw-files) was imported into MaxQuant software (version: 1.4) and searched against a FASTA-file containing both cellular and Ad2 proteins. The ratio of the chromatographic areas of heavy and light peptides matching to specific proteins was used for determining the differences in protein expression. The reported values are the average of two biological replicates.

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Transparency Document. Supporting information

Transparency data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2016.06.053.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2016.06.053.

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